PAST, PRESENT AND FUTURE OF THE CANADIAN SEAL FISHERY

31 March, 2024

A WHITE PAPER FOR THE SEALS & SEALING NETWORK / FUR INSTITUTE OF CANADA

PREPARED BY CONSERVATION VISIONS, INC.

Past, Present and Future of the Canadian Seal Fishery: A White Paper for the Seals & Sealing Network/Fur Institute of Canada

31 March 2024

Prepared by: Conservation Visions, Inc.

Table of Contents

List of Acronyms

AFWA - The Association of Fish and Wildlife Agencies
ALA - α-linolenic acid
ARM - The North American Animal Rights Movement
ASMS - The Atlantic Seal Management Strategy
CAFO - Concentrated animal feeding operations
CBD - Center for Biological Diversity
CBNRM - Community-based resource management
CIC - The International Council for Game and Wildlife Conservation
CITES - The Convention on the International Trade in Endangered Species of Flora and Fauna
CMS - The Conservation of Migratory Species of Wild Animals
CVMA - Canadian Veterinary Medical Association
COSEWIC - The Committee on the Status of Endangered Wildlife in Canada
COSS - Committee on Seals and Sealing
CPW - Collaborative Partnership on Sustainable Wildlife Management
CSA - Canadian Sealers Association
CSP - Canadian Seal Products
DFC - The Dairy Farmers of Canada
DFO - Fisheries and Oceans Canada
DHA - Docosahexaenoic Acid
DPA - Docosapentaenoic Acid
DSB - Dispute settlement body
DSU - Dispute settlement understanding
EEC - Eurasian Economic Union
EFSA - The European Food Safety Authority
EPA - Eicosapentaenoic Acid
FACE - The European Federation for Hunting and Conservation
FAO - The Food and Agriculture Organization
FPU - Fishermen's Protective Union
FRCC - The Fisheries Resource Conservation Council
FWS - The U.S. Fish and Wildlife Service
GACC - General Administration of Customs China
GATT - The General Agreement on Tariff and Trade
GHG - Greenhouse gas
GOSL - Gulf of St. Lawrence
IC - Indigenous communities
ICC - Inuit Circumpolar Council
IFAW - International Fund for Animal Welfare
ITO - International Trade Organization
IPBES - The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
IPCC - International Panel on Climate Change
IPLC - Indigenous Peoples and local communities

ISC - Ice Seal Committee
IUCN - The International Union for Conservation of Nature
IUU - Illegal, unreported and unregulated
KNAPK - Kalaallit Nunaanni Aalisartut Piniartullu Kattuffia
MHA - Members of the House of Assembly
MMC - The Marine Mammal Commission
MMPA - The Marine Mammal Protection Act
MMR - Marine Mammal Regulations
MRCD - Meat-related cognitive dissonance
MRM - Marine resource management
NAFO - Northwest Atlantic Fisheries Organization
NAMWC - The North American Model of Wildlife Conservation
NMFS - The National Oceanic and Atmospheric Administration's National Marine Fisheries Service
OBFM - The Objective Based Fisheries Management
OHHLEP - One Health High-Level Experts Panel
PAR - Pacific Aquaculture Regulations
PETA - People for the Ethical Treatment of Animals
RCSS - Royal Commission on Seals and Sealing
SARS - Severe acute respiratory disease
SSN - Seals and Sealing Network
SPCA - Society for the Prevention of Cruelty to Animals
SPR - Seal Protection Regulations
TAC - Total allowable catch
TBT - Technical Barriers to Trade
TEK - Traditional ecological knowledge
TRAFFIC - The Wildlife Trade Monitoring Network
UNDRIP - The United Nations Declaration on the Rights of Indigenous Peoples
UNFA - The United Nations' Agreement on Straddling and Highly Migratory Fish Stocks
WTO - The World Trade Organization

Executive Summary

Seal harvesting is an important means of securing healthy food, health supplements, high-quality clothing, and other products. The sale of these products continues to be an important source of income in both Indigenous and non-Indigenous communities. Despite this, strong opposition to the sealing industry has collapsed the market for both Indigenous and non-Indigenous seal products. Some bans on seal products have an exemption for certain Indigenous Peoples; however, these exemptions have completely failed in preventing harm to Indigenous Peoples and in allowing Indigenous Peoples to maintain market access. We also find that numerous other sustainable use practices accepted around the world—including in Europe and the United States—are comparable to, if not significantly worse than, the sealing industry in terms of ethical concerns, animal welfare, and sustainability.

Due to a collapse of the sealing industry, and the cessation of culls and bounties, harp and grey seal populations have grown to levels unprecedented in approximately 200 years and are likely playing a negative role in the recovery of certain fish species, such as Atlantic cod, in certain regions. However, the relative size of this role, and the impact that reducing seal abundance would have on recovery, are not clear. More importantly, due to their large size, reducing seal population size through culls or bounties is likely unattainable without significant public backlash and large financial costs. The seal population may be reduced through the commercial industry, but a reduction in the seal population large enough to have a positive impact on groundfish recovery would also reduce the number of seals that can be sustainably harvested by industry. We emphasize the need for a clear seal management strategy through a consultation process with stakeholders that duly considers the logistics, implications, and effectiveness of reducing seal populations.

The largest barriers to growing the sealing industry are bans on seal products, and a pervasive negative public perception of various aspects of the sealing industry. This negative perception is inhibiting the growth of new internal markets and is hindering demand in existing markets. We find that fully utilizing seal meat is essential to ensure public support, and thus also to the future of the industry, even though seal meat represents a relatively small proportion of the resources and profit that can be derived from the animal. Within this report, we outline several provincial and federal policies that may be hindering the industry and that should be re-evaluated. More importantly, to ensure the future of the industry, it is critically important that marketing efforts continue, especially because marketing efforts to counter the sealing industry will continue and strengthen as the industry grows.

The sealing industry is not alone in its struggle for international acceptance. Increasingly, the sustainable use of wild animals is restricted, but there is a growing constituency of people who are negatively impacted by these restrictions. Aligning seal harvesting in a larger international community supporting sustainable use may allow for increased acceptance of seal harvesting and may help open new markets and lift seal product bans. Leveraging existing international treaties and declarations that defend the right to sustainably use natural resources may further allow the industry to prevent new bans and target existing ones.

Section 2: Introduction

Seals have been hunted in what is now the Canadian Arctic and Atlantic coast by Inuit for 5000 years and by European settlers since the 1700s. Harp, ringed, grey, hooded, bearded, and harbour seals have been harvested in this region. Harp seals are the primary species harvested in Newfoundland and Labrador, while ringed seals are the primary species harvested by Inuit in Arctic Canada.

Seal harvesting is an integral part of Inuit culture and allowed Inuit to thrive in a harsh arctic environment. From seal harvesting derived nutrition, art, religion, ceremonies, fuel, clothing, and ingenious innovations, such as the kayak and harpoon. Seal harvesting remains an important element of Inuit culture, livelihoods, economies, health, food security and food sovereignty. Seal harvesting also transformed the economy, culture, and quality of life of settlers in Newfoundland and Labrador. It provided a source of employment in the winter from shipbuilding and in the spring from the seal harvest itself. Historically, many Newfoundlanders were dependent on the sealing industry for their survival. Today, many people from Newfoundland and Labrador still rely on this industry for their livelihoods and to acquire healthy foods in rural areas.

While seal harvesting is critically important to the local communities who depend on these resources, in the 60s, increasing scrutiny from animal-rights organizations resulted in massive international campaign to end the seal harvest in Canada. This campaign was well funded and highly effective, utilizing publicity stunts, celebrity engagement, letter-writing campaigns, films, active interference, boycotts, and more. This anti-sealing campaign has been active for over 60 years, and has significantly reduced public perception of seal products, resulting in bans on seal products in 36 countries (the EU, the US, Mexico, Russia, Belarus, Kazakhstan, Taiwan, Switzerland, the UK, and India). This had devastating impacts on seal harvesters and local economies and livelihoods, including in Inuit communities, and ultimately resulted in the collapse of the industry.

Today, the size of both harp and grey seal populations are the greatest they have been since the mid 1800s and are likely at, or near, their carrying capacity (i.e., the number of seals the environment could support in the absence of all human-induced mortality). There have been significant concerns that over abundant seal populations are limiting the recovery of many important fish stocks, such as Atlantic cod. For this reason, in addition to pressure to increase the harvest of seals for economic benefit, there is perhaps an equally strong motivation to reduce pressure on the marine ecosystem.

In this White Paper, we provide a comprehensive review of the sealing industry. This report was largely focused on Newfoundland and Labrador and Arctic Canada, but seal harvests in Atlantic Canada and Quebec, particularly the commercial grey seal harvest, were also considered to a large degree. Within this paper, we cover the relevant biology and life history of the seal

species in Atlantic Canada, the history of seal harvesting in Newfoundland and Labrador and Inuit Nunangat; the past and present importance of seal harvesting to the economies, livelihoods, and cultures in these regions; the management framework for seals in Canada; the history of seal population abundance and offtake; and the history and impact of the anti-sealing movement and the mechanisms that were successfully used to collapse the sealing industry.

After this comprehensive overview and history of seal harvesting, we discuss what products are derived from seals, marketing efforts for seal products, the state of commercial industry today, seal harvesting practices around the world, and the barriers that are preventing the industry from prospering. We also provide an overview of widely accepted harvests of wild and domestic species and compare these practices to seal harvesting. We discuss relevant international organizations, treaties and declarations that may prove to be essential to open and retain international markets. We end with a series of recommendations designed to increase and open markets for seal products, ensure a sustainable harvest, and deal with increasing pressure to reduce seal abundance in Canada.

Section 3: Ice, Seals, and Men: The history of the Newfoundland and Labrador Seal Fishery

Natural history and characteristics of the resource

Harp seal

The harp seal is the primary focus of the non-Indigenous commercial seal harvest in Canada. There are three recognized populations of harp seal: the White Sea/Barents Sea, the Greenland Sea and the Northwest Atlantic population (DFO, 2020). The Northwest Atlantic population spends its summer in the Canadian Arctic. In the fall, the seal migrates south down the Davis Strait, to give birth to pups (known as “whelping”), and nurse the pups in late February and March (DFO, 2011). Whelping and nursing occur on ephemeral sea ice in the Gulf of St. Lawrence (GOSL), where sea ice forms naturally, and near southern Labrador/northwestern Newfoundland in an area known as the “Front”. The Front consists of pack ice that froze in Baffin Bay and drifted south along the coast of Labrador by wind and current. Previously, 25–30% of the Northwest Atlantic harp seal population whelped in the GOSL while the remaining 70–75% of seals whelped on the Front, however, in recent years, almost all seals whelp on the Front due changing sea ice conditions (DFO, 2011, 2020).

When pups are born, they weigh 11kg and are 80–85cm long (DFO, c2022). Pups have a characteristic pure white coat that evolved to camouflage them against the white sea ice while also absorbing solar radiation to create heat. For this reason pups are called “whitecoats” (Ronald & Dougan, 1982). In the whitecoat phase, the fur is soft and not waterproof, so the pups are unable to swim. Pups gain weight extraordinarily quickly, gaining 2.5kg per day. Most of the mass gained is blubber, which provides essential insulation in the cold marine environment. The rich milk provided by the mother increases in fat content during the 9-day

nursing period from 25–40% fat. For comparison, human and cow milk is roughly 4% fat (Ronald & Dougan, 1982).

Harp seals nurse for 9 days. At 12–15 days old, their fetal coat is molted in stages, and a new, waterproof, grey and black spotted coat begins to grow in patches. In this transitory stage, the young seals are known as “raggedy jackets”(Ronald & Dougan, 1982). The waterproof coat is fully formed by 3 weeks of age, at which point the young seal is known as a “beater” (known for the noise their tail makes as it strikes the water, as they first learn to swim) (DFO, c2022). After weaning, the adult seals then leave their young to mate on the ice and disperse. The adult seals then congregate in large abundance to moult on the sea ice in Northeastern Newfoundland and in the GOSL in April and May (DFO, 2011). The seals then begin their migration back north. Harps seals have a gestation period of 11.5 months (Ronald & Dougan, 1982). Both male and female adult seals measure around 1.6m and weigh between 130–150kg (DFO, 2011). Harp seals can live up to 40 years (DFO, c2022).

Whitecoats were the focus of the Canadian harp seal harvest prior to 1983. In 1983, whitecoat products were banned in the EU, and hunting of whitecoat seals was subsequently made illegal in Canada in 1987, in response to public sentiment at the time (Sellheim, 2015). The harvest of harp seals peaked between 1830 to 1859, with an average of just over 450,000 seals being harvested each year. The greatest seal harvest on record was 1844, with nearly 700,000 seals exported from Newfoundland. The population could not sustain this level of exploitation and harvest levels decreased after 1859 as a result (Ryan, 1994). Harvest levels continued to fluctuate through time because of social and environmental factors (e.g., world wars, sea ice conditions, and anti-sealing movements and their resulting legislation). Harvest levels were relatively high between 1996–2008, averaging over 264,000 seals a year. In 2009 the EU closed its markets to non-Indigenous seal products, causing harvest levels to decrease dramatically. Between 2017–2019, only 58,140 were harvested per year, on average, and only 32,000 were harvested in 2019 (Stenson & Upward, 2020a).

The number of seals harvested in the Canadian Arctic is not well known. In the Canadian Arctic, an estimated 1,000 seals have been harvested per year since 2002, and, in Greenland, on average, 65,139 harp seals were harvested per year from the Northwest Atlantic stock between 2009–2017 (ICES, 2019). Since 2009, the Greenland harvest regularly surpasses the Canadian commercial harvest (Stenson & Upward, 2020a). All harp seals have been harvested by landsmen in Canada, primarily in small vessels, since 2001 (ICES, 2019). Between 2009–2015, on average, 99% of the Canadian commercial catch were <1 year old. Since 2016, however, 71–87% of the catch were <1 year old (Stenson & Upward, 2020b).

Since 1995, hunters in Newfoundland and Quebec can harvest harp seals with a personal use license, where up to 6 seals may be harvested by a license holder and no part of the animal may be sold. In all hunts, some seals are killed and not recovered, due to the nature of hunting animals in the open ocean. After being shot, seals may sink depending on sea ice conditions and the thickness of their blubber layer. The recovery rate of seals <1 year of age is estimated to be 95% (although it was 99% prior to 1983, when whitecoats were predominantly harvested);

therefore, very few of the young seals targeted in the commercial hunt are lost. The percentage of seals over 1 year of age that are recovered is reportedly only 50%. The percentage of the harvest that is struck and lost in Greenland and Arctic Canada is largely unknown, because of a lack of information on the age structure of the harp seal harvest, although struck and loss rates in these regions is assumed to be 50% in scientific reports, based on the assumption that mostly adult seals are harvested (Stenson & Upward, 2020a).

Harp seals are also killed as bycatch in commercial fisheries. While there is not strong data on bycatch, the most damaging fishery to harp seals is perhaps the lumpfish fishery. Lumpfish are caught in bottom-set gillnets. Lumpfish are caught for use in salmon aquaculture to control sealice infestation, an external parasite that feed on the skin of salmon. Lumpfish are also harvested for their eggs, which are used as a replacement for sturgeon caviar (Canada, c2021). On average, between 17.3–28.6 harp seals are caught as by-catch per tonne of lumpfish roe produced. There has been substantial, albeit highly variable, harp seal bycatch in the lumpfish fishery. In 1994 and 2004, for example, 46,743 and 35,567 harp seals were lost to by-catch—this is greater than the number of harp seals commercially harvested in 2019. Since 2015, bycatch has remained under 1000 seals, due to reduced lumpfish fishery intensity (Stenson & Upward, 2020a).

Prior to the introduction of the North American Model of Wildlife Conservation (see section 5), virtually all species harvested by settlers in North America were overexploited and harp seals were no exception to this. The Northwest Atlantic harp seal population numbered 10.8 million animals in the late 1700s, at its peak (Hammill et al., 2011). The commercial harvest was likely responsible for reducing the harp seal population size to a low of 1.6 million animals by 1918, after which point it increased slightly during war time to 2.2 million animals but decreased again to 1.6 million animals by 1971 (Hammill et al., 2011). The Northwest Atlantic harp seal population has increased since this time. Harp seal population size is estimated using aerial survey data on pup production every 5 years, with the last survey being conducted in March 2017. In 2017, an estimated 746,500 pups were born, 96% of which were born on the Front (DFO, 2020). This pup production data is incorporated with data on reproductive rates, harvest, struck and loss frequency, bycatch, ice conditions, environmental conditions, and age structure to estimate population abundance. Two models have been used recently to estimate harp seal abundance, a deterministic model, and a newer stochastic model.

The initial interpretation of the most recent harp seal survey, using the deterministic model, was that the Northwest Atlantic harp seal population has rapidly grown since 1982, leveled off in 1996 and grew rapidly again after 2011, numbering 7.6 (95%CI 6.55–8.82) million in 2019 (DFO, 2020). It appeared the population was still growing in 2019. Importantly, however, this prediction was inconsistent with the most recent (2017) estimate of pup abundance, which showed pup abundance was relatively low, similar to that observed in 1994. In 2023, a new stochastic model was used to analyze the available data. The interpretation of the available data from this model suggested that harp seal population size in 2019 was only 4.67 (95% CI: 3.71–5.68) million. This updated model suggests that the harp seal population increased gradually after 1971, then more rapidly after 1985 to a maximum abundance of 6.6 million

animals in 1997. After this time, the harp seal population decreased substantially and has remained around 4.6 million animals since 2012 (Tinker et al., 2023).

There have been many improvements to the stochastic model, such as incorporating age structure data and better accounting for environmental and ice conditions in the statistical model. The most important difference between the two models was that the deterministic model erroneously assumed that birth rates and juvenile mortality were constant. Therefore, in this model, a decrease in harvest automatically resulted in an increase in population abundance, even if observed pup production was low. The assumption of constant birth rates and juvenile mortality does not account for density-dependent effects. When any population of animals grows large enough, food resources become limited which can decrease offspring production and survival. This is true in the case of seals, where adult seals may outcompete young seals for limited food resources. The stochastic model accounts for this, by allowing juvenile mortality to vary depending on ice conditions, and population size. With the stochastic model, a reduction in offtake does not automatically result in an increase population abundance (Tinker et al., 2023).

The carrying capacity (i.e., the average population size that an environment can sustain in the absence of human removals) for the Northwest Atlantic harp seal population was estimated to be 6.79 (SD=0.07, 95% CI=6.68-6.91) million, based on post-2020 environmental and ice conditions (Tinker et al., 2023). The reproductive rate of the Northwest Atlantic harp seal population has decreased, as has the body condition of adult harp seals (DFO, 2020). Further, the reduction in harp seal abundance, following their maximum abundance of 6.6 million animals in 1997, was driven predominantly by density-dependent mortality (one such cause of this is food limitation) (Tinker et al., 2023). For this reason, it is likely that harp seals have reached their carrying capacity, are now fluctuating around it, and are currently in a trough.

Grey seal

There are three populations of grey seals in the world, one in the Baltic Sea, one in the Eastern North Atlantic (near the shores of Great Britain, Iceland, Norway, Denmark, the Faroe Islands, and Russia), and one in North Atlantic Canada and United States (NOAA, c2022).
In Canada, there is one interbreeding population that is managed in two herds, based on whether the seals pup in the GOSL, or on the Scotian Shelf (on the Nova Scotia shoreline and on Sable Island). In the past, virtually all pupping was done on sea ice, but with the lack of reliable sea ice in the GOSL due to climate change, now almost all pupping occurs on land (DFO, 2022). Most pupping occurs on the Scotian Shelf, with Sable island itself accounting for 78% of pups born in 2021 (DFO, 2022).

Grey seals are considered by many to be a nuisance species in Canada, due to their negative impact on commercial fisheries. Grey seals take bait from lobster traps, fish from gill nets and longlines, damage fishing gear, and, due to their predation on groundfish, may be impacting the recovery of Atlantic Cod and other groundfish stocks in certain locations (DFO, 2010). For this reason, grey seals have been subjected to a variety of harvest schemes, including culls,

bounties, nuisance seal permits, scientific permits, and a relatively small commercial harvest. Culls of grey seals ended in Canada in 1983, bounties ended in 1990, and the sale of nuisance seal permits ended in 2020 (Bowen & Lidgard, 2013; DFO, 2022; Hammill et al., 2014; Malouf, 1986).
Despite the changes in sea ice conditions and ongoing harvesting, the population has grown dramatically since 1960, from 15,000 seals to an estimated population size of 366,400 in 2021 (ASSTT, 2022; DFO, 2022). The population is still growing, but the rate of population growth has been slowing since at least 1997, and was only 1.5% per year between 2016 and 2021, suggesting that grey seals may be reaching their carrying capacity in Canada (DFO, 2017, 2022).

Hooded seal

Hooded seals are the largest seal species in the Northwest Atlantic and have the shortest nursing period of any mammal. Nursing lasts 4 days and pups gain 15 lbs a day during this time. Hooded seals form a single interbreeding population that summer in the Arctic, Greenland, and Denmark Strait and migrate south to whelp on sea ice, predominately in the Davis Strait and near the Front (DFO, 1996). Hooded seals whelp in small family units on sea ice further east at sea than harp seals. A small number of hooded seals historically whelped in the GOSL. The population of hooded seals in the Northwest Atlantic is estimated to have increased from 478,000 in 1965 to 593,500 in 2005 (the last year of assessment) (Hammill & Stenson, 2006). A new assessment for hooded seals is currently underway, using imagery data collected during the 2012 and 2017 harp seal surveys. This report is expected to be released in 2024.

Hooded seals have been hunted throughout the history of the commercial seal harvest, beginning in the early 1700s. Hooded seal pups have a characteristic blue fetal coat and are thus called “bluebacks”. This coat was highly valuable and fetched a higher price than whitecoat pelts. Although this coat is moulted at 15–16 months after birth, the blueback pelage remains until 2–3 years of age (DFO, 1996, 2011). Hooded seals were generally harvested by sealers pursuing harp seal whitecoats as a means of supplementing their harvest (Wright, 1984). Between 1976 and 1982, between 10,393– 15,125 were harvested per year, most of which were pups. Blueback pelts were banned from the European market in 1983, in which year harvest levels reduced sharply to only 128 seals, and generally have remained less than 1,000 since (exceptions are 1991: 6,425 seals, 1996: 25,745 seals, 1997: 7,058, and 1998: 10,148 seals). Since 2005, less than 80 seals have been commercially harvested per year, and only 30 hooded seals were harvested in 2019 (ICES, 2019).

Hunters in Greenland harvested between 3,287–9,891 hooded seals per year from 1972–2007. Since 2009, Greenland harvests have remained between 1,515–2,145 per year, with 1,526 being harvested in 2017. Most of the catch is from the western shore of Greenland (1,309 seals in 2017), which is the same stock that is harvested commercially in Canada. A couple hundred hooded seals are also harvested on the southeastern shore of Greenland each year (217 seals were harvested in 2017). Harvest by hunters on the northeastern shore has remained below 60 seals per year since 1954 and harvest in this area has been between 0–9 seals per year since 2006. These harvests are likely from a separate stock in the Greenland Sea, although interbreeding occurs between stocks (ICES, 2019).

Hooded seals were listed as vulnerable by the IUCN in 2015. Hooded seal abundance in the Greenland Sea has been declining by 3.7% per year, because of changes in climate conditions and sea ice. The species was classified as vulnerable, under the assumption that changes in sea ice are impacting all populations of hooded seal (including those in Canadian waters). The species has not been assessed by COSEWIC since 1986, at which time it was classified as "Not at Risk" (Kovacs, 2016).

Ringed seal

During the last glacial maximum, heavy sea ice radiated out from the Arctic and forced ringed seals to move southward, down from the Arctic. When the sea ice retreated, ringed seals again moved north, but certain populations became isolated in bodies of water that prevented their northward migration, generating the 5 subspecies of ringed seals that are present today. The most abundant subspecies, Arctic ringed seals (*P.h. hispida*) inhabits the Arctic Ocean, the Labrador Sea, Hudson Bay and the Bering Sea. Two subspecies are isolated from this larger population in the sea of Okhotsk, and in the Baltic sea, and two other subspecies are isolated in the freshwater lakes, Saima and Ladoga (Kelly et al. 2010).

Ringed seals are relatively small compared to other seals, they are approximately 1.5m in length and weigh 70kg, while newborn pups weigh only 4.5–5kg. Ringed seals prefer to whelp on landfast sea ice, but some also whelp on mobile pack ice (COSEWIC, 2019). They whelp in March–April and nurse their young for as long as 2 months on stable, shore-fast ice, and for only 3–6 weeks if the ice is moving. After whelping, tie they breed in April–June, and then molt between May–July (Kelly et al. 2010).

After moulting, ringed seals move in search of food. Certain ringed seals may travel for large distances (up to 18,500 km) to reach productive hunting grounds, while other ringed seals may remain within 100km of their breeding habitat, if there is plenty of food. Ringed seals are present throughout the Canadian Arctic year-round, accomplished by creating breathing holes through sea ice in the winter (Ogloff et al., 2021, Malouf, 1986). Some ringed seals migrate south in the winter and can be found along the Labrador coast, the north coast of Newfoundland, and very rarely in the GOSL (COSEWIC, 2019). Ringed seals prefer to prey upon small fish species that form dense aggregations. Arctic, polar, and saffron cod are important prey species, but ringed seals may also consume certain squid, octopi, mussels, crabs, anemones, and more. Ringed seals can dive to depths over 550m and hold their breath for at least 39 minutes in search of prey, but most dives last around 10 minutes (Ogloff et al. 2021).

Unlike other seal species which whelp on top of sea ice, ringed seals whelp within subnivean lairs. A subnivean lair is a burrow dug underneath of the snow. A ringed seal will use its claws to create a whole in sea ice underwater, and then dig the subnivean lair without breaching the surface. Ringed seals require 45cm of snow depth to form a subnivean lair. The ability to create a sbnivean lair is essential because it provides a critical insulation to protect the newborn pup from hypothermia, and it hides the pup from predation by polar bears, arctic fox, birds and

other terrestrial predators. Ringed seals are the most abundant marine mammal in the Arctic and are the primary prey of polar bear. The 16,000 polar bears in Canada need to consume roughly 600,000 ringed seals per year (COSEWIC, 2019). Ringed seals are more aquatic than many other seal species and spend most of their time under the ice, or within subnivean lairs, except during the spring molt, when they will bask in the open. Ringed seals may spend as much as 60% of their time on top of the ice in June (Kelly et al. 2010).

Ringed seal population size is very difficult to assess because of their circumpolar distribution and variation in abundance over the region. The Arctic subspecies encompasses multiple geopolitical regions which further complicates population size estimates. Global estimates of ringed seal population size range from 2.5–7 million, and in Canada, the population is estimated to be at least 2.3 million; however, the surveys used to generate these population size estimates were conducted in 1975, 1983 and 2004 (COSEWIC, 2019).

Ringed seals are extremely important to many Inuit in Canada. They are the primary species targeted by Inuit harvesters, and are an important aspect of their culture, livelihoods, economies, and food sovereignty (Farquhar, 2020). At least 25,879 ringed seals are harvested in the Canadian Arctic each year. Hunters in Greenland harvested 62,691 ringed seals per year, on average, between 2009–2013. Recently, however, the harvest has decreased substantially in Greenland, to only 24,711 in 2022, 21,603 in 2021 (Government of Greenland, 2015; Priest & Usher, 2004; Stephenson, 2004; NAMMCO, n.d.). In addition to Indigenous harvests, ringed seals may occasionally be targeted by personal and commercial sealers in Canada, as well as non-Indigenous residents that reside in the Canadian Arctic for food purposes (in sealing areas 1–4) (Marine Mammal Regulations, 2018). The species is classified as special concern by COSEWIC due to its dependence on sea ice and ongoing climate change in the Arctic. The species is classified as Least Concern by the IUCN; however, the Ladoga Ringed Seal subspecies (located in a freshwater lake in Russia) is classified as Vulnerable and the Saimaa Ringed Seal subspecies (located on a freshwater lake in Finland) as Endangered (COSEWIC, 2019). In the US, all 5 subspecies of ringed seal are listed as threatened or endangered under the Endangered Species Act, and as a result, these subspecies are also listed as depleted under the MMPA, though there are no population size estimates available to support this conclusion. These listings are also due to the impact climate change is predicted to have on ringed seal in the future (NOAA Fisheries, 2022). Ringed seals are threatened by climate change because of forecasted reductions in seal ice extent and thickness, and snow accumulation.

Bearded seal

Bearded seals are distributed throughout the Arctic and rely on sea ice for whelping and molting. They may be found in the GOSL, along the Labrador coast and northwestern Newfoundland. There is very little data on bearded seals. Population size is estimated to be greater than 500,000. At least 755 bearded seals are harvested annually by Indigenous hunters in Canada and an additional 1,231 are harvested by hunters in Greenland (Government of Greenland, 2015; Priest & Usher, 2004; Stephenson, 2004). They were classified as “Least Concern” by the IUCN in 2016. They were classified as “Data Deficient” by COSEWIC (NAMMCO, c2016). Like ringed seals, all subspecies of bearded seals are listed as threatened under the US

Endangered Species Act and are also listed as depleted under the MMPA as a result. This listing is also due to the impact climate change is predicted to have on bearded seal (NOAA Fisheries, 2023).

Harbour seal

Harbour seals are widely distributed around the temperate and Arctic coastlines of the world. They have a global population of 5–6 million animals. Harbour seals are often considered a nuisance species due to their interactions with fisheries (DFO, 2011; Government of Canada, 2016). A series of aerial surveys were conducted between 2019–2021 to estimate the number of harbour seals in Atlantic Canada for the first time. It is estimated that there are 25,183 (95% CI: 22,548–28,126) in Atlantic Canada, with most located in the GOSL (58%), and the remainder on the Nova Scotia (24%) and Newfoundland (19%) shorelines. Based on this most recent assessment, it is estimated that 720 harbour seals could be hunted annually in Canada, although no hunt currently exists (DFO, 2023). While generally abundant, the sub-species, Lacs des Loups Marins, was listed as endangered under the Species at Risk Act in Canada. This sub-species of harbour seal inhabits a freshwater lake system in Nunavik (northern Quebec) and this population likely numbers less than 100 animals, although population assessments are unreliable (DFO, 2018). Harbour seals were commonly the subject of culls and bounties on the Canadian and American Atlantic coasts. In the eastern US, between 72,000–136,000 seals were harvested for bounty between 1891–1962. Culls in Nova Scotia occurred between 1927–1976 and significantly reduced the population size (Bowen & Lidgard, 2011).

Inuit seal harvesting

It is important to note that the authors of this document are not Inuit, and thus are limited in their ability to accurately describe the importance of seal harvesting to Inuit. Documentation where Inuit tell their own story on the importance of seal harvesting can be found in Peter et. al, 2002; Inuit Tapiriit Kanatami, 2004; Inuit Circumpolar Council, 2016; and Arnaquq-Baril, 2016. The group of people called Sivullirmiut (meaning first people) by Inuit, referred to as Pre-Dorset or Paleo-Inuit in the scientific literature, began living in the Arctic at least 5000 years ago on the Alaskan Arctic coastline. This group of people spread eastward across the Canadian Arctic coastline and into Greenland via Ellesmere Island, in only 500–1000 years (Helgason et al., 2006). Across the vast Arctic landscape, different cultures arose, spread, and intersected, creating a variety of unique cultures. Inuit culture is likely derived in varying degrees from the Sivullirmiut, Dorset and Thule culture (Helgason et al., 2006; Inuit Tapiriit Kanatami, 2004).

Marine mammal hunting is an integral part of Inuit culture, and belongs to a way of life proudly upheld across the Circumpolar world. “Inuit everywhere,” Inuit Tapiriit Kanatami tells us, “take great pride in being able to make our life comfortable and sustainable in what is so often described by outsiders as a hostile, even unlivable environment” (Inuit Tapiriit Kanatami, 2004, p. 3). Today, many plants and animals remain important to Inuit subsistence practices; however, marine mammals, especially seal, have always been at the core of Inuit life. In every season of the year, seals provide food, clothing, shelter, and tools (Helgason et al., 2006; Inuit Tapiriit Kanatami, 2004) Marine mammal hunting contributes to a complex set of social, cultural,

economic, ethical, political, and spiritual values. Essential nutrients and fuel (rendered blubber for cooking and heat); ingenious innovations, such as the kayak (made for hunting seals in the summer and made itself of seal skin) and the harpoon (used to hunt seals but also constructed with seal bladder); housing (structures made of skin and whale bone) and clothing (e.g., boots, pants, parkas, baby carriers and mittens all made of sealskin); artistic and religious forms of expression—all of these vital components of Inuit society are bound up in the harvest of marine mammals (Peter et al., 2002). Sealskin is especially important as it provides a warm, water-resistant layer that provides comfort and utility in Inuit habitats.

Inuit still rely on seal harvesting in the Northwest Atlantic for food and income: 5,000 Inuit live in Nunatsiavut (Inuit land within Labrador), 30,000 Inuit live in Nunavut, 6,000 Inuit live in the Inuvialuit Settlement Region (Inuit land within the Northwest Territories), 10,000 Inuit live in Nunavik (Inuit land within northern Quebec), and 55,000 Inuit live in Greenland (Inuit Tapiriit Kanatami, 2004). Many Inuit participate in seal hunting. For example, approximately 6,000 Inuit in Nunavut harvest seals year-round (Farquhar, 2020). Inuit have hunted all 6 species of seals that inhabit the Atlantic and Arctic oceans; however, ringed seals are the primary target of Inuit seal harvesting (Farquhar, 2020). Seals are primarily hunted with guns, but are occasional harvested by other means including harpoons and nets (Farquhar, 2020). Inuit generally have not harvested seals with clubs and have their own seal hunting culture and traditions that are distinct from those in other regions in Canada.

A common misconception is that Inuit are “trapped” in a subsistence economy (we will discuss subsistence at greater length in Section 8) or must choose between subsistence and Westernized economic practices and culture. In fact, Inuit seal hunters and communities engage with international commercial seal markets and have done so for over 120 years (Peter et al., 2002), while proudly using that engagement to uphold and enhance their traditional subsistence practices. Inuit sealers, however, are negatively impacted to a great degree by policy decisions on commercial sealing, often in spite of Indigenous exemptions (Arnaquq-Baril, 2016; Chang, 2020; Farquhar, 2020). The obstacles to trade imposed by the E.U. seal ban is detrimental to Inuit subsistence, which is at the core of Inuit life and identity.

Seals are an important part of Inuit mixed economies in Arctic Canada. Mixed economies in the Canadian north blend subsistence practices with mainstream Western economic practices, as do many indigenous economies around the world. Sámi scholar Rauna Kuokkanen writes (Kuokkanen, 2011, p. 221):

> *Today’s indigenous economies are often “mixed economies” in which subsistence production continues to play a considerable role. Mixed economies are characterized by a mix of activities such as subsistence, commodity production, wage labor, transfers (social assistance, unemployment insurance, welfare, pensions, and other statutory or fiduciary payments), and enterprise. Although a subsistence economy alone no longer meets all the needs of a community, it continues to play a significant economic, social, and cultural role in many indigenous communities. According to various estimates, a*

> *subsistence economy accounts for 30—80 percent of all production and income in many northern indigenous communities.*

In the Arctic, often only rare, seasonal employment is available and the average price for fresh groceries is substantially higher than in urban areas elsewhere in Canada (Shafiee et al., 2022). Instead of relying on foods shipped from the south, the more economical and healthy means of food production in the Arctic is to allocate funds to purchase hunting and fishing gear (e.g., snowmobiles, boats, rifles, gasoline, ammunition), that can be used to hunt and fish for food and profit (Rosol et al., 2016). For Inuit, wild harvesting is not only an essential part of local food security and economies (Shafiee et al., 2022; Wolfe, 2004), it remains at the social, cultural, and spiritual centre of Inuit life. As David C. Natcher points out in "Subsistence and the Social Economy of Canada's Aboriginal North" (Natcher, 2009, p. 90):

> *[T]he cultural values associated with subsistence production have not been diminished by the wage economy […] wage earning has actually allowed for the continuation of harvesting activities and has, in some cases, strengthened the social networks supporting them. Rather than subverting subsistence production, the wage economy provides an economic basis for wildlife harvesting, thereby invigorating social institutions and perpetuating traditional values among the communities.*

Revenues from pelt sales are often used to purchase gasoline for snowmobiles—an essential purchase to reach seal harvesting grounds. In this way, seal harvesting is self-sustaining food provisioning system that figures essentially into Inuit subsistence: seal meat is eaten and the funds derived from the sale of seal pelts can be used to hunt more seals to obtain more meat and pelts (Arnaquq-Baril, 2016). Seal is an important food source that provides protein, energy, healthy fatty acids, vitamins and minerals, and is an especially important source of iron in Arctic Canada (Rosol et al., 2016).

The history of sealing in Newfoundland

European explorers re-discovered the island of Newfoundland in 1497. Starting in the 1500s, fishermen from France, Portugal, England, and Spain would cross the Atlantic in the spring to harvest cod around the shores of Newfoundland and Labrador and in the Grand Banks. In the 1500s and 1600s, migratory whalers from France and Spain would also hunt right and bowhead whales in the late summer, fall, and winter in southern Labrador (Higgins, c2008). Slowly, and with great difficulty, the English and French began to form colonies in Newfoundland in 1610, followed by the Irish after 1760 (Hiller, c1997).

Settlers were dependent on cod for income and as a protein source. The cod fishery was not always reliable, especially due to competition from migratory fishermen. To obtain protein, settlers hunted, trapped, and gathered foods to survive, including murres, gulls, and the now-extinct great auk (Troake et al., 2005). Homesteading potatoes, carrots, turnip and cabbage provided much of the remainder of food on the island and these foods were bottled for winter consumption (Omohundro, 1985). In the 1700s, settlers on the northeast coast began to

harvest seals, which proved extremely valuable: their blubber provided fuel for lamps, their fur provided boots and harnesses, and crucially, their meat provided much-needed sustenance in the spring, when winter provisions were running low and other food sources were unavailable (Ryan, 1994).

Commercial sealing in Newfoundland began around 1720, when small amounts of seal oil were exported to Europe. Seals were caught with nets from the shore, with flintlock muskets from small fishing boats, and, occasionally, with clubs on whelping ice that floated to land (Colman, 1937; Ryan, 1994). In 1780, the Argand lamp was invented which created a high demand for seal and whale oil in Europe as a source of fuel for indoor lighting; however, due to over-exploitation of whale populations, the market was left open for seal oil (Sanger et al., c1998). In the 1790's the market for oil was great enough that several small wooden sail boats left St. John's and Conception Bay to pursue seals in the ice fields. These trips would only result in a couple thousand seals (Ryan, 1994).

In the early 1800s, the industry rapidly expanded. By 1820, 67 wooden sailing ships carrying 2,748 men from St. John's and Conception Bay went to whelping patches to harvest harp and hooded seal pups (Ryan, 1994). The sealing industry peaked between 1830–1859. In these years, it employed roughly 12,000–14,000 men and resulted in an average harvest of 450,000 seals. The greatest seal harvest on record was 1844, when nearly 700,000 pelts were exported from Newfoundland (Colman, 1937; Ryan, 1994). In addition to the economic benefits derived from seal product exports, seal harvesting allowed local shipbuilding industries to flourish in many communities across Newfoundland during the winter months.

Sealing transformed the economy and quality of life in Newfoundland. It provided a source of employment in the winter from shipbuilding and in the spring from seal harvesting. This, coupled with the cod fishery, offered nearly year-round employment. Seal harvesting was an integral aspect of the economy in Newfoundland. In fact, many outport communities could not afford to finance the boats needed to participate in the cod fishery without the income derived from seal harvesting (Ryan, 1994; Wright, 1984). In some outport communities, seal harvesting was essential to survive the winter, because sealing captains would provide sealers with winter provisions on credit, which would then be paid off in the spring by working as a sealer. If the sealer failed to join the hunt in the spring, credit would be cut-off in subsequent winters (Millais, 1907). Commercial sealing in Newfoundland sparked a surge in population size on the island, from 6,000 people in 1750 to 122,000 in 1857 (Omohundro, 1985; Ryan, 1994).

The wooden sailboats used for sealing became ever larger throughout the early 1800s. This eliminated the shipbuilding industry in Newfoundland outports in the mid 1800s, when communities could no longer afford to build such large vessels. In 1862, wooden steam-powered vessels began to be used for sealing. Steam power allowed boats to move independently of the wind, which was crucial to successfully navigate through ice pans to get to whelping patches (Ryan, 1994). Despite the advancement, less seals were caught after the introduction of steamers, because the resource had been depleted. The introduction of steamers was also accompanied by the development of petroleum products for use in lamps,

which began to replace markets for seal oil. As a result, seal pelts used in the European fashion industry began driving the sealing market (Ryan, 1994).

By 1906, steel steamers began to be used for sealing. These ships benefitted from being able to break sea ice under the ship's own weight and form a new path though the ice. Additionally, the ship was much sturdier, which prevented the sea ice from damaging the hull of the boat. Despite the advances in technology, due to a depleted seal stock and market changes, greater profit was not actualized (Ryan, 1994).

The prices of seal products, particularly fur, began to increase; however, unfortunately, the extraordinary cost of financing steel steamers, coupled with a low seal population size, resulted in many ships being sold at the beginning of the first world war. By the second world war, all steal steamers were used or destroyed in the war and only wooden steamers were available for sealing. Only 150,000 seals were harvested per year, on average, in inter-war times, allowing a population resurgence to approximately 2.2 million seals by 1946 (Hammill et al., 2011). In the 1950's, however, harvest again increased to 316,358 seal per year, and the seal population decreased to only 1.6 million animals by 1971 (Hiller, c2001; Stenson & Upward, 2020a). In 1971, harp seal quotas were introduced, but a surge in negative publicity and international bans on seal products eliminated much of the commercial market (Sellheim, 2015). As a result, the population recovered and is now estimated to be 4.67 million in 2019 and is likely near its carrying capacity (Tinker et al., 2023).

Seal harvesting is perhaps the most dangerous hunt in the world. Historically, sealers were required to spend long days working on sea ice in winter, miles from shore, without proper safety equipment for cold-water immersion or frostbite. Sealers would work on floating pans of sea ice that break apart and close together unpredictably. All sealers would need to jump over cracks in sea ice to reach their sealing areas. Falling into the ice was commonplace and often resulted in death, either from drowning, being crushed from moving pans of ice, or hypothermia. The sea ice also took a toll on entire ships: ships often were crushed from moving pans of ice or became stuck in the ice for days. Hundreds of sealers and ships have been lost in the Newfoundland sealing industry (Grenfell, 1898; Ryan, 1994).

In addition to the dangerous nature of the seal hunt, sealers had to overcome other living conditions of the journey, which were described as "inconceivably filthy". At first, all crew members slept in one small cabin with an armful of straw in a sacking bag as a pillow (Grenfell, 1898). Once many seals were caught, all cabins needed to be used for pelt storage. Even coal was moved to be stored on deck or indeed thrown overboard, if need be, to make room for the pelts. The men slept wherever they could (Ryan, 1994). A Newfoundland sealer in the late 1800s describes the experience as such (Millais, 1907):

> *"Two hundred men in a foul tub not fit to carry thirty, an' a bully to thrash you out o' your bunk whether you're fit to go to the ice or no. They fling you out on the floe ice with a few billets of wood, and steams away a day to dump off another crowd, and like as not you've got to spend the night out wi' your clothes freezin' on you, for you're bound to fall*

> *in the cracks least once a night, however, 'loose' [fit/active] you may be. Thar's no room below once the steam winch gets a-going and seals a-comin' abord, so up comes the coal, and what with the grit and the blubber, two hundred men can't sleep very comfortable on the open decks in a mass of muck wi' the cold freezin' your marrow."*

To be a sealer in the 1800s was to risk one's life to acquire a relatively small amount of food and income. It is a reasonable question to ask why anyone would subject themselves to such conditions. The reason is simply necessity, stemming from poverty and starvation. In response to this very question ("I wonder the men stand it, and they get crews year after year"), the same sealer above replied (Millais, 1907):

> *"Ah, that's cos you don't know what the poverty o' newfun'lan is… [the sealing crews are] the poor, the very poor, and they just have to go or starve. It's this way. Ye see there's lots of poor fisher-folk all 'long the coast and islands that sees a dollar from one year end to another…. It 'ud make your heart sore to see the way lots o' these islanders come abard the sealin' vessels in the spring — wi' pinched, half-starved faces, and hardly 'nough clothes to stand a summer breeze."*

The same sentiment was expressed by Wilfred Grenfell who accompanied the SS. Neptune on a sealing expedition in 1896 (Grenfell, 1898):

> *"It must be partly these glorious doughs, this unlimited molasses, flour, butter, pork, tea, dried fish, seal meat, etc., which lures so many to strive for berths. For, sure enough, many have been on uncommonly short allowance all winter, and some have hardly known what a good square meal means at all."*

Seal harvesting is an integral part of the history of Newfoundland. Newfoundlanders were dependent on the sealing industry for their survival, and many still rely on this industry for their livelihoods. Sealing required one to be physically and mentally capable of withstanding extraordinarily harsh conditions. This fostered a unique culture and folklore in Newfoundland that carries on to this day.

Section 4: Ecological context for the modern Newfoundland and Labrador seal fishery

Ecological feasibility

Both harp and grey seal populations in the Northwest Atlantic can support a large sustainable harvest. The harp seal population size has increased 4-fold in the last 50 years, from 1.6 million animals in 1971 to 6.6 million in 1997. In fact, the harp seal population is likely near its carrying capacity, meaning that, even in the absence of all human-induced mortality, the harp seal population could not grow any larger because there are not enough resources to support

population growth (DFO, 2020). This resource limitation has likely contributed to a population reduction in recent years, to 4.7 million in 2019 (Tinker et al., 2023). Similarly, the grey seal population has increased in size by an order of magnitude, from 15,000 seals in 1960 to 366,400 seals in 2021, and may too be approaching its carrying capacity (ASSTT, 2022; DFO, 2022). These seal populations have increased despite commercial, personal, subsistence, and (in the case of grey seals) nuisance and cull harvesting. There is no concern regarding the sustainability of current levels of take, and levels of take could likely increase substantially while remaining sustainable (DFO, 2020, 2022).

Between 2009–2019, on average, 63,033 harp seals were harvested commercially in Canada each year and only 32,038 harp seals were harvested in 2019. Since 2009, the Greenland harvest of harp seals has surpassed the Canadian commercial harvest in 2010, 2011, 2014, 2015, and 2019. In Greenland, on average, 55,836 harp seals were harvested per year from the Northwest Atlantic stock between 2009–2022 (ICES, 2019). This harvest has decreased in recent years in Greenland, with only 28,751 harp seals being harvested from the Northwest Atlantic stock in 2022, and only 29, 904 in 2021. An additional 1,000 harp seals are thought to be harvested in the Canadian Arctic; however, this harvest has not been assessed since 2001 and was based on an average of 719 harp seals being harvested per year between 1996–2001 (Priest & Usher, 2004; Stenson, 2010).

The DFO no longer sets harp seal quotas due to the low level of harvest. Recent research, based on a population size estimate of 7.6 million harp seals in 2019, suggests that between 175,000–425,000 harp seals could be harvested per year in Canada depending on the age structure of the harvest (harvesting adult seals results in lower quotas, because the breeding stock is removed). This level of harvest would have an 80% probability of keeping the harp seal population above the precautional level of 70% of its highest population size (i.e., N70 = 5.3 million animals). Since 2016, 71–87% of the catch were <1 year old (Stenson & Upward, 2020a), which suggests that the possible sustainable harvest is less than 375,000, because an annual harvest of 375,000 remained above the precautionary level, when at least 90% of the harvest was <1 year of age (DFO, 2020). Importantly, these statistics are not based on the most recent population model, which suggests there are closer to 4.7 million harp seals. If this new model is more accurate, it is likely that less than 375,000 seals could be sustainably harvested per year.

Between 2017–2021, the average annual commercial harvest of grey seals was 1,018. Between 2017–2019, the average annual number of seals harvested under a nuisance permit was 3,467 (these permits ceased in 2020) (DFO, 2022). Fisheries and Oceans Canada does not assign a total allowable catch for grey seals, because the current offtake is nowhere near unsustainable. Estimated offtake that would keep grey seals above their precautional reference level of 70% of the total population size, varies between 24,200–77,300 seals per year, depending on the age structure of the harvest; however, since >95% of the grey seals harvested are young of the year, it is likely closer to 77,300 (DFO, 2022).

Data on hooded seal populations in the Northwest Atlantic are not as strong as for the other species. The last assessment of hooded seals in the Northwest Atlantic was performed in 2005.

This survey suggested that hooded seal populations in the Northwest Atlantic have increased from 478,000 seals in 1965 to 593,500 in 2005 (Hammill & Stenson, 2006). However, surveys on hooded seals in the Greenland Sea near Jan Mayen suggest that this population is declining by 3.7% per year, which would reduce the hooded seal population size there by 75% in three generations. Because of the lack of current information on hooded seals in the Northwest Atlantic, this has led to all hooded seals being listed as "Vulnerable" by the IUCN following their 2015 assessment of the species (Kovacs, 2016).

The average annual Canadian commercial harvest of hooded seals between 2009–2019 was only 13 seals; however, 79 seals were harvested in 2018 and 30 were harvested in 2019 (ICES, 2019). Hunters in Greenland now harvest more hooded seals than hunters in Canada. Between 2009–2022, hunters in Greenland harvested, on average, 1,340 seals per year from the Northwest Atlantic stock. Sustainable levels of harvest of this stock were estimated to be 27,400–32,100 in 2005 (the last year of assessment in Canada) (Kovacs, 2016).

While the above catches reflect the harvest of harp and hooded seals from Northwest Atlantic populations, hunters in Greenland harvested an additional 238 hooded seals and 1800 harp seals from the West Ice population, on average, per year between 2009–2022. Norway also harvested, on average, 6,904 harp seals and 69 hooded seals from the West Ice population per year between 2009–2019, and an additional 37 harp seals from the East Ice population per year between 2009–2019 (with high variability; for example, Norway harvested 2241 harp seals from the East Ice in 2018) (ICES, 2019).

There has been relatively little research on the other seal species in Canada, which are generally only harvested by residents of Arctic Canada. Results from the Nunavut Harvest Study, spanning 1996–2001 indicate that 25,086 ringed seals, 735 bearded seals, 719 harp seals, 12 harbour seals, 43 hooded seals, and 607 unspecified seal species were harvested annually, on average (Priest & Usher, 2004). In the Northwest Territories, the Inuvialuit Harvest Study revealed that 793 ringed seals and 20 bearded seals were harvested per year on average between 2002–2003 in three communities (Stephenson, 2004). This does not represent all communities in the Northwest Territories, nor the harvest in northern Labrador (Nunatsiavut), or northern Quebec (Nunavik). Therefore, at least 25,879 ringed seals, and lesser numbers of other seals are harvested in the Canadian Arctic each year. Like hooded seals, hunters in Greenland also harvest more ringed seals than hunters in Canada. Hunters in Greenland harvested 62,691 ringed seals per year, on average, between 2009–2013, and 1,231 bearded seals per year on average, between 2009–2013 (Government of Greenland, 2015). Recently the harvest has decreased substantially in Greenland, to only 24,711 ringed seals in 2022, 21,603 ringed seals in 2021, and 924 and 826 bearded seals in 2022 and 2021, respectfully (NAMMCO, n.d.).

Ringed seal population size is very difficult to assess because of their circumpolar distribution and variation in abundance over the region. Global estimates of ringed seal population size range from 2.5–7 million, and in Canada, the population is estimated to be at least 2.3 million; however, the surveys used to generate this population size estimate were conducted in 1975,

1983 and 2004 (COSEWIC, 2019). With poor data on harvest and abundance, there are no estimates of how many ringed seals could be sustainably harvested. Indigenous Peoples have sustainably harvested ringed seals in the Arctic for millennia (Inuit Tapiriit Kanatami, 2004). However, climate change and emerging anthropogenic impacts in the Arctic pose new threats to this renewable resource—effective monitoring of the resource is perhaps needed more now than ever before.

Conflict with other fisheries

After nearly 5 centuries of exploitation of cod stocks, the population collapsed in 1992 to only 1% of what it was in the 1960s, and a moratorium was put in place (Stenson, 2013). There has been a small inshore stewardship and recreational fishery since 2006, which landed 11,000t and 1900t of cod per year between 2016–2019, respectively (DFO, 2021). In addition to cod, other demersal fish populations have declined, including white hake (*Urophycis tenuis*), redfish (*Sebastes spp.*), and flatfish such as American plaice (*Hippoglossoides platessoides*) (Bundy et al., 2009). Seals may impact fisheries populations through direct predation or through complex ecological interactions, for example, by preying on forage fish (such as capelin) that are also consumed by commercially important fish stocks (Bundy et al., 2009; Stenson, 2013).
The DFO conducts research on the interactions between seals and groundfish and other commercial stocks. Most of this research has focussed on the interaction between grey seals and Atlantic cod. The DFO has collected enough evidence to conclude that grey seals are in fact negatively impacting the recovery of cod in the GOSL: *"Our studies have shown that grey seal predation is now limiting the recovery of Atlantic cod and may account for up to 50% of natural cod mortality in this region [the southern GOSL]"* (DFO, c2022b).

The DFO has conducted fewer assessments on the relationship between harp seal and Atlantic Cod and concluded that *"harp seal predation was not a significant factor in the lack of cod recovery*", as a result of seal predation on cod or forage fish (Buren et al., 2014; DFO, c2022a). However, not all research supports this conclusion. For example, Chassot et al. (2009) showed that harp seal predation on Atlantic cod more than doubled in the northern GOSL between 1984–2006. They concluded that "the current lack of recovery of the NGSL [Northern Gulf of St. Lawrence] cod seems due mainly to the very low spawner biomass, driven both by the fishery inherently targeting larger fish and increased harp seal predation". Harp seals consumed up to 30,000 t of cod (mostly aged 1–2 years) in the northern GOSL per year (Chassot et al., 2009). Further, Bundy et al., (2009) used an ecosystem approach to analyse the interactions between harp, grey, and hooded seals with cod between 1985–1997. They found that while commercial fishing accounted for most large cod mortality prior to the collapse of cod populations in 1992, after the collapse, predation by seals accounted for 70% of large cod mortality in the Newfoundland–Labrador/Grand Banks ecosystem. In this ecosystem, harp and hooded seals were the main predators of Atlantic cod, and in the northern GOSL ecosystem, harp and grey seals were the main predators of Atlantic cod.

Due to pressure from the Atlantic fishing industry, the DFO created the Atlantic Seal Science Task Team to "gather industry and stakeholder input on science activities related to Atlantic

seals, in particular as it relates to ecosystem interactions and predation on commercial fish stocks" (ASSTT, 2022). ASSTT reviewed the available scientific evidence, consulted with scientific research experts in Canada and Norway, and gained perspectives from industry and Indigenous groups. They made the following strong conclusion regarding the state of science on the interactions between fish stocks and seal populations: "the ASSTT considers the food, feeding and migration data for the harp and grey seal populations in Atlantic Canada to be woefully inadequate to accurately determine the role seals play in the Northwest Atlantic Ecosystem and the impacts on other ecosystem components"(ASSTT, 2022). The group pointed out that the studies to date only represent a small part the total range of seal species and only during specific times of the year. The composition of seal diet may change as it moves through its distribution over the year. For example, in NAFO Divisions 2J3KL, estimates of annual consumption of Atlantic cod by harp seals ranged from 1,500–565,000t in 2008, depending on the methodology used, with the upper bound of the 95% confidence intervals reaching up to 1,112,000t per year (Stenson, 2013). Therefore, stronger evidence is needed to accurately evaluate the interactions between seals and economically import fish stocks.

In addition to possible economic losses attributed to seal predation on fish stocks or forage fish, seals damage fishing equipment and facilitate nematode infections in commercially important fish species. Many species of seal, including both harp and grey seal are the final hosts for a variety of nematode parasites. These parasites are consumed by the seals, where they reside in the seals' stomach and release eggs into the water via seal defecation (Marcogliese et al., 1996). These infectious nematodes are consumed by crustaceans and forage fish, which are eventually consumed by Atlantic cod, and other economically important fish species, where they grow in muscle and organ tissue (Government of Canada, c2019). As a result of this life cycle, the distribution of seal worm infection in cod is dependent on the distribution and abundance of seals (Marcogliese et al., 1996). Nematode infection in cod and other fish reduces their marketability and increases processing costs (DFO, 2010). Infection decreases the condition and reproductive potential of cod and may increase cod mortality, especially among older, larger, cod that have been infected for a longer time (Horbowy et al., 2016; Ryberg et al., 2022).

How to manage an overabundant resource

The ASSTT made their position on seal reduction strategies clear in the following statement (ASSTT, 2022):

> *"Where science gaps have been addressed and levels of impact have been quantified, resource managers must be willing to move forward with seal population reduction strategies aimed to rebuild impacted stocks*."

Seals are perhaps the most culled group of species in the world (Bowen & Lidgard, 2013). Grey seals have been harvested in Nova Scotia through culls, bounty programs and nuisance licenses, although none of these programs currently exist (Bowen & Lidgard, 2011). Culls are inherently wasteful and as a result attract media attention and public outrage. The DFO hired a consulting

firm in 2010 to assess scenarios to reduce the grey seal population on Sable Island. Options involved a contraceptive vaccine and shooting followed by incineration. Just the consideration of a cull sparked widespread media attention and outrage (e.g., Animal Alliance of Canada, c2023; CBC, 2010; Ely, c2010; Pannozzo, 2010). Public opinion on wildlife management and use in Canada has resulted in powerful policy decisions that have impacted many Indigenous and non-Indigenous seal hunters in Canada, and thus public opinion should be carefully considered in seal management (Farquhar, 2020; Sellheim, 2015).

In addition to the negative media attention associated with culls, there is a significant monetary risk of culls. Project estimates to cull 220,000 grey seals ranged between $20–$35 million (CBC, 2010). In addition to the cost of the cull itself, there are costs to evaluate its effectiveness. For example, a proposal for a 5-year program to evaluate the effectiveness of a grey seal cull in southern Gulf of St. Lawrence was estimated to cost over $4.5 million (Hammill & Swain, 2011). Further, for culls to be effective they cannot occur only once. Ongoing, intensive culls are needed to maintain seal populations at target levels, which incurs ongoing financial costs (Bowen & Lidgard, 2013). Grey seals provide a great example of this, as they were subjected to culls and bounties in Nova Scotia from 1967 to 1990, however, the population continued to grow in this time, and increased by an order of magnitude after the culls ceased, despite ongoing commercial and nuisance harvesting (Bowen & Lidgard, 2011). Likewise, despite an annual Canadian removal of 68,673 harp seals between 1985–1995, the harp seal population increased from roughly 3 million animals to 6.5 million animals in this 10-year time period (Tinker et al., 2023).

A seal cull, from a commercial fishery perspective, is an investment. The cumulative cost of ongoing population control and monitoring would need to be surpassed by the increase in economic activity resulting from increased fish landings, for culls to be economically viable (Bowen & Lidgard, 2013). The United Nations Environment Programme developed criteria to evaluate cull proposals, which include assessments of the predicted increase in fishery production as a result of a cull (Scientific Advisory Committee of the Marine Mammals Action Plan, 1999); however, a full assessment on culling seals in Canada has not yet been performed. Many seal species, including grey, harbor and ringed seals have been the subject of culls in many countries, however, the effectiveness of these programs in achieving their desired outcomes has not been evaluated (Bowen & Lidgard, 2013).

Logistically, it is highly unlikely that seal populations could be reduced through commercial seal harvesting, or through a cull without incurring substantial financial losses, because of the large size of both the harp and grey seal populations and the number of seals that would need to be harvested. For example, to reduce the Atlantic harp seal population from 7.4 million animals to only 6.8 million in 5 years, it was estimated that between 560,000–610,000 seals would need to be harvested per year, assuming the harvest is comprised of 90% yearling seals (since 2016, 71–87% of the harp seal harvest is comprised of yearling seals) (DFO, 2016). Even in the peak of the sealing industry, between 1830–1859, an average of only 450,000 seals per year were harvested (Ryan, 1994). There is also no guarantee that this 8.1% reduction (i.e., 7.4 million to 6.8 million) would have any impact on groundfish species recovery. It is also important to

consider that (apart from the recent population reduction associated with overpopulation) the harp seal population has been increasing since 1972 despite ongoing large commercial harvests (Standing Committee on Fisheries and Oceans, 2023). If predominantly old harp seals were harvested, reducing the population would be much for feasible. For example, to reduce the Atlantic harp seal population from 7.4 million animals to only 6.8 million in 5 years, it was estimated that between 250,000–270,000 seals would need to be harvested per year, assuming the harvest is comprised of only 50% yearling seals (DFO, 2016).

For grey seals, the situation is even more dire, it is estimated that the grey seal population in the southern GOSL alone would need to be reduced by 70% (roughly 78,000 seals) in order to have a measurable impact on cod mortality in this region (Hammill et al., 2014; Hammill & Swain, 2011; Senate of Canada, 2012). This is likely unattainable. The most recent scientific advice indicates that an annual harvest of 77,300 grey seals per year in Atlantic Canada (with 8,700 grey seals being harvested in the GOSL) would respect the current management goal of keeping grey seals in the healthy zone (i.e., have no impact on the population) (DFO, 2022). If the removals were targeted in the GOSL, an annual harvest of 9,500 seals per year in the GOSL, every year for the next 30 years, would only have a 52% probability of reducing the population size by 50% after 30 years (Hammill et al., 2014). It is of note that the total Canadian harvest of grey seals has not exceeded 3,000 in the GOSL in its recorded history (since 1960), even with cull, bounty, nuisance, and commercial licensing programs (Hammill et al., 2014). It is therefore unlikely that a commercial harvest for grey seals could be high enough to have a positive impact on groundfish recovery. Like with harp seals, harvesting adult grey seals would have a stronger influence on the grey seal population size; however, the vast majority of grey seals harvested are yearling seals, largely due to the large size of the adult grey seals and the difficulties associated with harvesting them.

There is agreement that expanded seal populations are negatively impacting fish populations in some areas. This has resulted in calls to reduce the seal populations; however, there has not been enough attention paid to the logistics of decreasing the seal population. Moving forward with reducing the seal population without an appropriate plan is inherently risky, both in terms of its effectiveness, cost, impact on public opinion of both the fishing and sealing industries, and its impact on the sealing industry. Before a seal reduction strategy is put in place, research is needed to understand (1) the goal/optimal level of harp and grey seal population size that would benefit fish stocks, (2) the annual offtake needed to reduce the seal population size to this level (3) the ongoing annual offtake to maintain the seal population at this new level, (4) how the seal population could realistically be reduced and kept at the new level, and (5) what implications this new level of population abundance would have on harvest quotas and thus the productivity of the sealing industry. Discussion with stakeholders is needed to evaluate if this level of removal is possible, if it is worth the negative public backlash that may ensue, and if the new population size would be large enough to support the sealing industry (a substantially reduced seal population size would substantially reduce the number of animals that can be sustainably harvested per year).

Environmental benefits of seal products

Commercial seal harvesting currently does not impact the size of seal populations, therefore, reducing predation on fish stocks is currently not an ecological benefit derived from seal harvesting. However, there are many other environmental benefits. In the absence of the food and clothing obtained from seals, other food products and clothes would need to be purchased to meet the requirements of the consumer. If these products are replaced through commercial agriculture or through synthetic products, this may increase land-use change and greenhouse gas emissions. The production of all synthetic and cultivated textiles has negative environmental impacts. Cultivated textiles, such as cotton, hemp, and linen must be farmed, weaved into yarn, knit into fabric, and processed (which can include washing, boiling, bleaching, dyeing, and finishing using up to 2000 different chemical products). Generating this clothing requires a significant amount of agricultural land, fertilizer, herbicides, pesticides, water, and energy for cultivation and processing (Aguiar et al., 2023; Moazzem et al., 2022).

Synthetic fibers, such as polyester and nylon, are primarily used to generate fake fur. These products require less land to produce clothing compared to cultivated textiles; however, they are manufactured from petroleum and require significantly more energy to produce than cultivated textiles, which results in far greater greenhouse gas emissions. Surprisingly, wool production results in the most land-use change and wastewater production of all cultivated and synthetic fabrics, in part because of the large amount of land required to generate feed for the sheep (Moazzem et al., 2022).

Producing clothing results in greenhouse gas emissions, land-use change and pollution as chemicals are released into the environment through evaporation and wastewater. For example, producing 1 kg of clothing from wool requires 155 MJ of energy, from cotton requires 147 MJ, from polyester requires 217 MJ, and from nylon requires 342 MJ of energy (Moazzem et al., 2022). The amount of greenhouse gas released depends on where the products are created; however, China is the largest textile producer in the world and generates more than half of its energy from coal, which is notorious for its detrimental environmental impacts. The global clothing industry results in the annual release of 3.3 billion tonnes of CO_2 equivalents, and represents 6.7% of global climate change impacts (Moazzem et al., 2022).

Just as the clothing industry has inherent negative environmental impacts, so too does the food industry. Globally, the food system releases the equivalent of 18 billion tonnes of CO_2, accounting for 34% of greenhouse gas emissions (Scarborough et al., 2023). In addition to the animal welfare concerns surrounding industrial farming (Steagall et al., 2021), conventional methods of meat production are major contributors to land-use change and greenhouse gas emissions. In a meta-analysis, Hilborn et al. (2018) demonstrated that producing 7 oz. of beef results in the equivalent release of over 5 kg of CO_2—a statistic that is only exacerbated by the increased transportation required to get foods to rural communities such as sealing communities in Newfoundland, Labrador, Nunavut and other regions in Inuit Nunangat (Wolfe, 2004).

The fur and meat that is derived from seals may aid in alleviating the environmental impacts of clothing and meat production, by reducing dependence on the clothing and agriculture industries. Being derived from a wild animal, seal fur and meat does not require land, energy, fertilizer, pesticides, herbicides for its production. It does require energy for processing and transportation, but this may be less than other clothing items, which require energy for production as well as processing and transportation. Further, many seal skins in Arctic Canada are processed without the use of any chemical treatments or mechanical energy, which greatly reduces their environmental footprint (Fisheries and Sealing Division, n.d.). Some organizations south of Arctic Canada are also utilizing organic and chemical-free tanning processes, which can alleviate environmental impacts. Likewise, meat derived from wild animals does not contribute to land-use change and may have a lower greenhouse gas emissions compared to farm-raised meat, even when a lot of transportation is required to access wild meat (Fiala et al., 2020).

Climate change and new ecological realities

Despite the current abundance of seals, their future is uncertain. The greatest threat to seal populations in the Northwest Atlantic is a warming Arctic climate. All species of seal in Canada except for grey and harbour seal depend on sea ice for whelping. The entire globe has warmed by 1.1°C, compared to 1850–1900, but the Arctic region has warmed by more than double this global average. This has resulted in changes in the timing, duration, and thickness of Arctic Sea ice. The extent of arctic sea ice is declining at a rate of –83,000 km^2 per year in September and –41,000 km^2 per year in March. Similarly, the average thickness of arctic sea ice has decreased from 3.59m in 1975 to only 1.25m in 2012 (Intergovernmental Panel on Climate Change (IPCC), 2019).

The dependence of seals on sea ice and the on-going changes in the Arctic have drawn the attention of international conservation groups. In 2015, the IUCN evaluated hooded seals and changed their status from “Least Concern” to “Vulnerable”, due to their dependence on sea ice for whelping, the changing ice conditions in the Arctic, and the diminishing hooded seal population in the Greenland Sea (Kovacs, 2016). Similarly, in 2019, COSEWIC changed the status of ringed seals from “Not at Risk” to “Special Concern” because of forecasted reductions in the extent and duration of sea ice for pupping, as well as reductions in snow accumulation in the Arctic, upon which ringed seal pups are dependent for protection from predators and cold temperatures (COSEWIC, 2019). In the US, all 5 subspecies of ringed seal and bearded seal are listed as threatened or endangered under the Endangered Species Act, and as a result, these species are also listed as depleted under the MMPA. These listings are also due to the impact climate change is predicted to have on ringed and bearded seal in the future (NOAA Fisheries, 2022).

Harp seals were listed as “Least Concern” by the IUCN when they were assessed in 2015 (they are unassessed by COSEWIC) (IUCN, 2015); however, changes in sea ice have likely influenced harp seals populations dramatically and will continue to do so. Harp seals are “ice-obligatory” meaning that they only whelp on sea ice. If no sea ice is present in their usually pupping area,

they will search for ice elsewhere. If ice is present but poor (i.e., too thin) in their pupping area, they will give birth on this poor ice, which results in high pup mortality (Stenson et al., 2020; Stenson & Hammill, 2014).

Harp seals have already adapted to reduction in sea ice extent and duration in the GOSL. The number of pups born in the GOSL has declined from 28% of pups born in 1994 to only 2% of pups born in 2017 (DFO, 2020). Sea ice has a very strong influence on harp seal pup survival. For example, in 1969, sea ice in the GOSL was so poor that reportedly 100% of pups perished in this area (Johnston et al., 2012). Between 1950–1971, the harp seal population decreased, but then recovered from 1972–2000. While these population fluctuations are often attributed to hunting, there is evidence that sea ice cover fluctuations contributed to the decrease, and subsequent increase, in harp seal populations during this time (Johnston et al., 2012). Sea ice cover in all harp seal breeding regions is decreasing by at least –6% per decade in February and –4% per decade in March (Johnston et al., 2012). Changes in sea ice are likely to continue to increase harp seal pup mortality and may significantly impact harp seal populations in the future (Stenson et al., 2020; Stenson & Hammill, 2014).

In addition to climate change, seals face other threats. Bycatch from fisheries can represent a significant source of offtake in years with high fishery pressure. For example, in 1994 and 2004, an estimated, 46,743 and 35,567 harp seals, respectively, were lost to by-catch in the Canadian lumpfish fishery (Stenson & Upward, 2020b). Bycatch data is poor, but seals are also reported as bycatch in trawl or drift net fisheries from Norway, Newfoundland, Greenland, and the northeast United States and Alaska (COSEWIC, 2019; Kovacs, 2016).

Seal populations, particularly harp, hooded and grey seals, have been greatly influenced by commercial hunting (or culls and bounties in the case of grey seals) in the past. Hunting has generally caused harp seal populations to decrease since the mid 1800s to 1971, when quotas were first introduced (DFO, 2020; Stenson & Upward, 2020b). Seal populations may also be threatened by overharvesting fish species that are important dietary components of seals. For example, excessive fishing pressure for redfish, the favoured prey species of hooded seals, in the Barents and Norwegian seas may be contributing to their continuing decline in this region (Kovacs, 2016).

Section 5. Evolution of the Newfoundland and Labrador Seal Fishery

Fisheries Management

Canada is a signatory to the United Nations' Agreement on Straddling and Highly Migratory Fish Stocks (UNFA), which came into force in 2001 and requires the "Precautionary Approach" to be used in wildlife management, for all commercial, recreational and subsistence fisheries. The precautionary approach states that "Where there are threats of serious or irreversible damage,

lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation".

Seal populations in Atlantic Canada are governed under the Atlantic Seal Management Strategy (ASMS), formerly known as the Objective Based Fisheries Management (OBFM) (Fisheries and Oceans Canada, 2011, 2021c). Adopted in 2003, this strategy was the first implementation of a precautionary approach as a management principle for marine animals in Canada (Fisheries and Oceans Canada, 2011, 2021c). The ASMS identifies reference limits and control rules to create management measures for the industry (Fisheries and Oceans Canada, 2021c). The goal of this strategy is to allow a seal harvest without causing a reduction in the size of the stock. The precautionary approach was not considered for other fisheries until 2006, with the release of a technical document describing how Canadian fisheries can adhere to the precautionary approach (DFO, 2006), and the Sustainable Fisheries Framework was created in 2009, to describe the decision-making framework for fisheries that incorporate the precautionary approach (DFO, c2009).

Under the framework, stocks may be in one of three states at any time: in the healthy, cautious, or critical zone, relative to the size of the stock. The point at which a stock leaves the healthy zone and enters the cautious zone is called the "upper stock reference point", and the point at which the stock leaves the cautious zone and enters the critical zone is called the "limit reference point". The upper stock reference point may also be the "target reference point": the preferable stock size as determined by stakeholders. A target reference point is a requirement under UNFA and is recommended by the Food and Agriculture Organization of the United Nations (FAO); it is also required for Eco-certification standards like the Marine Stewardship Council (DFO, c2009).

If a stock leaves the healthy zone and enters the cautious zone, offtake must decrease to bring stocks back to the healthy zone. If stocks enter the critical zone, then removals from all human sources must be kept at the lowest possible level and management must be focused on regrowing the stock. When a stock is in the critical zone, there has been serious harm to the stock, there may be impacts on the entire ecosystem, and there may be a long-term loss of fishing opportunities (DFO, c2009). Currently, in Canada, 24% of assessed fish stocks are in the critical zone, including stocks of Atlantic Cod, Atlantic Herring, Atlantic Mackerel, and Atlantic Salmon (Environment and Climate Change Canada, 2023).

When a species does not have enough data to define a healthy, cautious and critical zone, "priority should go to monitoring the stock and establishing data time series to support the identification of an LRP [limit reference point]" (DFO, c2009). There are no clear guidelines for how to manage stocks for which management zones are unassessed. Therefore, the key principle of the Precautionary Approach, that a lack of scientific evidence should not be a reason for postponing conservation measures, is not formally addressed in Canada (Winter & Hutchings, 2020). Of the 192 key fish stocks assessed in the Sustainability Survey for Fisheries, 40% (77 fish stocks) do not have enough information to assign a healthy, cautious, or critical zone. Many important species have uncertain status, including capelin, which underwent a

population collapse in the early 1990s to only 2.5% of pre-collapse levels—this is of major conservation concern for many species that prey on capelin (DFO, 2022; Jubinville et al., 2022). Further, the Sustainability Survey for Fisheries only includes economically, culturally, and environmentally important stocks. These stocks are more likely to be data rich; therefore, the proportion of stocks that have unknown status, and are not managed under the Precautionary Approach, is likely much greater than the survey suggests (i.e., greater than 40%). For example, only harp and grey seals were included in the Sustainability Survey for Fisheries; ringed seals (and all other seal species) were not included in this survey but would likely be considered data poor.

Currently, harp and grey and seals are in the healthy zone. Other species of seal are considered data poor and should be managed under a more conservative management approach, in accordance with the Precautionary Approach (DFO, 2011). The appropriate level of offtake of harp and grey seal populations is determined by science. The healthy zone is defined as a population abundance greater than 70% of the maximum population size observed. The critical zone is defined as a population abundance less than 30% of the maximum population size observed (DFO, 2020). Seals are managed by simulating the level of human removals that would allow an 80% probability that the population will remain in the healthy zone for the next 5–30 years (using a longer time period results in a more conservative estimate). The offtake of both grey and harp seals has been well under quotas for many years, and quotas are no longer announced.

Incentivized conservation

The North American Model of Wildlife Conservation (NAMWC) is a system of wildlife management that has existed in Canada and the United States for over 100 years. It was formulated in the end of the 19th and beginning of the 20th century with the establishment of laws and regulations that brought many species back from the brink of extinction (e.g., elk, turkey, white-tailed deer, bison, etc.,) (Geist & Mahoney, 2019). There are 7 tenets of the NAMWC (Mahoney & Jackson, 2013):

1. Maintaining wildlife as a public trust resource
2. Prohibiting deleterious commerce in dead wildlife products
3. Regulating and defining appropriate wildlife use by law
4. Ensuring wildlife can only be killed for a legitimate purpose
5. Recognizing and managing wildlife as an international resource
6. Utilizing and safeguarding science as the appropriate basis for wildlife policy
7. Protecting the democratic allocation of citizen opportunity to harvest wildlife

Seal harvesting satisfies many aspects of the model. No one individual or entity owns seal populations; their use is allocated by law; they are killed for their fur, blubber and/or meat (i.e., legitimate purpose); they are managed as an international resource, by considering the offtake of Greenland in the establishment of quotas; and their management is based on science. Notably, seal harvesting strays from the NAMWC because seals are harvested for commercial

markets. Throughout history, financial incentives to harvest wildlife has resulted in overexploitation. Without scientific guidance and governmental oversight, people tend to maximize profits at the expense of wildlife populations. Historically, this phenomenon has occurred with virtually all terrestrial game animals in North America, as well as seal and whale species in the Northwest Atlantic (Mahoney & Jackson, 2013). In modern times, the FAO estimates that 35.4% commercial fish stocks around the world are over-exploited, predominantly for sale in commercial markets (FAO, 2022).

Nonetheless, many species have been effectively conserved while being harvested for profit. For example, many species, including beaver, otter, coyote, lynx, wolf, bobcat, muskrat, ermine, fox, opossum, mink, etc., are sustainably trapped in many regions in Canada and the US to sell their skins for profit; 64.6% of fisheries stocks are harvested within biologically sustainable levels; red deer are culled and their meat sold in Scotland and Italy; and in Newfoundland and Labrador, moose, hare, grouse and ptarmigan may be sold for profit by hunters (FAO, 2022; Fiala et al., 2020; McKenzie, 2023; White et al., 2015). While many species sold commercially have been subject to over-exploitation, many are well within their management objectives, including harp and grey seals today.

While incentives to harvest wildlife can result in stock depletion, incentives can also foster conservation. Wildlife conservation may be incentivized through wildlife watching, tourism, and hunting, trapping, or angling for food and profit. Where wildlife is not valued, it is often depleted for industrial or agricultural development and economic growth. For example, in many regions, forests are cut and burned to facilitate agricultural practices, causing rampant deforestation and biodiversity loss (FAO, 2021). In regions where economic options are few, wildlife species may be necessarily over-exploited for food and income to meet immediate human needs (Emerton, 2001).

For effective conservation, people generally require both an incentive to care about wildlife, and the means to support the community with conservation measures in place. For example, in Africa the White Rhino was poached for its ivory for sale on the international market, which, in combination with changes to the landscape, reduced their population size to only 100 individuals in the early 1900s. However, monetary incentives from hunting and wildlife-watching tourism generated both the funds and will to implement effective conservation measures. The population now stands at approximately 15,000 individuals, with most animals living on private lands. In these regions, the economic benefits from hunting and wildlife watching tourism outweigh the short-term benefits derived from poaching or converting the lands to agricultural use (Clements et al., 2023; IUCN, 2016).

Technological phases

In the 1700s, when seals were first commercially harvested in Newfoundland, they were mostly shot with flintlock muskets or trapped in fishing nets. If a pan of ice floated to shore, then seals could be struck on the head. Once sealers began travelling to the whelping patches in 1793, gaffs became the dominant method for dispatching seals, and continued to be the dominant

method until 1972 (DFO, 1985; ICES, 2019). Gaffs are a long wooden stick with a hook on one end, originally used in fishing. The blunt end of these tools was used to strike seals, but the gaff was also useful for mobility on the sea ice and to rescue a sealer that fell into the sea. Gaffs were a relatively effective and humane way of quickly dispatching young seals (Ryan, 1994; Sanger, c1998). Older seals have a thicker skull, and it is more difficult to cause death of an adult seal by head strikes. Adult hooded seals have a large air-filled bladder on their heads which makes strikes to the head especially ineffective at causing death or unconsciousness (Sanger, c1998). For this reason, adult seals were predominantly shot throughout the seal hunt. Other methods were also used for hunting seals (see section 7).

In 1964, the Seal Protection Regulations established the first legal requirements describing how seals may be killed. Only clubs and gaffs of specific dimensions, and rifles and shotguns chambered with powerful cartridges could be used. In 1967, hakapiks were added to the allowed killing methods. Gaffs were narrow in nature, had less mass than modern clubs, and thus exerted less force on the skull. As a result, gaffs were less effective at causing immediate death than modern clubs and were banned from use in 1972 (Ryan, 1994; Sanger, c1998). In 1993, the use of nets to hunt seals south of 54°N was prohibited (DFO, 1985; ICES, 2019).

The Newfoundland and Labrador seal fishery has come full circle. First, throughout the majority of the 1700s, seal harvesting was done by landsmen, people who harvested seals from shore or in small fishing vessels. The first sailboat took to the waters in 1793 to find seals on whelping patches at the Front, steam engines in wooden ships were first used for sealing in 1862, and finally steam-powered steal ships were first used for sealing in 1906. One steal steamer, the Imogene, was specifically built for the sealing industry in 1929 (Ryan, 1994). In 1987, hunting whitecoat and blueback seals, and hunting seals in large vessels (greater than 65 feet in length) was made illegal, in response to pressure from the anti-sealing movement. Today, like it was in the 1700s, the commercial harvest is conducted primarily by landsmen in small fishing vessels.

In the beginning of the commercial hunt, nearly all the sealing vessels were built, owned, and operated by Newfoundlanders. Shipbuilding was a major contributor to the economies of many outport communities, including Twillingate, Fogo, Greenspond, Bonavista, King's Cove, and more (Ryan, 1994). As the industry expanded, the sail boats used to reach the Front became too large to be made in outport communities, and the Newfoundland shipbuilding industry moved entirely to St. John's and Conception Bay. By the 1850s, the seal hunt quickly ceased to contribute to the ship building industry in Newfoundland (Ryan, 1994). After the turn of the century, steel steam powered ships dominated the industry, but these were expensive to finance. After the second world war, regions with more capital began to dominate the industry. By 1952, Norway accounted for more than half of the large vessel catch on the Front from their migratory seal fishery (DFO, 1985). In Canada, ownership shifted as well. By 1950, Nova Scotians owned more large sealing vessels than Newfoundlanders in the commercial hunt. These Nova Scotian vessels were mostly crewed by Newfoundland sealers, but were landed in Nova Scotia. Landings by Newfoundland owned vessels again surpassed Nova Scotian landings by 1970 (Malouf, 1986). After Canada introduced quotas in 1971 and obtained its 200-mile economic exclusion zone in 1977, quotas allocated to Norway decreased substantially, and when the

harvest of whitecoats and bluebacks was banned in 1983, Norway ceased harvesting seals at the Front (Malouf, 1986).

Commercial seal products

From the beginning of commercial sealing in Newfoundland in 1720 to the early 20th century, seal oil was the primary economic driver behind the hunt. Beginning in the late 19th century, the market began to change, as seal oil was replaced by synthetic oils and the fashion industry started utilizing high-quality seal pelts in their products. The most profitable fur was derived from bluebacks, and was worth roughly twice as much as the fur from whitecoats (DFO, 1985; Wright, 1984). The market for seal fur expanded dramatically in the 1960s, despite concurrent anti-fur movements. Between 1960 and 1980, the average price of pelts increased 9 fold, from $3 to $27 per pelt (Malouf, 1986). In addition to pelts and oil, throughout the hunt, many of the flippers (the shoulder musculature) from harvested seals were kept for consumption, a relatively small amount of seal hearts and livers, and carcasses were kept for consumption, and the genitals of adult male seals (particularly hooded seals) were sometimes harvested and sold on the international market when there was demand (Wright, 1984). Young seals do not swim; they gain weight almost entirely in the form of blubber and only their shoulders are used for transportation on sea ice; thus, the carcasses of seal pups contain little muscle tissue suitable for consumption (DFO, 1985; Wright, 1984).

Today, the blubber and pelts from seals are utilized for sale on the commercial market. Seal oil is refined and sold as an omega-3 fatty acid health supplement for pets and people. Today there is virtually no developed market for seal meat and very few carcasses are landed. Seal flippers are often sold within sealing communities, but without any formal book-keeping, it is difficult to ascertain the proportion of seal meat that is used for consumption.

Inuit seal hunters in Arctic Canada utilize all the meat, organs and blubber for local consumption. Harp seal meat is more frequently used for consumption by pets and ringed seal meat is mostly consumed by people. Local crafters utilize seal pelts to create clothing that is virtually all sold locally within Nunavut and the Northwest Territories. Seal pelts may be tanned and prepared locally or may be sold to the government for tanning. The government ships these pelts for tanning in Manitoba and are shipped back to Arctic Canada for use by local businesses and local sale (Z. Martin, personal communication, 2023). More information pertaining to the products used in the seal industry today can be found in section 13.

Controversy begins

The Canadian seal harvest was likely unsustainable during the 1800s and early 1900s. In the late 1700s, at the beginning of the commercial sealing industry in Newfoundland, the harp seal population was estimated to be 10.8 million. Following prolonged commercial overexploitation, the population size decreased to only 1.6 million by 1918. World War 1 and 2 provided a brief respite that allowed the population to increase to 2.2 million by 1947; however, continued

overexploitation after the wars reduced the population again to 1.6 million in 1971 (Hammill et al., 2011). The Canadian Audubon Society brought attention to the unsustainable nature of the harvest in the 1950's. Shortly after, animal-rights organizations became concerned about the humaneness and sustainability of the hunt. Growing public awareness of the seal hunt was attributed to a film capturing the hunt that was sent to humane societies in 1955 (Dauvergne & Neville, 2011). Emboldening the movement, in 1964, Artek Films produced a documentary that aired on CBC and German television. It inspired a newspaper article entitled "Murder Island" which was published in more than 3000 newspapers around the world. It gained global publicity because it showed seals being killed in abhorrent ways, including a scene in which a seal was skinned alive. This act is attributed to sparking international interest in Canada's seal harvest. After the film aired, it was later discovered through the Canadian judicial system, that these acts were staged by the filmmakers. Several of the acts were perpetrated by the filmmakers themselves and the film was shot before the opening of the season in the Magdelen islands. Further, in a sworn affidavit, Gustave A. Poirier testified that he was paid and instructed specifically to skin the seal alive by the filmmakers:

> *"*I, the undersigned, Gustave A. Poirier, of the Magdalen Islands, declare having been employed by a group of photographers, one of which had a beard, around March 4, 1964, to skin a large seal for a film. I solemnly swear before witnesses that I was asked to torment the said seal, and not to use a stick, but just to use a knife to carry out this operation, where in normal practice, a stick is used to first kill the seals before skinning them*"*

Therefore, this film was not representative of the practices during the Canadian seal harvest, but this film nonetheless initiated the international antagonism towards the Canadian seal harvest. CBC was reprimanded by the DFO for failing to investigate the authenticity of the film; however the damage was already done (Dauvergne & Neville, 2011; DFO, 1985; Keough, 2021; Malouf, 1986).

Pressure from both animal rights and conservation groups resulted in many amendments to the Seal Protection Regulations in 1965 (these regulations were initially established in 1949, when Newfoundland joined Canada) (DFO, 1985). These were the first laws aimed at improving animal welfare during the hunt and were largely based on the recommendations of humane societies. The Seal Protection Regulations implemented the following laws for the first time to improve animal welfare in the hunt: the licensing of individual sealers, prohibition of hunting seals at night, the prohibition of interference or harassment of adult seals, the requirement that only certified equipment may be used to harvest seals, the requirement to kill seals humanely, and, notably, the requirement for seals to be "without doubt" dead before skinning commences (DFO, 1985).

This pressure also resulted in conservation action: in 1966, harp and hooded seals were placed under the purview of the International Commission for the Northwest Atlantic Fisheries, which had a special scientific panel that reviewed the information on seal stocks. This resulted in the

first-ever quota for harp seals in 1971 and hooded seals in 1974 (DFO, 1985). Following the implementation of quotas, the harp seal population started to increase until it reached a high of 6.6 million animals in 1997 (see section 3) (Tinker et al., 2023). If it were not for these early calls for conservation and animal welfare, it is possible that harp seals could have had a similar fate as Atlantic cod, and other fish stocks now in the critical zone because of poor management and overexploitation.

These early measures did little to appease certain animal rights groups who saw all seal harvesting as inherently inhumane (See section 9 for more information on the anti-sealing movement). A persistent and effective anti-sealing campaign ultimately resulted in the 1983 ban on the importation of whitecoat and blueback seal products in the EU in 1983. Later, hunting these young animals became illegal in Canada in 1987 as a response to public perception of the whitecoat hunt.

Section 6: Federal and Provincial Governance

Federal Legislation

Canada's Fisheries Act - Seal Protection Regulations

The Canadian government has been actively involved in seal protection and regulation since the Fisheries Act's implementation in 1868 (Castañeda et al., 2020). The Fisheries Act has primary governing authority over sealing in Canada and its main objective is to regulate and conserve fish populations and habitats (Castañeda et al., 2020; Ronald & Lavigne, 2015). It is important to note that while the implementation of the Fisheries Act supported the expansion of the fishing industry, it simultaneously had negative consequences on Indigenous communities. Indigenous fisheries had been self-determined for thousands of years before European settlement, however, the Fisheries Act imposed government control that regulated Indigenous fishing practices, and sometimes restricted Indigenous access and use of wild resources (Castañeda et al., 2020; Claxton, 2019; Ronald & Lavigne, 2015).

Being one of Canada's first legislative acts, the Fisheries Act ultimately set the foundation for all future sealing regulations (Castañeda et al., 2020). The Fisheries Act established the Seal Protection Regulations (SPR) in 1949, when Newfoundland and Labrador joined Canada, to oversee the conservation of seals by regulating the seal hunt (Fisheries and Oceans Canada, 1981, 1985). The government of Canada urged activists to be official observers of the hunt to help create the regulations, which led to the SPR being heavily founded on recommendations from humane societies (Boghossian & Marques, 2019; Fisheries and Oceans Canada, 1985). Amendments to the SPR significantly increased throughout the 1960s from this participation (Fisheries and Oceans Canada, 1985). For instance, in 1965, quotas were introduced for juvenile harp seals in the GOSL, for hunts carried out by ship and aircraft; the use of aircrafts to hunt seals was prohibited in the Newfoundland and Labrador hunt (at the Front); and size and

weight requirements were introduced for clubs (Fisheries and Oceans Canada, 1985). By 1967, the SPR had set rules on sealing permits, harvest methodology, season dates, and more (such as the prohibition of killing adult seals in whelping patches) (Ronald & Lavigne, 2015). The Department of Fisheries and Oceans (DFO) implemented these measures to increase seal populations in the Gulf of St. Lawrence and minimize animal suffering during the hunt (Fisheries and Oceans Canada, 1985). These regulations were based on scientific research conducted over 20 years by the Fisheries Research Board and humane societies (Fisheries and Oceans Canada, 1985).

To more rapidly incorporate recommendations into the SPR, a Special Advisory Committee to the Minister of Fisheries and Forestry on Seals was established in 1971. This Committee was organized and composed of the heads of major animal-welfare organizations, including the International Society for the Protection of Animals, the Canadian Federation of Humane Societies, and the Canadian Council on Animal Care. Specifically, the mandate of this committee was "To investigate all aspects of the hunting of seals in the Northwest Atlantic and Arctic oceans and, in particular, to investigate the economic, sociological, ecological, and humanitarian aspects of the seal hunt and to recommend to the Minister of Fisheries and Forestry any changes in the present regulations which may be considered necessary" (Fisheries and Oceans Canada, 1985). This was a time of collaboration between the sealing industry and animal-welfare organizations. It resulted in many improvements to the hunt and avoided calls for its termination. Most of the regulations made in the SPR are still in effect today. Please note that while many organizations include the term "welfare" in their names, in this white paper, we differentiate animal-rights organizations as those that are not concerned with how to harvest seals humanely, but rather if they should be harvested at all. In contrast, we define animal welfare organizations as those supportive of the sustainable use of nature and concerned with how to humanely harvest animals—not whether they should be harvested.

Marine Mammal Regulations

The SPR was unified with other marine mammal regulations to create the Marine Mammal Regulations (MMR) in 1993 (Ronald & Lavigne, 2015). The MMR were established under Canada's Fisheries Act to regulate the hunting of marine mammals and prohibit the disturbance of marine mammals when they are not being legally hunted (Fisheries and Oceans Canada, 2023a). The DFO is responsible for regulating, monitoring and enforcing the MMR during the seal hunt (Fisheries and Oceans Canada, 2023a, 2016). The MMR dictates where seal hunt can be conducted, what weapons can be used, and how seals may be killed (Justice Laws Canada, 2023). Failure to comply with the MMR is illegal and can result in court-imposed fines, hunting probations, and forfeiture of harvest and gear (Fisheries and Oceans Canada, 2016).

The MMR has been frequently modified since its establishment under the Fisheries Act. The 2009 amendment to the MMR required a three-step process (striking, checking, bleeding) for harvesting seals and mandatory training for all sealers who wish to acquire or renew a sealing license (Fisheries and Oceans Canada, 2023b). Regulations were also amended in 2015 to prohibit any person without a seal fishery observation license from approaching within one

nautical mile of the seal hunt (an increase from one-half nautical mile) (Canada Gazette, 2015). Amendments were additionally made in 2018, for example, to clarify the meaning of "disturbing" a marine mammal, and for the act to clearly encompass whale watching and scientific research (Fisheries and Oceans Canada, 2018).

On a federal level, the Canadian Food Inspection Agency is responsible for ensuring the safety of food within Canada. This is an essential service that ensures that the food exported from Canada and available for human consumption is safe. Businesses that wish to sell food products outside of the province they are located (i.e., inter-provincial trade or international export) generally must adhere to the Safe Food for Canadians Act and Regulations and require a Safe Food for Canadians license. Under the Safe Food for Canadians Regulations, all marine mammals (including seals) are classified as a fish product: *"fish includes shellfish, crustaceans and other marine animals, and any of their parts, products and by-products"* (Safe Food for Canadians Regulations, 2018).

The inclusion of seals as a fish product may be hampering industry ability to trade certain seal meat products inter-provincially and internationally. Businesses are licensed for specific activities. Therefore, a business licensed for the manufacture and trade of fish (i.e., seal) products, may not be also able to manufacture and trade meat products. This can prevent the mixture of seal meat with the fat from other animals, such as cow and pig, and prevent the production of various value-added products, such as hamburgers, sausages, and salami.

In addition to the Safe Food for Canadians Act and Regulations, all food sold in Canada must adhere to the requirements of the Food and Drugs Act and Regulations (whether it is sold within the province or elsewhere). Amongst other things, these Regulations stipulate which preservatives may be used in which foods. One such regulation stipulates that sodium nitrate may only be used for the preservation of meat products, which seal meat is not considered. These Regulations do, however, have a specific exemption that allows sodium nitrite (different than nitrate) to be used as a preservative for marine mammal products.

Sodium nitrate is commonly used as additive to prevent the growth of *Clostridium botulinum* and is important for the safe production of dry-cured products. Because sodium nitrate cannot be used in seal products, this regulation may limit the production of dry-cured seal products, such as summer sausage and salami (Health Canada, 2006; McLaren et al., 2001). However, nitrates and nitrites can be converted into carcinogenic compounds, which was partly responsible for the recent classification of processed meat products as a group 1 carcinogen by the World Health Organization (World Health Organization, 2015). To maintain seal meat as health-promoting food, avoiding these additives might be prudent.

Provincial Legislation and Policy

Newfoundland has a rich political sealing history that has shaped provincial legislation and policy. Prior to the confederation of Newfoundland and Labrador, the Newfoundland House of

Assembly regulated the seal hunt and passed legislation to manage the industry. For example, in 1873, the House of Assembly passed legislation that required sealing steam ships to stay in port until March 10th, but allowed sailing vessels to leave a week early to ensure equitable access to the resource (Sanger, 2008). The collective action for sealing rights increased as the sealing industry expanded in Newfoundland (Ryan, 1994). There were notable sealing strikes in early 19th century Newfoundland, including strikes in Harbour Grace and Carbonear in 1832, St. John's in 1842, and Harbour Main and Brigus in 1845 (Ryan, 1994). In addition to the St. John's strike of 1902, these protests created a political opportunity for the Fishermen's Protective Union (FPU) to emerge, which ultimately solidified sealing regulations within provincial politics (Ryan, 1994).

The creation of the FPU was a significant development in the early 20th century that had social and political impacts (Baker, 2013). Formed in 1908, the FPU was referred to as the "fishocracy," and largely sought to improve the conditions and welfare of sealers (Baker, 2013; Brym & Neis, 1978). Led by William Coaker, the FPU challenged the economic and political power of sealing captains, shipowners, and merchants (Baker, 2013). The group had significant success within its first years of establishment. A committee was appointed to improve the conditions of the seal fishery at the FPU's third annual convention in 1911 (Ryan, 1994). The FPU issued the Bonavista Platform in 1912, which requested reform for fishing industry, governance, and social policy (Webb, 2020). The Bonavista Platform specifically proposed changes in cooperative marketing and fish grading controlled by the government to support fishery workers (Webb, 2020). The FPU gained significant political support, leading the group to win eight seats in the 1913 Newfoundland election (Brym & Neis, 1978). With their Liberal alliance, the FPU became the largest opposition party and then became a junior partner in a coalition government (Brym & Neis, 1978; Webb, 2020). The FPU made significant changes during its time as the opposition. Coaker introduced a bill to the House of Assembly which incorporated similar values of the 1912 Sealing Agreement, an Agreement known for its policy on price fixing before the harvest (Baker, 2013). The FPU also notably lobbied for a commission of inquiry into the two major Newfoundland sealing disasters in 1914, urging for immediate policies to be made in the seal fishery to prevent similar disasters in the future (Baker, 2013). Coaker continued to work for fishery reforms post-war and survived the confederation, but the FPU ultimately dissolved by 1960 (Baker, 2014; Webb, 2020). The creation of the FPU and its annual Union Sealers' Meetings illustrated the social and political importance of the commercial sealing industry in Newfoundland.

Today, the Newfoundland & Labrador seal fishery is managed and regulated by the Canadian government through the Department of Fisheries and Oceans (DFO). The seal hunt is unique from all other fisheries because it is perhaps the most controversial hunt in the world, seals interact with other fisheries and fishery equipment, and because seals may be harvested for commercial, personal, or subsistence use, or because they are a nuisance (Fisheries and Oceans Canada, 2022). For these reasons, the seal harvest is one of the most highly regulated animal harvests in the world (Government of Newfoundland and Labrador, n.d.).

While the management of the resource is done at the federal level, the provincial government has a large influence on the sealing industry. The provincial government is largely responsible for the sealing industry once seals (or seal products) are landed. The provincial government oversees how seal products are processed and brought to the market. Under provincial regulations, marine mammal products are considered to be fish, and are thus regulated Newfoundland and Labrador's Fish Inspection Act, and its four Regulations (Fish Inspection Administrative Regulations, Fish Inspection Operations Regulations, Fish Inspection Ticket Offences Regulations, In-Province Retail Fish Establishment Regulations).

To engage in any aspect of "handling, storing, grading, marketing, transporting or operating a vehicle for transporting fish [including seals]" in Newfoundland and Labrador, you generally must possess a fish processing license. There are three types of fish processing licenses. A primary processing license allows fish to be processed for sale. Primary processing licenses are species specific, so a person with a primary processing license for lobster and cod would not be allowed to process seal products. Importantly, holders of a primary processing license may also undergo secondary processing without further licensing: "Secondary processing is encouraged, so holders of primary processing licenses may also produce secondary processed products for those species categories they are licensed to process." (Newfoundland and Labrador, n.d.). Therefore, a person with a primary processing license may process fish to the primary or secondary processing stage.

A secondary processing license allows fish to be substantially modified into value-added food products, such as soups. This license is not species specific, and ingredients other than water and salt may be added. People who possess a secondary processing license may acquire seal products directly from seal hunters. Importantly, all products sold under a secondary processing license must be sufficiently modified (a holder of this license may only sell secondary processed fish as per the definitions below) (Newfoundland and Labrador, n.d.). It is important to note that commercial seal hunters do not require any processing license to transport and process seals. This allows seal hunters to modify seal products and sell them to a seal processing plant. For example, most seal hunters process seals during the hunt and sell the pelts to processing facilities and the flippers within local communities. A processing license is also not required by a person "marketing fish for a purpose other than human consumption" (Fish Inspection Administrative Regulations under the Fish Inspection Act, 2007). Therefore, processing seal meat for pet food would not require a processing license.

> *"Primary Processing means the processing of fish as part of its preparation for market by applying any one or more of the following processes to it: washing, cleaning, icing, skinning, shucking, filleting, portioning, pickling, cooking, salting, curing, drying, freezing or canning. A primary processed fish or seafood product is one that has been washed, cleaned, iced, skinned, shucked, filleted, portioned, pickled, cooked, salted, cured, dried, frozen and/or canned". (Newfoundland and Labrador, n.d.).*

> *"Secondary Processing (Products) means the processing of fish as part of its preparation for market beyond the primary processing stage. This can be achieved by (1) adding one*

or more ingredient(s), other than water or salt, which results in a substantive increase to the bulk and/or a substantive transformation to the taste and texture of the fish as a food product (e.g., au gratin, chowder or sauce); or (2) applying some other treatment or process to it, other than salting or curing, which results in a significant taste, flavour and/or texture enhancement of the fish as a food product (e.g., breading, battering, smoking, marinating, or pasteurizing).”

People who wish to process seal products in Newfoundland and Labrador must apply for one of these licenses. The application comes with a one-time fee ($7,500 for a primary processing license and $1000 for a secondary processing license), and a fee is required if the license is granted ($500 for a primary processing license for seal and $1000 for a non-specific secondary processing license). There are many requirements that must be met before a license is granted, such as a viable business plan, ample availability of the resource, an appropriate processing facility and a readily available labor pool. Applications are reviewed first by the Secretariat and public meetings may be held. The application is then considered by a Licensing Board and lastly must be approved by the Minister of Fisheries and Aquaculture, which is absolute and can only be challenged through court.

While seal hunters are allowed to process seal meat during the hunt, there are regulations that must be followed. Seal meat meant for human consumption must be processed without meeting any surfaces where contamination may occur. In practice, this can be difficult to achieve on a fishing vessel during the seal harvest. There is a code of practice for processing seal products, including seal meat, in the field (Government of Canada, 2013). Seals that are processed for human consumption must be completely eviscerated either during or immediately after the bleeding step of the Three-Step Process, with care not to perforate the bowels (Fish Inspection Operations Regulations under the Fish Inspection Act, 2007). It seems that the evisceration of a seal during the bleeding step (part of the three-step process) is counterproductive to the purpose of the Three-Step Process, which is to ensure that the seal is beyond doubt dead before processing the animal to avoid animal suffering. However, the two laws are not technically contradictory, because the MMR stipulates that bleeding must take place before skinning commences—not necessarily before other processing activities commence. The wording of these laws should be improved to better meet the purpose of the Three-Step Process. It is unlikely that waiting one minute prior to evisceration will have any impact on the quality of the meat. For reference, the relevant provincial law (Regulation 20), of the Fish Inspection Operations Regulations, under the Fish Inspection Act is (Fish Inspection Operations Regulations under the Fish Inspection Act, 2007):

20. (2) A person shall not hold, or offer for sale, transport, process or attempt to process a carcass of seal or a portion of it intended for human consumption unless the seal

(a) was bled immediately after killing by making an incision between the fore flippers and extending down the length of the abdominal cavity to allow the cavity to be opened to provide for proper bleeding;

*(b) was **completely eviscerated during** or following **the bleeding process**;*

> *(Fish Inspection Operations Regulations under the Fish Inspection Act, 2007, Regulation 20)*

and the relevant federal law, under the MMR is (Marine Mammal Regulations, 2018):

> 29. *No person **shall skin a seal** until the cranium has been crushed and at least one minute has elapsed after the two axillary arteries of the seal located beneath its front flippers have been severed to bleed the seal.*

In addition to these regulations, the provincial government may enact other laws that affect the sealing industry. For example, in 2008 the Newfoundland and Labrador government introduced a law that requires pelts be fully processed within the province, such that they are ready to be implemented and built into clothing products upon export. This law was designed to create more jobs in Newfoundland and Labrador, by preventing the export of seal pelts for processing out of province. However, this requirement is ambiguous in the *Fish Inspection Operations Regulations*, which describes the minimum processing requirements for seal products as "meat, oil or pelts tanned to meet specifications for final end use" (CBC, 2006; Fish Inspection Operations Regulations under the Fish Inspection Act, 2007).

Population Control and Lethal Management

The harvest of harp and grey seals has historically been great enough to maintain seal populations at relatively low levels. However, a reduction in the harvest of harp and grey seals since the 1980s has substantially increased the population size of both species. Larger populations require more offtake to control the population, or to cause a decrease in its abundance. The current level of harvest of harp and grey seals currently does not impede population growth and certainly does not cause a reduction in the size of the stocks (See section 4).

In the past both grey seal and harbour seal have been subjected to culls and bounties in Canada designed to reduce their population size. Culls of grey seals ended in Canada in 1983, and bounties ended in 1990, and culls for harbour seals ended in 1976. In addition to these activities grey seals have also been subjected to nuisance harvesting. A nuisance seal is defined as a seal that poses a threat, specifically to fishing equipment, and is typically used as a last resort (Fisheries and Oceans Canada, 2021a). The DFO proposed amendments to the MMR in 2002 to issue licensing that allowed commercial fishermen to kill nuisance seals under specific circumstances (Environment and Climate Canada Change, 2012). Amendments to the 2003-2005 Atlantic Seal Hunt Management Plan resulted in the creation of licenses that allowed grey seals to be killed when they are actively interfering with fisheries activities (Fisheries and Oceans Canada, 2003). However, in 2019, the DFO informed commercial fisheries and aquaculture operators that authorization to kill nuisance seals would end, and, in 2020, amendments to the MMR stopped nuisance seal licenses from being issued (Fisheries and Oceans Canada, 2021b, 2021a). The amendment was largely in response to the United States

Import Provisions of the Marine Mammal Protection Act (MMPA), which was set to begin January 1st, 2022 (Fisheries and Oceans Canada, 2021a; Withers, 2020). The new MMPA import provisions required all fisheries that export fish to the United States to have the same standards in place for marine mammals as does the United States itself (Withers, 2020). The DFO's decision was to ensure trading relations and opportunities with the US (Fisheries and Oceans Canada, 2021a). The proposed amendment to the MMR and Pacific Aquaculture Regulations (PAR) is Phase II of the DFO's Forward Regulatory Plan 2023-2025 (Fisheries and Oceans Canada, 2019).

Decreasing Seal Populations by Cull

Seal culls are often proposed to manage seal populations, but the practice is highly controversial. A seal cull is an intentional killing to reduce the abundance of a species, and in turn their impact on fisheries (Trzcinski, 2020). Government-sponsored culls and bounty programs were used to manage grey seals throughout the 20th century (Hammill, 2014). There have been many recommendations and proposals for seal culls in Atlantic Canada: the 1971-1978 progress report by the Advisory Committee on Seals and Sealing proposed a total cull of all grey seals on Sable Island (Fisheries and Oceans Canada, 1985); the DFO's Atlantic Seal Hunt 2000 Management Plan acknowledged calls for decreasing the grey and harp seal populations by culling to support groundfish populations but admitted to not considering the option at that time (Fisheries and Oceans Canada, 1999).

In 1999, the Fisheries Resource Conservation Council (FRCC) released a report entitled "1999 Conservation Requirements for the Gulf of St. Lawrence Groundfish Stocks and Cod Stocks in Divisions 2GH and 3Ps". In this report, they advocated that the Precautionary Approach should be used as a rationale to reduce harp seal populations. They argued that while there is not scientific certainty that reducing the seal herds in Atlantic Canada would benefit Atlantic cod, they argued that it likely would, and because Atlantic cod are endangered, seal population size in the Atlantic should be reduced. In fact, the principal recommendation from this report was that seal herds be reduced by up to 50% in specific areas (Fisheries Resource Conservation Council, 1999):

> *"Principal Recommendation: Reduce the seal herds by up to 50% of their current population levels in specific areas and use such reductions as a basis for scientific study and adaptive management."*
>
> *"The accumulated evidence from scientific assessments, as well as the consistent, continual, and corroborating information from fishermen throughout Atlantic Canada is such that the FRCC is convinced beyond any reasonable doubt that the conservation of groundfish stocks, most notably cod, will continue to be jeopardized if the seal herds remain at their current levels."*

In 1999, the Standing Committee on Fisheries and Oceans released a report on their investigation of seal populations in Canada, entitled the "Seal Report". The Committee found that there was no agreement regarding the impact of seals on the recovery of groundfish. For

this reason, they stated that more scientific research must be done to understand the impact of seals on groundfish however, this should not prevent action from being taken to reduce the harp seal population (Standing Committee on Fisheries and Oceans, 1999):

> *"Considering that the harp seal population is now in excess of five million, the Committee believes that there must be a major reduction in the harp seal population."*

> *"Recommendation 2: The Committee recommends that the Department of Fisheries and Oceans conduct both experimental harvests and experimental seal exclusion zones. These should include the 2J3KL (Northern cod) fishery, the 4TVn (southern Gulf of St. Lawrence cod) fishery, and the 4RS3Pn (northern Gulf cod) fishery and others as deemed necessary for the purpose of preventing the expansion of seals into the fishery, designated bay, or area. This measure is designed to protect spawning and juvenile cod concentrations and prevent seals from inflicting high mortality."*

As a direct result of the previous report, an "Eminent Panel on Seal Management" was established to evaluate the current available science on seal populations and provide advise on a long-term strategy for seal management. This Panel was composed entirely of academic scientists. They released their report in 2001. In contrast to the previous reports from the Standing Committee on Fisheries and Oceans and the Fisheries Resource Conservation Council, the Eminent Panel on Seal Management was much more hesitant to attribute a lack of recovery of fish populations to seal overpopulation. The Panel emphasized the need for more research to be done, and that a reduction in seal populations would not necessarily increase groundfish abundance. For example, the Panel's opinion of managing the harp and grey seal with the goal of reducing their population size was (McLaren et al., 2001):

> *[Section 5.2.5: The objective [Managing harp seals to reduce the seal population by a predetermined amount] is to reduce the quantity of fish consumed by seals, in the expectation that this will reduce overall mortality and speed up the recovery of those groundfish stocks, like northern cod, that are seriously depleted. As Winters and Miller (2001) point out, a scenario of this kind is effectively a form of experimental management. However, it is an experiment without a control and with no replicates. It will therefore be impossible to evaluate whether or not it has been a success, except in terms of the actual reduction in seal numbers. Rather, it should be viewed as a speculative, high-risk venture whose potential future benefits are considered by government to outweigh the costs."*

> *"there is no scientific consensus on the effects that grey seals are having on the recovery of cod stocks. In these circumstances it is not possible to predict the consequences of any specified reduction in the size of the grey seal population with any confidence. All of the caveats associated with the likely benefits from a reduction in harp seal numbers that are noted in 5.2.5 apply with even greater force to grey seals."*

In 2005, the Standing Committee on Fisheries and Oceans presented a report to the House of Commons on Northern cod. They included in this report, the reasons for the collapse of northern Cod in 1992, and why northern cod have not recovered. In support of this document, the DFO provided the Standing Committee with their scientific opinion on the lack of recovery of northern cod. Overabundant seal populations were 1 of 40 reasons for the lack of recovery. The Standing Committee added to this list several issues pertaining to mismanagement of the resource. Importantly, the Standing Committee agreed with witnesses that the overabundant harp seal population is impeding the recovery of the northern cod stocks. They stated that the DFO should acknowledge that managing the seal herd to reduce its population size would have a positive impact on northern cod and issued the following recommendations and conclusions (Standing Committee on Fisheries and Oceans, 2005):

> *"Recommendation 14: That the Government of Canada aggressively promote the expansion of markets for harp seal products; and, that DFO increase the commercial quotas for the seal harvest in accordance with market conditions."*
>
> *"Conclusion: We believe that the root cause [of the lack of recovery of the northern cod stock] lies in a lack of vision and long-term planning. Not dealing with foreign overfishing, re-opening of the inshore fishery in 1998 at unsustainable levels, and not recognizing sooner the size of the seal herds each contributed to the lack of recovery of the northern cod stocks. While DFO, as the body responsible for managing the fisheries, had the critical role in this disaster, it was often under pressure from fishermen, coastal communities, unions, and politicians to provide opportunities."*

In 2007, in response to calls for a ban on the importation of seal products into the EU, the Standing Committee on Fisheries and Oceans again examined the impact of seal populations on groundfish stocks. The Committee re-emphasized the results of their 2005 report (directly above), and concluded that seal populations (particularly harp seal populations) are impacting the recovery of groundfish stocks. They implied that the population should be reduced, but did not specify how this could be achieved (Standing Committee on Fisheries and Oceans, 2007):

> *"Seals alone did not cause the collapse of the fish stocks; however, the current size of the harp seal and the grey seal herds is a significant impediment to their recovery. The Committee does not call for a cull, but it fears that a collapse of markets for seals products would lead to a reduction in the commercial seal harvest that could, in turn, have dire long-term consequences for the ecological balance in the Northwest Atlantic Ocean."*

From 2009 to 2012, there was a discussion about removing grey seals to reduce their predation on southern Gulf cod, which was initially supported by former Minister of Fisheries and Oceans, Gail Shea, in 2009 (Senate of Canada, 2012). In 2011, the Fisheries Resource Conservation Council (FRCC) recommended that the DFO begin an experimental reduction of grey seals.

Subsequently, in 2012, the Standing Senate Committee on Fisheries and Oceans was authorized by the Senate to provide a report to the Senate on grey seal populations in Atlantic Canada. This report recommended the DFO establish a plan to mitigate the impact of the increasing grey seal population on groundfish stocks in the southern GOSL. This plan clearly called for a grey seal reduction either through a culls or bounties (Senate of Canada, 2012):

> *"Recommendation 3: That starting with the 2013 season and for a period of four years, the Department of Fisheries and Oceans implement and manage a grey seal targeted removal program in the southern Gulf of St. Lawrence to reduce the level of the herd by 70,000 animals…"*
>
> *"Recommendation 4: …that adequate and fair compensation, the level of which yet to be determined, be provided to seal harvesters for each dispatched animal."*

This resulted in the DFO science team to investigate the possibility and practicality of culling grey seal populations in the southern GOSL (Hammill & Swain, 2011). In seemingly unrelated seal cull investigation, the DFO hired a Halifax-based consulting firm to investigate the cost and logistics of culling 220,000 grey seals over 4 years, and administering a contraceptive vaccine to 75,000 grey seals over 5 years on Sable Island (CBC, 2010). Later, in 2016, in response to industry pressure to reduce harp seal impact on fisheries, the DFO science team investigated the number of harp seals that would need to be removed per year to significantly reduce the population size of harp seals (DFO, 2016).

More recently, in 2022, the Atlantic Seal Science Task Team (ASSTT) was established by the DFO, and recommended "Where science gaps have been addressed and levels of impact have been quantified, resource managers must be willing to move forward with seal population reduction strategies aimed to rebuild impacted stocks."(ASSTT, 2022) (See section 4 for more details on this report). In December 2023, the Standing Committee on Fisheries and Oceans provided a report to the House of Commons with recommendations to the DFO with regard to seal populations in Canada. The report clearly acknowledged the overpopulation of pinnipeds and urged the DFO to seriously consider and plan to reduce the population of pinnipeds. For example, the report urged the DFO to move forward with the targeted removal of seals at locations where seals are known to prey upon Atlantic salmon, and that a strategy be created which establishes humane, ethical and sustainable methods to reduce the impact of pinniped overpopulation (see recommendations below). Unlike the 2012 report, this report was not as clear in its recommendation that culls or bounties should be used. The report did not comment on the methods to reduce pinniped overpopulation, but many recommendations within the report focused on increasing the productivity of the sealing industry (Standing Committee on Fisheries and Oceans, 2023).

> *"Recommendation 9: The DFO acknowledge and act on concerns of stakeholders, scientists, harvesters and Indigenous bodies that the population of most pinnipeds have expanded to points of imbalance in certain regions, with negative impacts on fisheries and livelihoods"*

> *"Recommendation 16: Taking steps to reduce pinniped predation of salmonid and other prey species made vulnerable at 'pinch points' in all Canadian waters including fish ladders, hatcheries and at the mouth of tributaries (especially where log booms are positioned) through consultation with companies and agencies responsible for them and, if necessary, through a targeted harvest of 'specialist' pinnipeds, building on the conservation success achieved in other jurisdictions such as Washington and Oregon States and Norway*
>
> *"Recommendation 17: Consult with Canadian and American harvesters and Indigenous fishers on a bilateral strategy to address pinniped predation of fish stocks that provides the public with a clear, accurate picture of the impact of regional instances of pinniped overpopulation, measures to address this issue that are demonstrably ethical, humane and sustainable, do not draw US Marine Mammal Protection Act sanctions and include a mechanism to evaluate results in terms of the overall health of monitored fish stocks."*

Clearly, there has been significant and ongoing pressure to reduce seal populations in Atlantic Canada, and the opinion of the Federal government (via the Standing Committee on Fisheries and Oceans) is that seal populations should be reduced and are impacting groundfish recovery. Despite the significant impacts of increased seal populations, the idea of a cull has been highly scrutinized for its efficacy and ethics in recent times. There has been much uncertainty in the scientific community regarding the impact of seal culls, as there has been virtually no assessments of the efficacy of any marine mammal cull conducted in the past (Bowen & Lidgard, 2013). In 1981, scientists at a Northwest Atlantic Fisheries Organization (NAFO) meeting concluded that the effects of previous seal culls on fisheries were unknown (Lavigne, 2003). Further, many scientists have cautioned that reducing the population size of pinniped populations could have a wide number of impacts, that it may not benefit fisheries, and may in turn, result in unforeseen consequences for fisheries (Lavigne, 2003; Standing Committee on Fisheries and Oceans, 2023). While there has been scientific progress about seals, there is not enough scientific evidence to make definite conclusions about the impact a seal culls would have.

In calls to reduce seal population abundance, a commercial seal harvest is seen as a better option than seal culls to reduce the population size, because it is inherently less wasteful, less costly, and is more acceptable by the public (Senate of Canada, 2012; Standing Committee on Fisheries and Oceans, 2023). However, there are important implications to reducing the seal population through a commercial harvest. When a pinniped population is reduced, the number of seals that can be sustainably derived from the population also decreases. Therefore, to reduce seal populations through a commercial harvest would require the industry to expand very greatly (See section 4 for details on the number needed to be harvested and the practicality of this). However, after the seal population is reduced, the industry would necessarily need to collapse with the collapse of resource. Therefore, if seals populations were to be reduced by a commercial harvest, it would likely have negative consequences on the sealing industry.

Much like debates surrounding the seal hunt itself, the social controversy surrounding a seal cull comes from an array of values and attitudes (Lavigne, 2003). On one side, proponents of seal culls argue that they are necessary to sustain commercial fisheries, whereas opponents deem culling to lack morality (Lavigne, 2003). Newfoundland and Labrador residents typically have a broad perspective, in which they acknowledge the ecological importance of seals while supporting this form of lethal management (Jackman et al., 2023). There has been increased advocacy for seal culling to decrease populations due to the unprecedented size of harp and grey seal populations, and recent studies showcasing the impact that seal populations have on fish (Withers, 2023). Despite management recommendations, the seafood industry has warned the government not to disrupt market opportunities for Canadian fish and seafood products, as a cull can incite negative attitudes which can have potential policy and market repercussions (Withers, 2023). The impact of such an outcome could put coastal communities that depend on the fishery in jeopardy (Withers, 2023). With this, seal culls (apart from nuisance seals) have not occurred in Canada in the 21st century to maintain a positive public image and market access (See section 4 for more details on seal culling).

Section 7: Ensuring a Humane Harvest

Evolution of seal harvesting methods and their impact on animal welfare

While clubbing and shooting seals were the most common methods for harvesting seals in the commercial Newfoundland seal hunt prior to 1965, inhumane harvesting methods were also utilized throughout Atlantic Canada. These included the taking of seals on a “seal trawl line”, a modified longline consisting of herring-baited hooks at 9-ft intervals along a main line, and various netting systems used to trap seals underwater and cause death by suffocation (Malouf, 1986; Moussette, 1979). Ironically, these methods did not receive the same level of criticism from animal welfare organizations as did clubbing, despite being associated with worst animal welfare outcomes. Public attention on these harvest methods may have been averted because seal death occurs underwater.

While the suffering inflicted on a seal by capture on a baited hook and line is easily imaginable, the suffering inflicted on seals by netting is not readily apparent, because of the unique underwater adaptations that seals possess. Seals are extremely well adapted to diving and may be able to stay underwater for 25 minutes–2 hours, depending on the species. Notably, seals have a shunt that is used specifically to supply oxygen to the heart and brain. This allows the seal to remain conscious for a long time underwater. Seals also convert carbon dioxide into a non-toxic form, which prevents carbon dioxide from causing narcosis and unconsciousness. The result is that the seals violently struggle to escape the net underwater for an extended period until they are physically incapable of movement. The seal remains conscious until all aerobic and anaerobic metabolic resources are exhausted and does not inhale water at any point in the process (Malouf, 1986). The Royal Commission on Seals and Sealing in Canada had this to say of netting (Malouf, 1986):

> *"Because of the long time it took seals to die underwater, and because the seals were conscious throughout this period, Ronald (1982) concluded that "there is little evidence that the seals are being killed [in the net fishery] in any way as humanely as the club, hakapik or gun methods." This conclusion seems to the Royal Commission to represent an understatement of the degree of inhumaneness involved in killing seals with nets as compared either to clubbing or shooting."*

The North American Marine Mammal Commission (NAMMCO) expert group on the best practices in hunting and killing seals found that while netting likely results in poor animal welfare outcomes; however, because only one study has examined this issue, they did not make a definitive statement on the subject (NAMMCO, 2009):

> *"The adaptations [to diving] do, however, imply that net-entangled seals may survive for prolonged periods before unconsciousness and death ensues, but documentations of responses of diving animals under such conditions are limited (Ronald 1982), although these in part may be predicted based on previous diving physiology studies involving forced experimental dives in the laboratory (e.g., Scholander 1940, Elsner et al. 1970, Kerem and Elsner 1973), and possibly also long duration dives in freely diving seals (e.g. Kooyman 1966, Kooyman et al.1983, Qvist et al. 1986). …the limited data that exist on entanglement of seals do not allow assessment of the extent of suffering experienced by the seals or the cause of death. Factual information is required to explain the process of dying under these conditions."*

In 2007, in response to calls to ban the importation of seal products into the EU, the European Food Safety Authority issued their scientific opinion on the animal welfare aspects of killing and skinning seals. They made a much more definitive statement on the use of nets to hunt seals:

> *"Some methods of killing seals are inhumane e.g. trapping seals underwater until they die, and should not be used."*

With respect to netting, it is important to consider that, in certain areas, the hunting of seals by netting is essential for nutrition and income. Hunting of seals by netting is particularly important during the polar night, when food is scarce and hunting seals by other methods (e.g., firearms) is not possible (Danielsen, 2018; Hovelsrud-Broda, 1999). Therefore, we cannot recommend that netting be banned, because this might have serious implications for the health and livelihoods of certain of sealing communities.

In 1964, in response to a growing animal welfare movement, the Seal Protection Regulations established the first legal requirements describing how seals may be killed. Clubs and gaffs of specific dimensions, rifles and shotguns chambered with powerful cartridges, and nets could be used to harvest seals. In 1967, hakapiks were added to the allowed killing methods, and in 1972 gaffs were banned from use. Lastly, in 1993, following recommendations of the Royal Commission on Seals and Sealing, the use of nets to hunt seals south of 54°N was prohibited

(DFO, 1985; ICES, 2019). Despite these prohibitions, seal trawl lines were reportedly still used in the Magdalen Islands in 1979 (Moussette, 1979).

The use of longlines and netting were not the only inhumane aspects of the seal hunt prior to 1965. Unfortunately, without animal welfare laws in place and little oversight on the industry, there were instances where seals suffered during the commercial harvest (e.g., Malouf, 1986b Part Va, pg. 10). For example, Wilfred Grenfell describes the clubbing of an adult hooded seal with gaffs in 1896 at the Front (Grenfell, 1898):

> *"I watched four men fight an old dog Hood one day on a small pan. Reared up on his haunches, with his hood blown up, he awaited the attack. The first blow, struck on his hood, might as well have hit a stone wall, while catching the second gaff-end cleverly in his teeth, he shook its long handle to such good purpose that he cleared the pan of his enemies in an instant. … and soon a lucky blow under the jaw stretched him out. A perfect shower of blows on the head seemed to finish him off. …. He was hauled to the bulwarks by steam winch. Just as he got there his immense weight broke it down, and he disappeared [into the ocean] …. refreshed by the cold water, he climbed out onto the very same pan, where the hunters were ungallant enough to return and despatch him with their long knives."*

After hunting whitecoats was made illegal in 1983, less sealers utilized the hakapik or club to harvest seals. This is because, after the whitecoat stage, beater seals are much more capable of fleeing into the water to escape an approaching sealer. For this reason, the majority of seals are now shot (Daoust et al., 2002).

Scientific research on seal welfare

Interest in the welfare of seals during the seal hunt began in 1955, when humane and conservation agencies began travelling to the ice fields to observe the hunt. Since this time, there has been an unbelievable amount of scientific research to determine the most effective and humane way to kill seals. So much, in fact, that many would argue that the research itself encroached on animal welfare. For example, between 1969 –1972, the US government commissioned scientific and humane organizations to investigate alternative methods of killing seals. Every conceivable method was tested, but none was as humane or efficient as the clubbing and exsanguination technique used throughout the hunt and still in use today (DFO, 1985):

> *"The methods [for killing seals] investigated included electrocution, captive bolt pistols, gun shot, carbon dioxide, nitrogen asphyxiation, succinylcholine drug paralysis, acoustical shock, gas chamber techniques, decapitation, gaseous anaesthetics, pneumatic compression and impaction techniques, injectable drugs, thermal neurological destruction, ultrasonic and laser systems. These studies concluded that none of the more mechanical techniques was as adaptable to the harvest or more humane than the simple stunning and exsanguination technique. Further, gas hypoxia techniques*

and drug paralysis were found to then taken five to eight times longer to dispatch animals than the stunning and exsanguination method".

Plenty of Canadian research on the humaneness of seal harvesting has also been conducted. Between 1966 to 1987, 44 veterinarians, animal-welfare officers and biologists made 86 visits to the hunt to observe its humaneness (Malouf, 1986). In 1966, the Ontario Humane Society used a special permit to evaluate the humaneness of captive bolt pistols, plastic-filled cartridges, and other killing methods, but concluded that the club was the most humane way of killing young seals— and was even more humane than the methods used in most abattoirs at the time. In 1969, an observer from the Canadian Federation of Humane Societies observed a 99.82% incidence of humane killing. Veterinary pathologists in 1971, 1975, and 1977 conducted post-mortem investigations of clubbed seals and all concluded that the method was humane (DFO, 1985). In 1971, the Committee on Seals and Sealing (COSS) was established to examine all aspects of the seal hunt, including its humanness. The committee re-assessed the various types of firearms and captive bolt pistols that could be used to kill seals. They concluded that the club and hakapik were the most effective and humane (DFO, 1985).

Between 1979 and 1984, in response to the anti-sealing campaign targeting European parliament, the Canadian Veterinary Medical Association (CMVA) began conducting research into the humanness of the seal harvest. During these years, groups of up to 5 veterinarians observed the hunt in the Gulf and performed post-mortem examinations of harvested seals. They concluded that a strike with a club or hakapik was a humane method of killing seals (Daoust et al., 2002).

A Canadian effort even resulted in the design and manufacturing of prototype handguns and cartridges, specifically designed to harvest young seals. These guns were tested in 1979, 1980, 1982 and 1983. The CMVA was tasked with evaluating the effectiveness of these firearms. They concluded that the club and hakapik remained the most effective humane killing method (DFO, 1985).

Royal Commission on Seals and Sealing was established in 1984 in response to the European seal ban in 1983. They reviewed all the available national and international evidence on the humaneness of the seal hunt and concluded that the vast majority of seal pups are killed in a manner that meets a high standard of humane killing (Malouf, 1986).

In 2001, IFAW observed and filmed the seal hunt in the GOSL. They hired 5 veterinarians to observe the hunt by helicopter and study the sculped carcasses left behind by sealers. This group has campaigned for the cessation of the seal hunt for decades and held seal welfare during the hunt to a higher standard than all other animal harvests. They found it unacceptable for any seal to be struck more than once to ensure death even if virtually no time has passed between strikes, and found it unacceptable for a sealer to strike a seal that has been previously shot to ensure death (Fielder, 2001). In fact, it is required by law in Norway to strike a seal with a hakapik after it is shot to ensure death as a precautionary measure to minimize animal suffering (NAMMCO, 2004). In Canada, it is required by law for the sealer to ensure that the

skull is crushed, following an initial shot or blow with a club or hakapik; if it is not, the seal must be clubbed or shot again (Marine Mammal Regulations, 2018).

It is our opinion that the IFAW study was biased in their assessment. For example, IFAW concluded that, following a strike on the head with a club or hakapik, if the skull is not fractured or had a hairline fracture it "would be highly un-probable to be associated with a level of unconsciousness", and moderate skull fractures "would still not have a high level of probability to be associated with unconsciousness". We find these claims to be unfounded (Daoust et al., 2002; Daoust et al., 2014). Other evidence of biases was apparent in the narrative, language and logic used in the report. For example, they posited that a strike to the skull is a far less efficient method of rendering a seal unconscious than a strike to the brain stem. Firstly, this is not true: a strike to the skull directly targets the underlying cerebral cortex, which is the centre of pain, perception, and consciousness. This is therefore the proper target. In contrast, the brain stem is responsible for respiration and blood circulation (Daoust, personal communication, 2023). Secondly, this line of reasoning is irrelevant considering that the brain stem is well protected and impossible to strike.

The study did, however, have several recommendations similar to those later made by the Independent Veterinarians Working Group (Smith, 2005). These included a killing procedure comprised of immediate stunning, checking, and bleeding, and a prohibition on shooting seals in the water. The study also agreed with the Independent Veterinarians Working Group that it is unclear whether a seal exhibiting a swimming reflex is conscious or not (Fielder, 2001; Smith, 2005).

In 1999 and 2001, members of the CVMA again observed the seal hunt in the GOSL and performed post-mortem examinations of the seals. This group also reviewed the videotapes captured by IFAW of the 2001 hunt at the GOSL. They did not agree with most of the purported animal welfare violations by IFAW. They concluded that 98% of seals were killed in an acceptably humane manner; however, 2% of seals were struck, hooked, and brought on board the ship while still alive and conscious, and 5.4% of seals were struck or shot and subsequently lost in the ocean (Daoust et al., 2002).

Between 1978–2008, sealers were required to check the "corneal reflex" (i.e., the absence of blinking when the seal is poked in the eye), to ensure seal death. However, in 2001, as many as 87% of sealers did not check for the corneal reflex after striking the seal and prior to bleeding it (Daoust et al., 2002). This research highlighted the need for sealers to ensure the seal is unconscious and bleed the seal immediately after it is shot. Further, this research highlighted that the corneal reflex is not an ideal test of seal death, because (1) it is not easy to apply in the field, (2) reflex is also absent in seals that are unconscious, and (3) the corneal reflex may be absent in conscious seals that sustained certain injuries to the eye or proximal regions (Daoust et al., 2002).

In 2005, the Independent Veterinarians Working Group, composed of 9 veterinarians from North America and Europe was formed to evaluate the humaneness of the Canadian harp seal

hunt (Smith, 2005). They also found that striking the seal with a club or hakapik was a humane killing method. Their recommendations resulted in the Marine Mammal Regulations being amended in 2008, to describe a clear killing procedure. This procedure involves striking the seal, palpating the skull to ensure that both cerebral hemispheres have been crushed (which replaced the requirement to check the corneal reflex), and bleeding both axillary arteries for at least 1 minute prior to skinning the seal (DFO, 2011). These regulations officially made the striking method the means of causing death or "irreversible unconsciousness", and bleeding to be a precautionary measure to ensure death. Their recommendations also resulted in mandatory training for all sealers (Smith, 2005).

The Independent Veterinarians Working Group also recommended that seals not be shot in the water, due to the high frequency of seals not recovered after being shot. This results in both wastage of the seal and potential suffering due to the inability to ensure death following an initial shot (Smith, 2005). This recommendation has not been incorporated into the Marine Mammal Regulations. The loss rate for seals taken in water may be between 2–5 times higher than for seals taken on ice, although estimates are highly variable. Between 0–21.6% of beater seals shot in water are lost and between 5–50% of adult (over 1 year of age) seals shot in water are lost, depending on the time of year, weather conditions, and sealer skill (Sjare et al., 2000). It is of note that these struck and loss data were derived from harp seals and do not necessarily reflect the struck and loss rate of ringed seals, which are the primary target of the hunt in Arctic Canada.

In 2007, in response to a proposal for a ban of seal products in the European Union, the House of Commons Standing Committee of Fisheries and Oceans examined the humaneness of the Canadian Seal harvest. In their assessment, they consulted with veterinary experts, representatives from animal-rights organizations and went themselves to observe the seal hunt in April of 2007 aboard a Canadian Coast Guard vessel. The committee agreed with the findings of the Independent Veterinarians Working Group, and supported the use of the club, hakapik and rifle as humane killing methods (Standing Committee on Fisheries and Oceans, 2007):

> *"[Conclusion 2] Humaneness of the seal harvest: Upon reviewing the evidence presented by expert independent veterinarians, the Committee believes that the Canadian harp seal harvest is humane. The methods used to kill seals — the hakapik and the rifle — satisfy standards for humane killing and euthanasia and compare favourably to methods used in slaughterhouses across the country. However, in light of concerns about the way the harvest is carried out in some areas, the Committee urges the government to amend the Marine Mammal Regulations to implement the Independent Veterinarians' Working Group's recommendations."*

More recently, veterinary scientists reported on observations of more than 500 seals harvested during the 2005, 2006, 2008, and 2009 seal hunts in the GOSL and on the Front. They found that virtually all seals killed with a club or hakapik had a positive animal-welfare outcome, but that 5% of animals that were shot had a poor welfare outcome, because these animals were not killed immediately with the first shot and were not shot again before being retrieved. Animals

with this poor outcome were alive for an average of 114.4 seconds after the initial shot, and before death. Virtually all of the seals hunted at the Front were shot (278/280 seal harvests observed). They found that the probability of a poor animal-welfare outcome was 30% when a seal is shot in the water, but only 2.6% when a seal is shot on ice. No struck and loss was observed, as all seals were retrieved after being shot at the Front. The authors could not comment on struck and loss in the GOSL, where this aspect of the hunt was not recorded (Daoust & Caraguel, 2012).

International reviews of seal welfare

In 2004, the North Atlantic Marine Mammal Commission held a workshop on the hunting methods currently used for seals and walruses, and included an overview of hunting practices in Canada, Norway, Finland, Sweden, the Faroe Islands, Alaska, Iceland, Greenland, and Russia. It was clear from this review that the Canadian commercial seal hunt is one of the most regulated in the world. There are no regulations pertaining to the methods used to harvest seals in Greenland, Alaska, or Iceland. Other countries have some regulations, for example, as to the type of ammunition that can be used, but do not have a formal three-step killing process in place. Netting is common in Greenland and is the primary method of hunting seals in Iceland; it is also legal in Finland, and in Northern Canada. In the Faroe Islands, seals are only shot as nuisance animals, and none of these animals are recovered (NAMMCO, 2004). In this review, a representative of the Iceland seal hunt stated that *"every pup entangled in the net is caught, none escape wounded, and none suffer pain from their wounds"* (NAMMCO, 2004). We note that without underwater monitoring, it is not possible to conclude that no seals escape a net. Further, we find it highly unlikely for a seal to become wounded without suffering pain.

Norway has the most regulated seal hunt from an animal welfare point of view, even more than Canada. Like Canada, Norway has a formal killing process in place to ensure minimal suffering, and only clubs and hakapiks of specific dimensions, and rifles of specific calibers, can be used to harvest seals. Sealing regulations in Norway differ from those in Canada in a number of ways: the shooting of seals in water is illegal to minimize the number of seals struck and lost; prior to each hunt, rifles are required to be inspected, approved by a gunsmith, and sighted in with the ammunition that will be used in the hunt; and all hunters are required to take a shooting test prior to participating in a seal hunt (NAMMCO, 2004).

In 2006, the EU adopted a recommendation that invited member states to ban cruel seal harvesting practices *and* to prohibit the stunning of seals with instruments such as hakapiks, bludgeons and guns. Following this recommendation, in 2007, the European Food Safety Authority issued a scientific opinion on the animal welfare aspects of killing and skinning seals. They reviewed seal harvesting practices around the world and evaluated the available evidence on the humaneness of the hunt. They concluded that many seals can be, and are, killed rapidly and humanely; however, the degree that this happens in practice was unclear based on the available evidence. They further recommended that clubs and hakapiks are humane methods of killing young seals and recommended that the three-step process be put in place, and hunter

training be required. The Canadian commercial seal hunt has now met all the recommendations of the European Food Safety Authority (EFSA, 2007).

In 2009, NAMMCO created an expert group on the best practices used for harvesting seals at its annual meeting in Greenland in 2008. They concluded that hakapiks and clubs are effective primary tools for killing and stunning young seals (NAMMCO, 2009). They did not take a stance on netting (as described above).

Research Gaps

As demonstrated above, there has been a very large scientific effort to evaluate the animal welfare aspects of seal harvesting. From this research, we can confidently conclude that the hunt for yearling harp and grey seals is conducted with very high animal welfare standards. Extensive scientific research has demonstrated that these animals are killed rapidly with minimal suffering and with minimal struck and loss.

In contrast, there is very little scientific information available on the animal-welfare aspects of the harvest of adult harp and grey seals. Unlike the hunt for beater seals, adult seals must be harvested by firearm, because their skull is too thick for a blow to the head from a hakapik or club to be effective, and because it is difficult and dangerous to approach an adult seal, as they are weary of humans and are considerably larger. Because adult seals are wearier of humans than yearling seals, they are often shot at further distances, are shot in the water more often, and may be more difficult to kill with a firearm. This places greater importance on the cartridge used (to ensure the bullet can kill the animal effectively), and on the accuracy of the shooter. This may result in relatively worst animal welfare outcomes than the harvest of yearling seals. For example, research on the harvest of beater harp seals suggests that poor animal welfare outcomes are more frequent when seals are harvested in water, than on land (Daoust & Caraguel, 2012).

In addition, the little research available on the topic suggests that struck and loss rates may be much greater for adult seals than for yearling seals (Sjare et al., 2000). Struck and loss rates are low in yearling seals for two reasons. First, yearling grey seals are all harvested on land, and most beater harp seals are harvested on ice, which reduces the chance of a seal sinking and becoming lost (Daoust & Caraguel, 2012). Second, yearling harp seals have relatively little muscle compared to fat, allowing them to float when shot in the water. In contrast, adult seals are frequently shot in the water and undergo fluctuations in their body composition which can allow them to sink. Much more research is needed on the animal welfare aspects of the hunt for adult seals (Daoust, personal communication, 2023).

A research project on this topic is already underway in the Magdalen Islands. The Adult Seal Hunt Optimization Project is scheduled to end March 31st, 2025. This research uses funds from the Quebec Fisheries Fund to allow two veterinarians to observe the harvest of adult grey and harp seals in the 2020–2024 seasons. Veterinarians will collect data on the velocity and energy of the ammunition used, the distance at which animals are normally fired, the proportion of

animals struck-and-lost, and the time to animal death. This research will inform the methodology that should be used to harvest adult seals and may result in amendments to the MMRs, for example, to specify the caliber of ammunition that can be used to harvest adult seals and the length of the club that can be used to harvest seals within a vessel. However, because this research is taking place in the Magdalen Islands, it unlikely to result in many observations of harp seals.

Section 8: Social Context for the Modern Newfoundland and Labrador Seal Fishery

Cultural significance, livelihoods, food security and local economies on the Newfoundland seal hunt

Of the 522,000 residents of Newfoundland and Labrador, 39% (204,000 people) reside in a rural area (Government of Canada, 2022a). Many of these rural residents live in remote coastal communities with limited and seasonal employment. Many communities only have one store where groceries can be purchased at a relatively high price due to the cost of transportation and the typical markup required by small vendors to be profitable (Sellheim, 2015a). In these communities, fishing is the primary source of income. Employment within fisheries is sporadic and subject to the conditions of the stock and environment. For example, in census regions 8 and 9 in Newfoundland and Labrador, which encompass much of the north coast of the island, the unemployment rate is 34% and 30%, respectively. This is roughly 6.5 times greater than the unemployment rate of Canada (5.2%) (Government of Canada, 2022b). For all the reasons above, rural communities depend on hunting and fishing to procure wild foods to meet their protein (and other nutritional) requirements. It is in this setting where most sealers in Atlantic Canada likely operate; however, the authors could not find any published data on the demographics of seal hunters in Atlantic Canada, including what proportion live within rural vs urban communities (i.e., within St. John's).

As discussed in section 3, Newfoundland and Labrador has a rich sealing history. Seal harvesting transformed the way of life in Newfoundland and had a profound role in shaping the culture (Wright, 1984). Despite 70 years of an ongoing and powerful anti-sealing movement, the majority of both urban and rural Newfoundlanders still support the seal hunt, and would like to see it continue (Engel et al., 2021).

In remote places where sealing occurs, seal harvesting is conducted by fishermen in the spring, prior to the start of most commercial fishing practices. In these places, sealing is an important part of the local economy. Few studies exist on the impact of sealing within local Newfoundland communities. One study in Woodstock, Newfoundland, offers some insights (Sellheim, 2015a). In this town, sealing is an important part of social structure, food security and the economy. Strong bonds are formed among sealers and their families. Sealing remains a dangerous activity, and this comradery is a vital support for both the hunters and their families during the seal harvest.

In some years, sealing brings a substantial amount of money into the community. For example, in 2013, $15,000 were spent on supplies from the local store to finance a single sealing vessel. Due to variation in the price of pelts and other commercial fish products, sealing is not always profitable. For this reason, sealing captains decide prior to the season whether to participate in the hunt. If more money could be made through fishing, then they will not go sealing. Importantly, when the price is low for fish products, or there is little fishing opportunity, up to 50% of a sealer's income in this community was reportedly derived from sealing. Other estimates of the percentage of total income sealers derive from sealing are highly variable, but generally range between 5–35% (Sellheim, 2015b). Therefore, sealing is an integral part of the economies in rural communities. Income from sealing fluctuates because of market conditions but acts as a critical economic buffer that dampens the negative impact caused by poor fishing seasons (Keough, 2021).

Sealing is undoubtably an important part of food security in remote sealing communities. Within sealing communities, seal meat may be purchased, bartered for, or given freely. Unfortunately, due to the small sizes of sealing communities and a poor market for seal meat, a large proportion of the seal meat is likely not landed. For example, Woodstock, a small coastal town with a population of 311 people, landed 150 carcasses, 300 flippers and 60 hearts for consumption in the community in 2013 (Sellheim, 2015a). While this provides a lot of food for the community, it is only a fraction of the wild meat that is available from the harvest. The same year, this community harvested 1,987 seals. This indicates that 7.5% of the meat available from the harvest was landed. Because communities are small, demand for seal meat is likely satisfied by only a fraction of the total available meat from the harvest. In other words, the economic needs of the community outweigh the demand for seal meat. This does not indicate that seal meat is unimportant in these communities. In years when there is no commercial market for seal products, seals are still hunted to acquire food for the community (Sellheim, 2015a).

Continued importance to Indigenous Peoples and local communities

The authors again emphasize that they are not Inuit, and thus are limited in their ability to accurately describe the importance of seal harvesting to Inuit. Documentation where Inuit tell their own story on the importance of seal harvesting can be found in Peter et. al, 2002; Inuit Tapiriit Kanatami, 2004; Inuit Circumpolar Council, 2016; Qikiqtani Truth Commission, 2013; and Arnaquq-Baril, 2016. Seals, especially ringed seals, have been an integral part of Inuit culture, diet, and livelihoods for approximately 5,000 years. Today, because of this rich history, seal harvesting remains a vital part of Inuit culture. Seal harvesting is an important means of securing healthy food and suitable clothing in remote communities (Peter et al., 2002). The utilization of seals by Inuit communities for food and clothing is often referred to as "subsistence" hunting, although for Inuit "subsistence" is far more complex than the seal hunt alone.

As texts like George Wenzel's 1996 paper "Inuit Sealing and Subsistence Managing after the E.U. Sealskin Ban", the Inuit Circumpolar Council's "Inuit Arctic Policy", and Rauna Kuokannen's

"Indigenous Economies, Theories of Subsistence, and Women" (among many others), show, when Inuit use the English term "subsistence" to name for us their economic practices, they mean something substantively different than what many people of European descent tend to mean by that word. The Inuit Circumpolar Council, for example, describes what Inuit mean by "subsistence" in its document *Inuit Arctic Policy* (2016 edition) (Inuit Circumpolar Council, 2016, p. 29):

> *"An Inuit Arctic Policy must recognize that indigenous "subsistence" is a highly complex notion that includes vital economic, health, social, cultural and spiritual dimensions. The harvesting of renewable resources provides Inuit with food, nutrition, clothing, fuel, shelter, harvesting equipment, and income. Subsistence means much more than mere survival or a minimum living standard. It is a way of life that requires special skills, knowledge and resourcefulness. It enriches and sustains Inuit communities, in a manner that promotes cohesiveness, pride, and sharing. It also provides an essential link to, and communication with, the natural world of which Inuit are an integral part."*

For Inuit, "subsistence" refers to great wealth, stability, and social cohesion; for Europeans, it tends to refer to bare necessity, precariousness, and reduced socioeconomic participation. As Kuokannen observes (Kuokkanen, 2011, p. 218).,

> *"[f]or many, the term 'subsistence' carries negative connotations of primitive ways of life, a low standard of living, or 'eking out' a wretched existence in conditions of poverty. For others, it refers to 'primitive' societies of the past or rural communities in the developing world […]"*

It is typically this latter interpretation of subsistence that has worked its way into international policies, and has influenced the positions of many animal rights organizations (such as, IFAW and PETA) (The European Commission, 2009). The importance of the commercial trade in seal products in Inuit communities is far less understood around the world and has historically been ignored in discussions of sealing and in policy decisions (Arnaquq-Baril, 2016; Commission of the European Communities, 2008).

Like any other nation, as proclaimed through the United Nations Declaration on the Rights of Indigenous Peoples, Inuit have the right to uphold their own economic systems and practices, and prosper from these systems even if this contradicts what European and European-descended cultures might construe as "normal" economic practices. Infringing on this right, between 1950–1975, it became the policy of the Canadian government to force Inuit to practice a "subsistence" lifestyle, in isolation from modern society, or to fully practice and participate in the culture and wage-labour economy of white settler society. A formal Canadian policy statement from 1956 describes this as such (Qikiqtani Truth Commission, 2013):

> *Where [Inuit] in remote areas are relatively free from contact with white civilization, it is planned to leave their present economy as undisturbed as possible. In those areas where there is already permanent contact, integration with the white economy will be*

> *encouraged. Between these two extremes employment of Eskimos will be encouraged, provided it does not interfere unduly with their normal life. It is also planned to diversify the Eskimo economy and to continue to transfer families from unproductive areas to regions where game is more abundant or employment is available.*

Inuit participation in the international market for seal products allowed Inuit to participate in the global economy while maintaining their culture and traditions. As Inuit Tapiriit Kanatami, the national representational organization protecting and advancing the rights and interests of Inuit in Canada, puts it (Inuit Tapiriit Kanatami, 2004, p. 14):

> *We cannot pursue avenues leading to new economic development if they ignore or impact upon our continuing ability to hunt or to earn an income from the application of traditional skills. Family members continue to contribute to household incomes that are derived from several different sectors of the new economy. In this way we are able to balance the emerging opportunities with our stable and sustainable traditional hunting and social activities. As part of our new political position we are able to support and strengthen our sustainable attachment to the territorial and resource base of our culture through direct participation in newly established management boards or through co-management programs.*

The notion that Indigenous Peoples who practice subsistence hunting languish in poverty stems from European prejudices dating back to the earliest stages of colonial expansion and persist today. For example, a poll by CTV news in 2011 revealed that a staggering 69% of southern Canadians believed that northerners live exclusively in igloos (Johnson, 2011). In reality, Inuit in Canada have been trading and interacting with Europeans since at least the 1700s. This trade, along with the introduction of the Christianity, wage-labour, novel diseases, and a policy of assimilating Inuit to western ideals and eliminating their culture, irrevocably changed the Inuit lifestyle (Truth and Reconcilliation Commission of Canada, 2015). By the 1920s, due to the unsustainable harvesting of whales by European settlers (*ibid.*, p. 12), Inuit communities had been compelled to enter the newly-fashionable fox fur trade, which also had negative impacts for them:

> *The best strategy for fox trapping required small groups to spread out over a large region. This tended to break apart our traditional social groups and to reduce the potential for cooperation that was so essential for our acquisition and sharing of food, skills and social responsibilities. In addition, the places where there was good trapping frequently did not coincide with our preferred hunting areas. When we talk to elders who remember these times they explain how their decisions were taken over by the fur trade who controlled the Inuit through his power to issue credit and to collect debts. (ibid.)*

With the onset of the great depression and the world wars, the market for arctic fox declined precipitously. These trends resulted in further hardship for Inuit, with many communities facing starvation.

American miliary presence in the Arctic (which at times numbered 3 times more than Inuit), the Hudson Bay Company, and popular media raised awareness of these issues, which initiated welfare programs. Prior to 1950, most Inuit lived in small, groups of up to 30 people, moving by dog team or boat depending on the season and to pursue wildlife (Qikiqtani Truth Commission, 2013). By 1951, 61.8% of Inuit family income was derived from welfare (Hudson, 2012). Without wanting these financial costs, and with an interest in establishing a Canadian military presence in the Arctic, the Canadian government began a series of relocation programs in 1950. As noted in the above policy statement, these programs were designed to either assimilate Inuit to settler economies and cultures, or re-establish the "traditional" way of Inuit life. Both extremes resulted in hardship for Inuit. For example, in 1953, in perhaps one of the greatest human rights atrocities in Canadian history, Inuit families were separated and relocated from Inukjuak Quebec to Grise Fiord on Ellesmere island in the high Arctic, the northernmost Island in Canada—more than 2,000km due north (approximately the same distance lies between Whistler BC, and the border of Mexico)—without food, water, shelter, or informed consent, under the faulty assumption that igloos would be created, natural resources would be utilized, and the relocated Inuit would thrive by living off the land (Hudson, 2012).

Other relocation programs were designed to concentrate Inuit in towns, so that the government could more easily implement social services, and achieve other goals (Wenzel, 1996). Some Inuit relocated voluntarily to permanent settlements; however, others were coerced or threatened by government authorities to move, and were often not given a choice, especially in whether to send their children to attend schools (Qikiqtani Truth Commission, 2013). These relocations drastically affected Inuit lives in many ways. One consequence of the relocation was the demise of sled dogs (qimmit). Sled dogs were very important to Inuit culture and livelihoods. However, as a result of the concentration of sled dogs in permanent settlements amongst settlers, new laws were put in place which resulted in the killing of hundreds, if not thousands of sled dogs by the Royal Canadian Mounted Police. In addition, after relocation, Inuit became more dependent on the wage economy, but there were not enough jobs and food insecurity was prevalent (Qikiqtani Truth Commission, 2013). This made it difficult to feed dogs, and dogs became less useful in permanent settlements, because there were few hunting opportunities within reach of dog teams (Wenzel 1996, p. 123).

In 1961, a tanning process had been developed in Norway that made seal skins suitable for the international market (Wenzel, 1996). Inuit quickly participated in this market and used the funds to finance snowmobiles. The importance of the sealskin market in all this was twofold, according to Wenzel:

> *In many respects […] the emergence of sealskins as an export commodity had substantial ecological advantage for Inuit in that, despite expensive capitalization costs, the tools sealskin monies provided allowed Inuit more control over local economic relations than they had experienced since the collapse of the arctic fox trade. As well, there were also significant socio-cultural effects, the most important of which in the 1960s and 1970s were that sealing: 1) allowed every Inuk to participate in the cash aspect of the North's economy through the practice of indigenous, not imported, skills; 2) sealskin sales helped*

> *secure the food component of local communities by insuring that the equipment needed for hunting was readily available. (ibid.)*

Forced relocations and their consequences resulted in famine in many communities and the death of many Inuit, despite Inuit adapting new economic and technological forms to their needs. Relocation was one component of an ongoing genocide perpetrated by the Canadian government that continues to affect Inuit lives (e.g., residential schools and the 60's scoop) (Tester, 1994). Without adequate economic or hunting opportunities, Inuit became more reliant on store-bought foods without enough economic opportunity or government support to meet their nutritional requirements. The impact of the lack of economic opportunity on food provisioning was exacerbated by the remoteness of Inuit communities. This colonial history still resonates in Inuit society today, where store-bought foods are 2–3 times more expensive to purchase than elsewhere Canada (Hoover et al., 2017), and the prevalence of food insecurity among Inuit is 4.7–7.5 times that of the national average (Rosol et al., 2016). The monetization of the Northern economy, Wenzel argues, severely disadvantaged Inuit across the Canadian North (1996, pp. 134–136), forcing Inuit to defend their culture with creative adaptations.

The importance of seal harvesting in Inuit communities is readily apparent through the testimony of Inuit (Peter et. al, 2002; Inuit Tapiriit Kanatami, 2004; Arnaquq-Baril, 2016). This importance is not adequately captured through the scientific literature. As Wenzel points out, "[t]he importance of ringed seals, and sealskins, to the kind of integrated economy of Inuit communities after centralization, in which one sector is monetized and the other not, cannot be underestimated" (*ibid*, p. 135). Nonetheless, the available literature on the contribution of seal harvesting to Inuit diets provides some data to quantify the importance of seal harvesting to Inuit diets. An Inuit community in Clyde River reportedly harvested 275,000 kg of country foods between July 1971–March 1974, of which 72% (200,000 kg) was ringed seal meat. This meat would have cost the community CAD 1.6 million to replace with locally available commercial meat products. Further, 76% of the ringed seals caught were sold, which generated CAD 64,000 for the community (Wenzel, 1996). Research from the 1970s and 80s suggested that ringed seals contributed up to two-thirds of the edible weight of all wildlife harvested in the eastern Canadian Arctic (Malouf, 1986).

More recently, in the summer and fall of 2007 and 2008, 24-hour dietary recall surveys were conducted in Nunavut, Inuvialuit Settlement Region, and Nunatsiavut. It was found that seal contributed most to nutrient intake in Baffin island, where seal meat generated 3% of total caloric intake, 9% of total protein intake, and 35% of iron intake (Rosol et al., 2016). In a small study of two communities in Nunavut with only 87 respondents, bearded seal was consumed by 2% of respondents and seal fat contributed to 35% of vitamin A intake (Sharma et al., 2010). Using a 30-day recall survey of 211 adults in 3 communities in Nunavut, it was found that cooked seal meat was consumed by 37.9% of respondents, and raw seal meat by 12.3% of respondents, and the average portion sizes were 184 g and 195 g, respectively (Sheehy et al., 2013). Lastly, a 24-hour dietary recall survey from 2 communities in the Inuvialuit Settlement Region found that seal meat made up 7.2% of iron intake (Sharma et al., 2009).

The importance of ringed seal to the diet of Inuit in Canada can also be estimated through the available harvest data. In Nunavut, at least 25,086 ringed seals, and lesser numbers of other seals are harvested each year (Priest and Usher, 2004). One ringed seal yields approximately 18kg of meat (Ashley, 2002). Therefore, the harvest of ringed seals in Nunavut today likely provides at least 451,548kg of wild meat per year for its 38,780 inhabitants in Nunavut. That is equivalent to 2,654,650 meals (based on a 6 oz portions of meat), or over 68 meals per person, per year in Nunavut.

Human dimensions of science-based wildlife management

Fisheries management in Canada is influenced by science, but not determined by it. Stakeholders, external groups, and the opinions of wildlife managers all have influence on wildlife management in Canada. The opinions of these groups may influence fisheries management at many stages, including the establishment of stock conservation zones.

As described in Section 5, in accordance with the precautionary approach, fisheries management is based on the establishment of three zones that signify the state of a stock: the critical, cautionary, and healthy zone. In a technical document describing how Canada will implement the precautionary approach, it is clear that all zones will be determined by the best available science (DFO, 2006); however, the Sustainable Fisheries Framework subsequently relegated science to an advisory role for many fishery management decisions (DFO, c2009). According to this more recent framework, the critical zone of a stock is based on scientific advice, but the establishment of the cautionary zone is much more complicated. The cautionary zone is "developed by fishery managers informed by consultations with the fishery and other interests, with advice and input from science" (DFO, c2009). The cautionary zone is meant to indicate when a stock is at risk of irreversible damage (i.e., at risk of entering the critical zone). Therefore, it would seem imperative that science plays a key role in defining at which point this risk occurs. Instead, members of industry (which have an incentive to maximize off-take) help decide when the stock is at risk of collapse (Winter & Hutchings, 2020).

If a stock is in the healthy zone, socioeconomic factors alone determine the "target reference point", that is, the ideal level of abundance, at which the stock should be maintained. The target reference point must lie within the healthy zone, or directly on the healthy-cautious zone boundary. Fishery managers may choose to set the target reference point on the boundary of the cautious zone, if they prefer that the stock be at the lowest abundance allowed under the precautionary approach. Conversely, fisheries managers may choose to set the target reference point at the highest level possible (defined by the stock's carrying capacity), to achieve maximum sustainable yield (the maximum amount of resource extraction that can be sustainably derived year after year) (DFO, c2009).

After the initial conservation zones are set, interested parties may continue to impact management decisions. There are basic guidelines to follow when a stock is in the cautious and critical zone; however, these basic guidelines are open to interpretation, which allows the opinions of industry and fishery managers to influence management decisions. For example,

when a stock enters the critical zone, official guidance states that offtake must be reduced to the lowest possible level (DFO, 2006). Importantly, what defines the "lowest possible level" is subjective. Some wildlife managers may interpret "lowest possible level" to mean all offtake must cease, while others may interpret this to mean that the resource may be exploited as required to keep those who depend on the resource out of poverty, or to keep those who depend on the resource prosperous. For example, northern cod remain in the critical zone, and offtake is kept at the "lowest possible level"; however, the stewardship fishery results in the harvest of over 10,500 t of cod per year (DFO, 2021). Further, while all Atlantic cod stocks are in the critical zone, certain stocks allow directed fisheries while others do not (Winter & Hutchings, 2020).

Related to cod recovery is the abundance of Capelin. As of 2020, cod have been showing increasing signs of food limitation, namely, a reduction in stomach contents (primarily capelin), and an increase in cannibalism. Capelin were forecasted to decline in 2020, which was predicted to further reduce cod productivity (DFO, 2021). While the critical, cautious and healthy zones are undefined for capelin, they exhibited a significant population collapse in the early 1990s to less than 2.5% of pre-collapse levels (DFO, 2021). Scientific advice recommends that removals from all sources be kept at the lowest possible level. After consultation with industry, however, the average quota for capelin between 2010–2020 has been 22,000 t per year. This quota was not determined by science, but rather socioeconomic considerations and the stock has not recovered (DFO, 2022a; Jubinville et al., 2022).

Apart from the above mechanisms that allow interested parties to influence management decisions, there are many other nuances that can obscure the role of science in wildlife management. For example, harp seals had a quota of 400,000 seals per year between 2011–2016, the last year quotas were announced. This is despite scientific advice from the Canadian Science Advisory Secretariat in 2014 (Hammill, Stenson, et al., 2014). This research demonstrated, based on a current population size of 7.4 million animals, that if harp seal reproductive rates are similar to those of the previous 5 years (2008-2013), an annual harvest of 400,000 harp seals had 91% chance of bringing the harp seal population into the cautious zone (a 30% reduction), a 60% chance of reducing the harp seal population by 50%, and a 21% chance of bringing the harp seal population into the critical zone (a 70% reduction). Instead of 400,000, the authors found that a quota of only 125,000 harp seals would be appropriate (i.e., give an 80% probability of the harp seal population remains in the healthy zone) (Hammill, Stenson, et al., 2014). It is, therefore, very unclear, as to why such a high quota was announced in 2015 and 2016, after this research was released.

This quota may have been set too high because the scientific evidence was interpreted differently. For example, the same research suggested that if reproductive rates were similar to the last 10 years instead of last 5 years, an annual harvest of 400,000 harp seals only had a 35% chance of reducing the harp seal population size by 30%, an 11% chance of reducing the population by 50% and a 3% chance of reducing the population size by 70% (and into the critical zone) (Hammill, Stenson, et al., 2014). Therefore, it is possible that fisheries managers only considered the less conservative scientific estimate. This latter possibility is in violation of the

precautionary approach and DFO's Sustainable Fisheries Framework which states that the more conservative estimate should be used:

> *"the PA [precautionary approach] is, in general, about being cautious when scientific information is uncertain, unreliable or inadequate and not using the absence of adequate scientific information as a reason to postpone or fail to take action to avoid serious harm to the resource" (DFO, c2009);*

and is in violation of the advice from the research scientists providing the advice (Hammill, Stenson, et al., 2014):

> *"Scientists provide regular advice to managers based on biological assessments of an exploited resource. These assessments attempt to predict changes in the resource by incorporating information on catches, estimates of recruitment, and indices of abundance into a population model (Cooke 1995). Because the information is often incomplete and estimated model parameters are subject to natural variability, the resulting advice has considerable uncertainty.*
>
> *In the past, failure to appreciate the risk associated with this uncertainty has led managers to be more aggressive when setting exploitation levels, often with catastrophic results. The collapse of northwest Atlantic cod (Gadus morhua) stocks and many large whale populations are examples where traditional management approaches have failed (Rice and Rivard 2003; Baker and Clapham 2004)."*

During the same time, quotas for grey seals were also likely too high, and could have caused a substantial reduction in grey seal population size if they were reached each year. The quota for grey seals was 60,000 between 2011–2016 (the last year quotas were announced). In 2014, the Canadian Science Advisory Secretariat determined that an annual harvest of 60,000 grey seals had an 81% probability of reducing the grey seal population by at least 50% along coastal Nova Scotia, a 62% chance of reducing the population by at least 50% in the GOSL, and a 30% change of reducing the population by at least 50% on Sable Island, after 30 years (Hammill, den Heyer, et al., 2014). The Advisory Secretariat was not asked to give the estimated probability of the stock falling into the critical zone. Instead of 60,000 animals per year, this research suggests that a quota of only 35,200 would be appropriate (i.e., give an 80% probability that the grey seal population remains in the healthy zone) The report clearly states that the TAC at the time would likely significantly reduce the seal population size, and emphasized the uncertainty around estimates:

> *"Based on this assessment of the population, harvest levels at 50,000 grey seals or more, even with a harvest comprising 95% pups, have a moderate to high probability of resulting in a population decline below N70 [i.e., into the cautious zone] and N50."*

Quotas for harp and grey seals in 2015 and 2016 appear to have been set despite scientific advice suggesting that this would likely cause substantial declines in the seal population, and

further, that these reductions could not be detected for 10–15 years (Hammill, den Heyer, et al., 2014). It is possible that harp and grey seal quotas may have been higher than scientific advice at the time, on purpose due to ongoing pressure to reduce seal populations (CBC, 2010; DFO, 2016; Hammill & Swain, 2011). It is also possible that the scientific evidence was interpreted differently or not given due consideration by managers. Conversely, that quotas were not changed after this scientific research was released may simply reflect the time it takes for scientific advice to influence management decisions. Lastly, it may have been that since harvest levels were so far below quotas, managers felt that adjusting the quota was unnecessary.

Interestingly, after a review of the seal industry in 2001, the Eminent Panel on Seal Management also found that quotas were historically too high. They found that if the quotas were reached each year, the harp seal population would likely decline (McLaren et al., 2001):

> *"The objective of [the harp seal] management strategy is not entirely clear to the Panel. The 2001 Seal Management Plan (DFO 2001a) simply states that the objective is that the hunt is "managed on a long-term, sustainable basis." However, this is rather different from the precautionary approach used in setting TACs for fish stocks in Atlantic Canada, where one of the management objectives is a low probability that a stock will decline. In the case of the harp seal TAC, there is a rather high probability (approximately 50%) that the seal population will decline if the TAC is taken in full each year."*

The most recent scientific advice suggests that an annual harvest of 375,000 harp seals and 77,300 grey seals would have an 80% probability of keeping these populations within their healthy zones (DFO, 2022b; Fisheries and Oceans Canada, 2020). Importantly, this harp seal estimate was based on an older population model, which suggested that harp seals abundance was 7.6 million in 2019 and the population was increasing. A more recent model suggests that the harp seal population was only 4.7 million animals in 2019 and was stagnant (Tinker et al., 2023). This new model would very likely result in a lower number of harp seals that could be sustainably harvested, because the population size is lower, and because juvenile survival is much lower than previously thought, among other reasons (Tinker et al., 2023). The variation in our understanding of the number of seals that can be sustainably harvested over the last 10 years alone strongly suggests the need for caution when establishing quotas.

Global perspective

While fishermen, industry and other parties directly impacted by sustainable-use activities may influence wildlife management decisions, people who are completely unaffected by the activity can have just as much, or indeed more influence, over management decisions. In the globalized world we live in today, the opinions of people in cities around the world influence the practices of peoples in rural communities. This trend has been observed in other activities including "trophy hunting", in Africa (IUCN, 2016). Unfortunately, these opinions can have negative consequences for relatively poor people in rural communities, who depend on sustainable use activities for their livelihoods.

This is especially true in the sealing industry, where over a hundred million dollars were donated each year to end the seal hunt (Livernois, 2010). The anti-sealing movement uses imagery to galvanize people from distant urban settings to donate money to end the seal harvest. These donations are then used to finance complex campaigns that put pressure directly on wildlife managers and governing authorities (such as the Canadian seafood boycott), or on local government agencies to pass regulations to restrict the trade of seal products (such as the EU importation bas in 2009), and to reduce the market for seal products in general, by impacting consumers' opinions on seal products (Hennig, 2018).

For example, pressure from the anti-sealing movement alone resulted in the Canadian government banning whitecoat and blueback hunting in 1987 (Malouf, 1986). From a resource management standpoint, it makes no difference whether a seal is harvested at less than 1 week of age (when it is a whitecoat), or 2 weeks of age (when it is a raggedy jacket). In one sense, the banning of the whitecoat hunt improved animal-welfare, because a small proportion of nursing seals will remain to defend their young when approached by a sealer, and this caused stress to the animals (Daoust, personal communication, 2023). In contrast, there is also a case to be made that banning the harvest of whitecoats resulted in worst animal-welfare outcomes. Banning whitecoat harvests resulted in virtually all seals being shot instead of clubbed at the Front (but not in the GOSL hunt). While clubbing seals results in immediate unconsciousness, shooting seals from a distance carries the possibility of a non-fatal shot, and thus may allow the animal to suffer until it is shot again, or retrieved and rendered unconscious with a club. Perhaps more importantly, the change in regulations may have also resulted in a greater number of seals being struck and lost, because beater seals are able to flee into the water (and may also be shot in the water) when compared to whitecoats which do not swim (Daoust et al., 2002; Daoust & Caraguel, 2012; Sjare et al., 2000).

With this said, external oversight on any industry is not necessarily bad. For example, pressure from external organizations motivated the Canadian government to implement many beneficial regulations to improve the conservation and welfare of seals (e.g., establishing quotas and regulated harvest methods). Undoubtably, however, there has been a disproportionate amount of largely unfounded criticism on the sealing industry, which has had profound negative impacts on Indigenous and non-Indigenous sealers in Atlantic and Arctic Canada (Arnaquq-Baril, 2016).

Mental models are frameworks in peoples' minds that are used to make sense of new concepts. Mental models allow people to draw on what they know to understand and make predictions about new concepts. For example, people who want to understand the flow of electricity may think of it as similar to the flow of water through a pipe; or, people who want to understand an atom, may think of it as a series of large and small rapidly moving balls (Jones et al., 2011). Mental models are unique to everyone, because they are a cumulation of each person's experiences, values, and beliefs. In the context of wildlife management, people tend to understand wildlife issues, based on preconceived understandings of things that they deem to be similar (Jones et al., 2011). This may explain why, when people are exposed to a seal with tears (seals do not have lachrymal ducts like terrestrial mammals do), they assume that the seal is suffering, or when they see a seal being clubbed, they think it is inhumane. Oftentimes,

implementing conservation policy and decisions may impact, or be judged by, many different groups of people, each with their own mental models that describe how humans should interact with nature. Researchers are increasingly trying to understand the mental models of various stakeholders interested in conservation decisions. Understanding the different perspectives on a resource can help address misconceptions pertaining to a resource/sustainable use activity, and predict what responses can be expected following the implementation of management decisions (Moon et al., 2019; van Velden et al., 2020). In terms of sealing, gaining a deep understanding of the viewpoints from seal hunters, fishermen, and anti-sealing groups may help address misinformation, and predict the reactions to future management decisions.

Section 9: Anti-sealing Sentiment: A Sustained Campaign

Objections to fur

Despite humans' long history of using animal fur, strong objections to the use of fur emerged during the late 20th-century environmental movement (Olson & Goodnight, 1994). The societal perception of fur began to change in the late 1970s and early 1980s as anti-fur organizations started to present its use as cruel and problematic (Godart et al., 2023). Animal rights activists focused on fur campaigns throughout the 1980s and 1990s, and the era became characterized as the “anti-fur season” (Bollard, 2019; Faiers, 2020). Animal rights organizations and activists denounced the use of animal fur as clothing by showcasing misconduct within the fur farming industry (Jin & Shin, 2020). These sentiments ultimately generated significant public debate (Olson & Goodnight, 1994).

Several notable anti-fur campaigns emerged during this period. Lynx, for example, emerged in 1985 as a prominent British anti-fur organization (Faiers, 2020). The organization was well-known for its “It takes up to 40 dumb animals to make a fur coat…But only one to wear it” campaign (Faiers, 2020). People for the Ethical Treatment of Animals (PETA) in the United States used extremism to lobby against the fur industry, with their popular slogan, “I’d Rather Go Naked than Wear Fur”, and their “Fur is Dead campaign” (Deckha, 2008; Faiers, 2020).

The anti-fur movement made a significant impact on the fashion industry and government legislation. Despite the initial refusal to give up fur, several high-fashion houses such as Calvin Klein in 1994, Ralph Lauren in 2006, Vivienne Westwood in 2007, Georgio Armani in 2016, Gucci in 2018, and Prada in 2019, have become fur-free after persistent pressure from activists over the years (Murray, 2019; Street, 2019). The social stigmatization of fur also resulted in significant political consequences. For instance, public opposition to fur farming has been active in the UK since the late 20th century, which resulted in the government banning fur farming under the Fur Farming Prohibition Act of 2000 (Halliday & McCulloch, 2022). Fur farming has been prohibited in various countries, such as Austria, Belgium, Serbia, Italy, Ireland, and France; further, a fur farming ban will be implemented in Norway in 2025 (Four Paws International,

2023). Changes in international policy and within the fashion industry demonstrate the influence that anti-fur campaigns continue to have.

Sealing protests

Gaining traction in the late 20th century, anti-sealing protests have been a source of significant public controversy, and emotional baggage for sealers. Anti-sealing "mindbombs", graphic imagery used to evoke strong emotional responses and change people's worldview, started to emerge in media by the 1960s and 1970s (Dauvergne & Neville, 2011a; Marland, 2014). The most common strategy during this time was to present images of harp seal pups (coined "baby seals") being killed and "crying" (tears form naturally in young seals to prevent desiccation and because, in contrast to terrestrial mammals, seals do not have lachrymal ducts that would normally carry tears to the nasal passages) (Dauvergne & Neville, 2011a). These images were highly effective because whitecoats are beautiful young animals and evoke strong feeling of sympathy. Seeing these animals being struck with a club, with red blood on white ice and snow was very evocative. The use of mindbombs was supplemented with other effective tactics in the 1970s and 1980s. Elaborate media stunts, videos, and petitions were used to change public opinion (Dauvergne & Neville, 2011a). For example, animal-rights organizations brought celebrities and American Airlines stewardesses to seal harvesting areas; sprayed whitecoats with paint to reduce their pelt value; chained themselves (Greenpeace activists) to sealing vessels attempting to leave port (people were chained both to the deck and to the exterior of the vessel while swimming and wearing a wetsuit); and physically interfered with the hunt by protecting seals with their bodies, and blocking sealing vessels with their ships (Dauvergne & Neville, 2011b; Malouf, 1986; Wright, 1984).

The strength of the anti-seal movement heightened throughout the 1980s as a result of the cooperation and expansion of environmental movements and the North American animal rights movement (ARM) (Rodgers & Scobie, 2015). Together, the outreach of ARM and the emotional images of seal pups created the opportunity for successful global campaigning (Rodgers & Scobie, 2015). The sealing protests during this time led to the EU's 1983 sealskin ban by the European Economic Community (Renner, 2023).

Anti-sealing organizations targeted Canada again in the 1990s and 2000s as a result of the resurgence of the sealing industry (Dauvergne & Neville, 2011a). During this time, anti-sealing organizations used similar tactics that were successful in the 1970s and 1980s to once again disrupt markets (Dauvergne & Neville, 2011a). The tactics of anti-sealing activists and organizations were ultimately a success. After being plagued with anti-sealing messaging, citizens were beginning to see the hunt as a needless massacre of a vulnerable species, with sealers being perceived as killers (Dauvergne & Neville, 2011a). This narrative altered the global perception of Canada, as the image of a seal being clubbed became one of the most prominent visuals associated with Canada (Marland, 2014). Such propaganda put pressure on governments, the public, and hunters to stop sealing (Burke, 2023; Rodgers & Scobie, 2015). In addition to propaganda, anti-sealing groups also specifically targeted members of parliament to encourage legal reform. For example, leading up to the vote on the 2009 EU seal products ban, Humane Society International implemented a 12-week advertising campaign in the

European Voice, an important journal for EU policy-makers, with photos of harp seals and headlines such as ""bloody fate . . . the EU can stop", "doomed to die . . . unless the EU acts now", or "save me from a horrible fate." In addition, HSI personally approached each member of parliament multiple times to provide them with flyers, fake voting cards, DVDs and plush toys on the seal hunt and encouraged them to vote in favor of the ban; HSI hung flyers on every office door of each member of parliament; issued position papers on the seal hunt and on its legal basis; put advertisements on large screens in Strasbourg and Brussel; distributed booklets on the hunt via email to each member of parliament; created two online advertising campaigns; published advertisements in newspapers in France, Spain, Ireland, Germany, Italy, Hungary, Romania, Portugal, and Poland; and took pictures with members of parliament in front of anti-sealing banners _. The size, power, and influence of the anti-sealing movement cannot be understated. Without appropriate funds, or indeed the time and energy resources that can be allocated by multiple independent organizations, Newfoundlanders and Inuit had little chance of countering this campaign.

As a result of increased sealing opposition, the European Parliament overwhelmingly voted in favor of a ban in 2009 with 550 votes in favor, 49 against and 41 abstentions. This ban prohibited the sale of seal products within the EU, with exemption for products derived from certain Indigenous Peoples and from hunts conducted for marine resource management (although, see section 11) (Rodgers & Scobie, 2015).

People for the Ethical Treatment of Animals (PETA)

Founded in 1980, PETA is one of the most well-known organizations that has emerged from the animal rights movement (Matusitz & Forrester, 2013). Co-founded and managed by Ingrid Newkirk, PETA operates through the philosophy that animals should never be killed by humans, under any circumstance (Matusitz & Forrester, 2013). PETA is known for its controversial undercover investigations in slaughterhouses. These investigations have resulted in major fast-food corporations to change and source meat from producers with good animal welfare practices (Matusitz & Forrester, 2013). Over the years, PETA has become infamous for its shock advertising to gain publicity. Like many animal-rights organizations, publicity is essential for the organization to raise funding and influence public opinion (Matusitz & Forrester, 2013).
PETA typically uses two strategies for their campaigns: pressure and shock value. PETA uses pressure campaigns by persistently targeting existing practices through "name and shame" strategies, which include retailers and consumers boycotting PETA's targets (Bromberg, 2021). PETA also uses shocking imagery and slogans to promote its messages, mainly by heavily relying on celebrity endorsements and sexual imagery (Deckha, 2008). Their shock campaigns have also included its "I'd Rather Go Naked Than Wear Fur" campaign from 1990 to 2020 which objectified women, the "Holocaust on Your Plate" campaign that compared killing chickens to the Holocaust, and the "End Slavery" campaign that compared zoo animals to enslaved people (Deckha, 2008; Matusitz & Forrester, 2013).

PETA's actions have been criticized because, while they advocate for animal rights, the organization simultaneously diminishes the rights of marginalized groups and perpetuates negative stereotypes (Deckha, 2008). Critics have observed that PETA's opposition to the

commercial seal hunt has had “neo-imperialist” attitudes toward Inuit communities, which relates the organization’s actions to modern-day colonialism (Faiers, 2020). This is well-exemplified by PETA continuously vilifying the seal hunt and considering it to be a massacre for the sake of fashion (PETA, 2009).

While PETA has stated that its campaign against the Canadian seal hunt does not target Indigenous sealing (CBC News, 2017; Lennon, 2010), its messaging does not differentiate between the hunts or portray Indigenous seal harvesting in a positive light (Lennon, 2010). For instance, in 2017, the organization released a graphic video of the seal hunt along with a link to an online petition for Prime Minister Justin Trudeau to stop *all* federal subsidies for hunters (CBC News, 2017). In reality, PETA’s negative rhetoric have had devastating consequences for both Indigenous and non-Indigenous sealing communities (CBC News, 2017).

Greenpeace

Greenpeace was one of the most prominent organizations leading the anti-sealing campaign between 1977 to 1986 (Burke, 2021; Rodgers & Scobie, 2015). Known for its media strategies, Greenpeace has launched many media campaigns, protests, and publicity stunts to end the hunt. The “Save the Seals” campaign was first launched in 1975 and was successful in gaining attention and growing the organization (Rodgers & Ingram, 2019). In 1972, Greenpeace had one office with $9,000 in funds but expanded internationally with millions of dollars in annual revenue by 1977 (Rodgers & Ingram, 2019). The organization was also well-known for its media stunts towards the seal hunt, such as sailing the Rainbow Warrior to spray green dye on whitecoats in 1981 and 1982 (Dauvergne & Neville, 2011b; Rodgers & Ingram, 2019).

Over the years, Greenpeace has used a variety of different messaging tactics to target the Canadian seal harvest. For instance, in 1977 the organization claimed that seals would go extinct within 5 years if hunting quotas were not reduced, but when proven to be false, Greenpeace changed to an animal-rights position, claiming that the hunt was cruel and should be completely banned (Myers & Summerville, 2004). Greenpeace recognized the advantage of focusing on morality to stop the seal harvest. Paul Watson, an early member of Greenpeace, explained in 1978, the topic of sealing was profitable because images of young seals being killed are inherently exploitative (Rodgers & Ingram, 2019).

The organization made a notable shift away from sealing in 2004, when it did not oppose Canada’s seal quota increase (Rodgers & Ingram, 2019). Its decision was based on the need to target issues that the organization found more urgent (Rodgers & Ingram, 2019). In 2014, Greenpeace stated that it was focusing on decolonizing its organization (Rodgers & Ingram, 2019). Greenpeace chapters in North America subsequently initiated decolonization workshops and developed ‘Indigenous Peoples policies’ to outline their commitment to the Indigenous communities and rights (Rodgers & Ingram, 2019). Despite these efforts, Greenpeace has been criticized for building its multi-million-dollar company with campaigning that has been detrimental to the sealing industry and that its actions are irrevocable (Burke, 2023; Rodgers & Ingram, 2019). The decolonization process included an apology to Indigenous communities by

Joanna Kerr, the Executive Director of Greenpeace Canada, on behalf of the organization that admitted that their campaigning against commercial sealing did economic and cultural damage (Rodgers & Ingram, 2019). Critics have argued that Greenpeace's apology did not adequately acknowledge the damage Greenpeace has done to non-Indigenous coastal communities and that communities should be financially compensated (Burke, 2023; Rodgers & Ingram, 2019).

Sea Shepherd

Paul Watson was an early member of Greenpeace, but was not credited as a founder of Greenpeace by the organization itself. He was unanimously voted out of the Greenpeace organization in 1977, and in the same year started his own organization, Sea Shepherd. While Greenpeace created many media stunts to bring public awareness to the seal harvest, Sea Shepherd used a much more aggressive, even militant, methods in support of its causes. Sea Shepherd has rammed various fishing vessels, and several sunk whaling ships by opening their sea valves. For these reasons, Greenpeace does not like to be affiliated with Sea Shepherd, and wrote an article to this effect in 2008 (Greenpeace, 2008).

Sea Shepherd has spread misinformation about the seal harvest and actively interfered with the seal harvest in the GOSL, sometimes endangering the lives of seal harvesters. In 2005, eleven Sea Shepherd activists were arrested for going within half a nautical mile of the seal harvest without an observers permit. At this time, there was an altercation with a Sea Shepherd activist and a seal harvester (CBC, 2005).

Later, in 2008, the Sea Shepherd vessel Farley Mowat was used to disrupt the seal harvest in the GOSL. The vessel came dangerously close to seal harvesters and was ultimately boarded and seized by the RCMP, and the crew members were arrested. Fisheries officer Mr. Jean-François Sylvestre said the following of this interaction (Standing Committee on Fisheries and Oceans, 2014):

> *…what you see is not a harpoon but rather a water cannon. The effect, however, is exactly the same. In the series of photos you see, the Farley Mowat is going directly for the fishing vessel from Cape Breton, Nova Scotia, and is just about to deploy the water cannon on the fishers.*
>
> *However, there are some things even more dangerous than water cannons. … A few seconds before that, the fishers were on the ice, while the boat was getting closer. That is clearly within the half-mile. It is really quite close. I was onboard the patrol boat that day and we played cat and mouse all afternoon to avoid taking damage from that boat. We then stopped the boat. Of course, all the rules, agreements and approvals from senior management gave us the authority to end this violation. The ship was therefore stopped. I was the first to board the Farley Mowat to arrest the crew. They were led aboard our ship, that is the icebreaker. The Farley Mowat was towed to the wharf in Sydney. Charges were laid in the following days. The fishers' lives were indeed in danger that time.*

> *As you can see on the picture, there are two fishing vessels, a red one and a blue one, which are the same size, about 45 feet. The people on these boats said that they were truly scared that day. Some told us that the Farley Mowat had brushed their stabilizer. Stabilizers are those long arms that are deployed on each side of a ship to stabilize it. The Farley Mowat had missed the stabilizer by a few centimetres. These people were scared. They were truly happy to have us there that day to put an end to that violation and allow them to see to their business and to earn a living.*

Sea Shepherd wrote an article condemning the seal harvest in 2012 (Sea Shepherd, 2012), and in 2017 flew actress Michelle Rodriguez to the ice fields in the GOSL to take photos with whitecoats as a publicity stunt on the 40th anniversary of when Brigitte Bardot did the same (Labchuk, 2017). Opposing the seal harvest is seemingly at odds with the organizations' primary goal, which is to "*to greatly enhance a government's own capacity to patrol, monitor, and enforce their own laws"* (seashepherd.org/our-mission/). Therefore, the organization may have taken a different direction, either because of the collapse of the sealing industry, shifting socio-political viewpoints, or because opposing the seal harvest is no longer profitable to the organization.

International Fund for Animal Welfare (IFAW)

Founder of the International Fund for Animal Welfare (IFAW), Brian Davies, began to call for the end of seal harvesting while working for the New Brunswick Society for the Prevention of Cruelty to Animals (SPCA) (Barry, 2005). Through the SPCA's Save the Seals Fund, Davies aimed to force the Government of Canada to ban the seal hunt with public opposition, decrease European demand for seal products, and gain foreign support to end the hunt (Barry, 2005). The SPCA's campaigns were persistent and successful; for example, one of their early articles, "The Cruel Seal Hunt,'' resulted in nearly 5,000 letters calling for an end to the seal hunt being sent to Canadian parliament, and resulted in significant donations to the SPCA (Barry, 2005). Davies and several directors created IFAW after leading observers and journalists to the Gulf Hunt in 1968 and 1969 (Barry, 2005; Dauvergne & Neville, 2011b). The IFAW was established in 1969 with the proceeds of the Save the Seals Fund, which, by 1968, accumulated 19,000 subscriptions and $23,000 contributions (Barry, 2005).

IFAW was founded with the sole purpose of ending the Canadian seal hunt (Rodgers & Scobie, 2015). By the late 20th century, IFAW was the most vocal opponent of the seal hunt (Rodgers & Scobie, 2015). IFAW's messaging ultimately denounced the seal hunt, particularly claiming that the benefits derived from seal harvesting do not justify the violence inflicted upon seals (Sellheim & Fink, 2022). Large animal rights groups like IFAW have historically relied upon the revenue generated from anti-sealing campaigns to maintain their operations (Fakhri, 2022). IFAW was fundamentally built from its anti-sealing campaign, from which it received a large influx of donations, including nearly C$1.3 million in 1977 alone (Dauvergne & Neville, 2011b).

By 1977, the IFAW accumulated significant international outreach and used its resources to lobby for the EU to ban seal products by increasing Europe's attention to the hunt, in CAD 2.5-

million-dollar campaign. Before the 1983 EU ban, IFAW published full-page advertisements in European newspapers urging readers to write to their Parliament Members to ban the importation of whitecoat and blueback seal pelts (Dauvergne & Neville, 2011b). Approximately five million letters were written to EU parliament during this time to end the sale of seal products (Malouf, 1986a). The international campaign by IFAW started social debates in Great Britain, Italy, the Netherlands, France, and Germany (Renner, 2023). Such initiatives directed national legislation and initiated action in the European Parliament, specifically resulting in the ban of whitecoat and blueback seal products in the EU in 1983 (Renner, 2023). IFAW celebrated the 1983 ban, with Davies referring to it as a "victory for Canada" (Dauvergne & Neville, 2011b).

IFAW continued its aggressive anti-sealing campaigns after the EU ban. In late 1983, IFAW encouraged consumers and supermarkets to boycott all Canadian fish products until the Canadian seal hunt was closed (Dauvergne & Neville, 2011b). IFAW distributed over 4 million postcards to Britain consumers to expand the campaign (Dauvergne & Neville, 2011b). Britain's largest supermarket chain, Tesco, joined the boycott in early 1984 and Safeway subsequently followed (Dauvergne & Neville, 2011b). IFAW used the same campaign strategy in the United States, which threatened 80% of Canada's fish exports (Dauvergne & Neville, 2011b). Such a significant economic threat to Canadian fish products resulted in a fragmented countermovement. Despite strong support for the seal industry in Newfoundland and Labrador, many citizens started to worry about the economic consequences of these threats to the more prominent industry (Dauvergne & Neville, 2011b). The economic threats resulted in a lack of local incentives for sealing.

IFAW continues to condemn the seal harvest. As of 2024, the group views sealing as unnecessary and wasteful. They argue that the commercial seal hunt exists only to employ those affected by the Atlantic cod fishery moratorium in 1992 (Fink, 2023). This perspective devalues the seal hunt and ignores its complexities.

Celebrity engagement

The use of high-profile celebrity figures has been an instrumental media tactic for anti-sealing organizations (Marland, 2014). This is largely because of the attention and credibility that celebrities give to protests, due to their inherent popularity and status (Lowe, 2017). Celebrity involvement brings forth a perception of legitimacy that the anti-sealing movement uses to broaden its audiences (Lowe, 2017; Webb, 2020). The most prominent celebrities against the seal hunt have been Brigitte Bardot, Paul McCartney, and Pamela Anderson.

Brigitte Bardot started the era of celebrity involvement in the anti-sealing campaign with her visit to Newfoundland, where she hugged a whitecoat in 1977 (Lennon, 2010). Partnered with IFAW, Bardot's opposition brought international attention and initiated Europe's focus on seal products (Lennon, 2010). Indigenous Peoples have heavily criticized Bardot's photo-op. Alootook Ipellie, an Inuk artist and writer, wrote "After Brigitte Bardot," a short story analyzing the consequences of this event (Lennon, 2010). The story's narrator states, "*If I had realized Brigitte Bardot was going to destroy the seal industry, I would have taken her for a long ride in*

my dog team that day and told her about the realities of our lives as hunters and gatherers" (Lennon, 2010). Bardot returned to Canada in 2006 to encourage Prime Minister Stephen Harper to stop the seal hunt, before the government announced the start date of the spring hunt (CBC News, 2006a).

Notable celebrities have followed in Bardot's footsteps. Paul McCartney has been an avid protester against the Canadian seal harvest. In 2006, McCartney and his then-wife, Heather Mills, travelled to the Magdalen Islands, Quebec, to take photos with whitecoat seal pups (CBC News, 2019). The Humane Society of the United States organized the trip (CBC News, 2006b). McCartney expressed that the historical importance of the hunt does not make it justifiable, stating, "Plenty of things have been going on for a long time, like slavery. Just because it's been going on for a long time doesn't make it right" (NBC News, 2006). The couple have also called the seal hunt a stain on the country's reputation (CBC News, 2006b). McCartney and Mills participated in an infamous debate with former Newfoundland and Labrador Premier, Danny Williams, on CNN's *Larry King Live* in 2006. Premier Williams stated that the celebrities were being used by million-dollar animal rights organizations and that they were not informed about the seal hunt (CBC News, 2006b).

Pamela Anderson has also been an active protestor of the seal hunt (Lennon, 2010). Anderson has frequently condemned the government of Canada, calling the hunt a "barbaric massacre" (CBC News, 2009). As an advocate for PETA, Anderson launched PETA's anti-sealing campaign in 2009, which met significant criticism from former Minister of Fisheries and Oceans Gail Shea (CBC News, 2009). Anderson has been known to advocate for whitecoat seal pups, which have not been hunted in Canada since 1987 (CBC News, 2009). In 2013, Anderson, along with Sam Simon (co-creator of *The Simpsons*) and PETA's campaign coordinator, personally delivered a cheque for $1 million to the Canadian Sealers Association (CSA) in St. John's, Newfoundland and Labrador to stop the seal hunt (CBC News, 2013b). The offer has been criticized for its condescending message, with CSA president Eldred Woodford stating, "It's crazy for anyone to think that you can buy out an industry for a million dollars" (CBC News, 2013b). In 2013, there were 9,221 people in Newfoundland and Labrador with a commercial seal harvesting license, thus Anderson's offer was essentially a one-time payment of CAD 108 to each sealer.

Other celebrity endorsements of anti-sealing campaigns have also perpetuated negative stereotypes and misinformation. Kelly Osbourne, for example, has been a spokesperson for PETA, stating, *"I decided to do this baby seal ad for PETA because I feel I have a responsibility to let people know that fur is not for wearing. We're not cavemen anymore*" (Lennon, 2010). Sarah McLachlan posted a letter on the PETA website to former Prime Minister Stephen Harper where she compared the sealers to tobacco and asbestos workers (CBC News, 2019). Other celebrities have penalized Canadian citizens—sealers or not—for the hunt. Morrissey, for instance, refused to play in Canada until the seal hunt was terminated, stating on his unofficial website that the greedy and barbaric hunt is outdated and creates a negative international image for Canada (CBC News, 2019). Some celebrity endorsements are not as direct, which was well illustrated in the aftermath of Ellen DeGeneres' selfie at the Oscars (Knezevic et al., 2018; Rodgers & Scobie, 2015). Sponsored by Samsung, the infamous picture gained US$3 million for DeGeneres' charity

of choice and the Humane Society of the United States received US$1.5 million (Rodgers & Scobie, 2015). The Humane Society of the United States has actively opposed the Canadian seal hunt and was, at the time, preparing their annual campaigns (Rodgers & Scobie, 2015). Comments and actions such as these neglect the nuances of the seal hunt, undermine its modern use, and perpetuate a form of "otherness" towards IPLCs. Anti-sealing organizations use the power of celebrities to further these messages.

There have been celebrities who supported the seal hunt, though they do not receive as much media attention. Anthony Bourdain, for example, had been a vocal defender of the practice. Bourdain had oftentimes contrasted the hunt to industrialized meat production, arguing that the seal hunt creates a more authentic relationship between food and the consumer (Logan, 2013). Bourdain has defended the seal hunt as a necessity within Indigenous communities and, among various supported tweets, condemned the activists for targeting cultural harvests (CBC News, 2013a). In Bourdain's television series, *No Reservations*, he visited an Inuit community in northern Quebec to participate in a hunt and eat seal (Commisso, 2013). Tanya Tagaq, an Indigenous throat singer and musician, has also been a strong supporter of the seal hunt (Stanley, 2019). Tagaq has received significant harassment for posting a picture of her baby next to a dead seal in support of the Twitter movement "#sealfie" (Battistini, 2018). Tagaq has publicly condemned PETA in her speech at the Polaris Music Prize by ending with "Fuck PETA" and has questioned the tactics of anti-sealing lobbyists (Battistini, 2018). She explained the irony that anti-sealing groups are now making money off seals, but the people who are living among them cannot (Battistini, 2018).

Media coverage

The power of media is demonstrated though the history of the seal harvest. Journalism encourages the free flow of information to the public, but when journalism is biased, it can have undue negative consequences. Because there were little efforts to promote seal harvesting and counter the narrative perpetrated by extremely well-financed and persistent anti-sealing interests, media coverage became biased towards an anti-sealing stance. Decades of media coverage of the seal hunt have illustrated a lack of objectivity and authentic reporting. Media attention has been used as a tool by anti-sealing groups to spread misinformation on the seal harvest. Both sides have been aware of the vital role that media plays in their arguments (Lee, 1989). However, the media tactics of anti-sealing organizations relentlessly showcased a biased, yet successful, narrative that has resulted in international controversy and international restrictions. Anti-sealing organizations purposely use imagery, celebrity engagement, and media stunts that will evoke maximum media coverage (Lee, 1989). Since the 1960s, media coverage that opposed the hunt used graphic images to create shock value for audiences. Such tactics have led anti-sealing protestors to be successful communicators, despite the information's inaccuracy (Harter, 2004; Lee, 1989).

To combat anti-sealing propaganda, supporters of the seal hunt started successfully using social media to reach international audiences (Rodgers & Scobie, 2015). Social media has enabled Indigenous voices to respond to anti-sealing campaigns and reach audiences outside of their

communities (Knezevic et al., 2018). This social media movement, *#sealfie*, is characterized by Indigenous people posting pictures of their use of seal products on Twitter, directly contrasting the messaging and images from anti-sealing activists (Rodgers & Scobie, 2015). To retaliate against anti-sealing sentiments, supporters of the seal hunt used *#sealfie* to educate and promote seal harvesting. In contrast to past forms of media, social media allows Indigenous Peoples to present their perspectives on sealing and regain their narrative.

Some media outlets offer positive perspectives on the seal hunt, particularly from Newfoundland. For example, the *Globe and Mail* portrayed sealers as people striving to maintain their traditional way of life and culture, while the local *Telegram* presented sealers as good, hardworking individuals who are facing economic hardship with the decline in the seal industry (Safarov, 2019). Canada's own publicly funded media outlet, the Canadian Broadcasting Corporation (CBC) played a significant role in propagating the anti-sealing narrative by IFAW and others leading up to the 1983 EU ban. For example, CBC aired the Artek Films documentary in 1964 showing a seal being skinned alive by a sealer who was paid to do so by the film crew; CBC was also castigated by Richard Cashin of the Newfoundland Fishermen, Food and Allied Workers' Union for describing the seal hunt as the "murdering of baby seals" in 1977. Within this interview, the CBC placed the same picture of a whitecoat seal "crying" as the background behind Richard Cashin that was widely used as propaganda by anti-sealing interests, and clearly propagated the narrative that the seal hunt was unimportant to local economies and that "seals are only killed for the furs to satisfy the vanity of a few rich people in Europe" (CBC News, 1977; Malouf, 1986a).

Recent debates

Since the collapse of the market for seal products, seal populations have grown to levels unprecedented in 200 years. Most controversy on seals today pertains to their impact on fish stocks and how to deal with an overabundant population (see section 4 for a review of recent science and section 6 for a review of policy documents relevant to seal overabundance). Discussions of implementing a seal cull in Newfoundland & Labrador were re-emphasized in March of 2021 when crabs were found inside the stomachs of seals (CBC News, 2021). Many believe that harp and grey seal consumption of crab and groundfish leads to a loss of economic opportunity. Pressure from the fishing industry led political leaders to debate the need for a seal cull (CBC News, 2021). Former Progressive Conservative Leader Ches Crosbie supported a cull, while NDP Member of the House of Assembly (MHA) Jim Dinn disagreed and stated that a cull would waste seals (CBC News, 2021). Fisheries Minister Elvis Loveless stated that more research needs to be conducted (CBC News, 2021). In March 2023, a federal political debate surrounding the seal hunt was brought forth when federal Conservative Leader Pierre Poilievre stated that he would expand Canada's seal hunt if he became prime minister (Woolf, 2023). Poilievre explained that expansion would solve the overpopulation of seals eating salmon (Woolf, 2023). The claims gained significant attention from various animal-rights organizations and anti-sealing activists, with PETA's honorary director calling the idea "barbaric and unsustainable" (Woolf, 2023).

There have also been recent debates on the sustainability of sealing outside of Canada. For example, in October of 2023, the Center for Biological Diversity stated its intent to sue the National Marine Fisheries Service for failing to protect the Arctic ringed and bearded seals in Alaska, which are listed as threatened (CBD, 2023). The Center for Biological Diversity explained that the National Marine Fisheries Service broke the law by not creating recovery plans and failing to review the status of the ringed and bearded seals every two years, which is required by the Endangered Species Act (Rosen, 2023). The state of Alaska and other entities have disagreed with the listing of ringed and bearded seals as endangered and the formal designation of various areas as critical habitat for these seals (Rosen, 2023). These complaints were taken to federal courts, but the U.S. Supreme Court ruled in favor of the listings in 2018 (Rosen, 2023). To initiate the delisting and cease critical habitat designation of the Bering, Chukchi, and Beaufort seas for the seals, the state of Alaska sued the National Marine Fisheries Service in November and February 2023 (Rosen, 2023). The state has argued that the designation in place is too large and is unjustifiably delaying oil and gas exploration and consequently impacting Alaska's economy (Brooks, 2023; Rosen, 2023). Both these cases are still pending (Rosen, 2023).

Most recently, controversy arose in November 2023 when the EU-Canada summit was held in St. John's Newfoundland with Prime Minister Justin Trudeau. In this meeting, many topics were discussed, including sustainable economic growth. Much to the displeasure of those impacted by sealing, the European ban on seal products was not discussed (Butler, 2023). When asked if seal harvesting was discussed, Prime Minister Justin Trudeau avoided the question but took a positive stance on the seal hunt (Cooke, 2023):

> *"The conversations Canada has continued to have with our EU counterparts on defending the seal harvest in Canada as an important part of local economies and an important part of protecting our fisheries as well, will continue."*

In the same press conference, controversy arose when the President of the European Commission, Ursula von der Leyen emphasized the benefits of the Indigenous Exemption to the seal product ban, stating the following:

> *"I think we found a good balance. As you know, we have a system in place that does not allow in the European Union the placing of seal products on the EU market. However, there are exceptions with regards to seal products deriving from hunts conducted by Inuit and other Indigenous communities who can continue exporting to the European Union markets. And as far as I am informed, the system is working well."*

The President must not have been well informed. Testimony from the Government of the Northwest Territories, the Government of Nunavut, and the Government of Greenland, to the European Commission, as well as statements from many Inuit organizations, make it blatantly clear that the Indigenous Exemption has been nothing short of a complete failure in preventing economic harm to Indigenous Peoples and allowing Indigenous Peoples to retain market access within the EU (see section 13).

Indigenous impact

Indigenous Peoples have been vocal about the impact that anti-sealing campaigns have had on their communities for decades (Burke, 2023). Despite claims from organizations that they are not targeting the Indigenous seal hunt, and exemptions within seal product bans for Indigenous Peoples, Indigenous Peoples have been seriously impacted by international bans, because they are a part of the international market for seal products (Chang, 2020b). In addition to decimating the market value of seal products, anti-sealing activism has significantly changed the lives of people within northern communities (Burke, 2023).

While the anti-sealing movement did not target seal harvesting done by Inuit, it nonetheless likely impacted Inuit communities in Canada the most. The period following the EU 1983 ban is referred to as the "great depression" by Inuit for the impact it had on their communities, in which sealing is a cornerstone of both the economy and culture (Arnaquq-Baril, 2016; Peter et al., 2002). For example, prior to the ban (between 1962–1982), pelt sales in the Northwest Territories (which at the time included both the Northwest Territories and Nunavut) generated CAD 465,299 per year on average, with over CAD 890,000 generated in 1980; after the ban, between 1984–1994, sealing only generated CAD 30,826 on average each year (N. Kogiak, personal communication, 2023). In Nunatsiavut, it reduced the total income of Inuit by 33%. In Pangnirtung, hunters' average income fell from $1,100 to only $202 per year. Apart from income, the impact of the ban can be seen in the number of Inuit hunting in the Northwest Territories (which at the time included the region of Nunavut), which fell from 1,286 to 562 following the ban. Social assistance payments also increased substantially in the region, ranging from an increase of 176% in Clyde River to 443% in Sanirajak. Further, suicide rates reportedly increased among Canadian Inuit after the ban (Malouf, 1986a). Because of the important role that the commercial seal market has in financing hunting activities, the consumption of wild game likely decreased in favor of store-bought foods with lower nutritional value (Peter et al., 2002). It is therefore clear that the 1983 ban, though it provided an exemption for Inuit, had a devastating impact on their income, culture and health.

Anti-sealing activism has led to the stigmatization of Indigenous cultures and livelihoods and acts of cultural violence (Burke, 2023). Supporters of the seal hunt, who are typically from marginalized communities, are at risk of being perceived as morally "less than" anti-sealing protestors, and were often portrayed as "heartless killers" (Burke, 2023). Such moral division is prevalent in anti-sealing messaging. As Brian Davies explained, the imagery of the hunt is an allegory of good versus evil (Barry, 2005).

This perpetual dichotomy recalls the concept of the "noble savage," specifically the "ecological noble savage". This term is used to refer to the racist ideology that Indigenous Peoples are primitive, live in harmony with nature, and are fundamentally separate from the modern world, stuck in a static past (Chang, 2020b; Rodrigue-Allouche, 2015). The otherness and noble savage ideology have been reinforced by activists and have been associated with the cultural colonialism that the 2009 EU ban's Indigenous communities (IC) exception has been criticized

for (Burke, 2023). Inuk lawyer Aaju Peter explains that the IC exception reinforces a separation of the Inuit from the commercial industry, excludes them from discussions of contemporary issues, and exerts control over their participation in modern-day hunting (Burke, 2023).

Economic realities

Anti-sealing protests in Canada had direct economic consequences. Protests over the decades have created market instability which has resulted in fewer sealing opportunities. For instance, seal skin prices fell between 1965 to 1968 while the media was portraying the hunt as inhumane (Dauvergne & Neville, 2011b). The seal industry also experienced a significant decline throughout the 1970s, with the harvest decreasing by 50,000 between 1970 and 1971 being attributed to anti-sealing protests (Dauvergne & Neville, 2011b). The aggressive campaigns against sealing played a significant role in the 1983 EU ban. The consequences of the ban devastated the Canadian sealing industry, with the average price of a seal pelt in 1983 declining to $13, which was half of what it was in 1982 (Dauvergne & Neville, 2011b).

The anti-sealing movement is still active today and the 2009 EU ban is still in effect. Despite initial promises that the ban would not interfere with Indigenous market accessibility and opportunity, this has proven to not be the case. Since the legislation for the ban was first proposed in 2009, the price of seal pelts has decreased by 64% from 2007 levels (Hossain, 2013). While the Government of Canada has been working with Indigenous communities to utilize the Indigenous exception, the ban will continue to limit Indigenous economic prosperity and opportunity within the sealing industry.

Canadian government regulatory response

Since criticism of the sealing industry began in the 1960s, the response by the Canadian government has been to address the concerns of critics through legal reform. The Seal Protection Regulations and the Marine Mammal Regulations have been amended numerous times—arguably every time a valid concern was raised—to ensure that the harvest is sustainable, has a high degree of good animal welfare practices, and is properly enforced (e.g., see sections 5, 6 and 7). The result is that the seal harvest is perhaps the most regulated and researched harvest of any wild creature on the planet. Unfortunately, however, legal reform did little to assuage anti-sealing groups.

The Canadian government has defended the sealing industry, but, in contrast to the aggressive tactics of anti-sealing activists, it has limited regulatory and legislative responses (Marland, 2014). Throughout the decades, the federal and provincial governments of Newfoundland & Labrador have tried to create a countermovement by defending sealing with scientific facts (Dauvergne & Neville, 2011b; Marland, 2014). The Government of Canada and pro-sealing groups such as the Canadian Sealers Association (CSA) largely conveyed their arguments through factual information and statistics to contradict the anti-sealing narratives (Marland, 2014). This was demonstrated by the CSA's distribution of "Save Our Cod, Eat A Seal" buttons to

highlight the significant amount of cod seals consumed (The New York Times, 1983). Such responses did not garner as much media attention compared to anti-sealing campaigns. However, the Government of Newfoundland and Labrador often took a nationalistic approach to address the anti-sealing movement. The intensity of this nationalism was showcased in infamous ways, such as when former premier Danny Williams debated sealing with Paul McCartney and Heather Mills in 2006 on CNN's *Larry King Live*, and through smaller instances, such as when Liberal MP for Humber-St. Barbe-Baie Verte, Gerry Byrne, called for PETA to be charged under anti-terrorist legislation after a protest pie was thrown at the federal fisheries minister in 2010 (CBC News, 2010; Marland, 2014).

Despite the limited reach of media rebuttals, the Canadian government has enacted regulatory measures to strategically counteract anti-sealing activism over the years (Dauvergne & Neville, 2011b). The government has tried to prevent protestors from interfering with the seal hunt by passing an order-in-council in 1978 that prohibited individuals from going on the whelping ice without a sealing license or an observer's permit (Dauvergne & Neville, 2011b). Greenpeace members were then arrested and charged with loitering while attempting to obtain a permit in the Department of Fisheries office. The Canadian government could do little other than refusing and taking back permits (Dauvergne & Neville, 2011b).

Despite the seal industry being restricted by international markets, the Government of Canada still advocates for the seal hunt and supports the industry. After the 2009 EU ban on seal products, the Government of Canada challenged the EU through the WTO (see section 11) and partnered with Indigenous groups to facilitate trade with the EU and rebuilt the market for all seal products through the Certification and Market Access Program (see section 13 for more information).

Section 10: Global Policy Review

Various international treaties and entities have a strong influence on international and national policy that influences sustainable use practices around the world, including seal harvesting in Canada. In what follows, we will review these international bodies, their mandates, and key policy points. Many nations that have implemented bans on seal products are subject to the laws and declarations of international processes that are unequivocally supportive of the sustainable use of wild resources. While these international bodies may not deal with sealing exclusively or specifically, their commitment to sustainable use paradigms and scientific rigor are assets to the sealing industry.

The International Union for Conservation of Nature (IUCN)

Founded in 1948, the IUCN (https://www.iucn.org) is a membership union comprising over 1,400 members worldwide. These include nation-states and their respective national and subnational agencies, nongovernmental organizations, Indigenous Peoples' organizations, scientific organizations, and academic institutions. This membership accounts for over 160 countries out of 195 on Earth. IUCN also works with private enterprises to help facilitate the

implementation of sustainability and diversity practices in business. Between quadrennial meetings of the Members' Assembly of the IUCN World Conservation Congress, it is governed by its President and Council.

IUCN's mission is to *"[i]nfluence, encourage and assist societies to conserve the integrity and diversity of nature and ensure that any use of natural resources is equitable and ecologically sustainable"* (International Union for Conservation of Nature, n.d.). It is the première world forum for working out the kinds of problems that the Canadian sealing industry seeks to address. The IUCN creates accords, global standards, moratoria, and helps implement national conservation legislation, policies, and practices. It is thus well-positioned to assist stakeholders of the seal hunt in addressing policy issues pertinent to sealing, including the EU seal products ban.

As noted in section 13, IUCN is unequivocally in support of a sustainable seal hunt that respects animal welfare and can be an ally in the renewed effort to rehabilitate the sealing industry. In this connection, the IUCN has been instrumental in creating two adjacent bodies that can be of help to sealers: the Convention on Biological Diversity and the Sustainable Use and Livelihoods Specialist Group (SULi).

United Nations Environment Programme (UNEP)

The United Nations Environment Programme was founded in 1972, in the wake of the world's first global conference on the environment, the United Nations Conference on the Human Environment. Today comprised of 193 member states, UNEP's function is to "*monitor the state of the environment, inform policy making with science and coordinate responses to the world's environmental* challenges" (UNEP, 2021).

The Programme is a world authority on environmental issues, including sustainability practices. Its chief relevance to the Canadian sealing industry is that it is a central hub for all aspects of environmental issues, and underpins multiple important treaties discussed in this section, including the Convention on Biological Diversity and the Convention on the Conservation of Migratory Species of Wild Animals.

Convention on Biological Diversity (CBD)

Ratified on 29 December, 1993, under the auspices of the United Nations Environment Programme (UNEP; https://www.unep.org/), the Convention on Biological Diversity (https://www.cbd.int) is an international, legally binding treaty with three main objectives (Convention on Biological Diversity, 2012):

> *"1. The conservation of biological diversity*
> *2. The sustainable use of the components of biological diversity*
> *3. The fair and equitable sharing of the benefits arising out of the utilization of genetic resources"*

Today, the CBD has a membership of 196 signatories, comprised of countries and the European Union. Since 2018, signatories (including Canada) have observed the Post-2020 Global Biodiversity Framework, which provides a systematic approach to conserving biodiversity. The CBD is relevant to sealing because one of its main objectives is to utilize and share natural resources—an objective that is undeniably hampered by international bans on trade in sustainable seal products. Further, the CBD contains guidelines for maintaining and improving sustainability—not only through the harvest of the resource, but also through its trade. Since the EU is a signatory to the treaty, it may be in violation of its principles, and the CBD may act as a basis to challenge this ban, and other existing or proposed bans.

Sustainable Use and Livelihoods Specialist Group (SULi)

IUCN's Sustainable Use and Livelihoods Specialist Group (https://iucnsuli.org) is a volunteer group boasting members worldwide. Convened jointly within IUCN by the Species Survival Commission (SSC) and the Commission on Environmental, Economic, and Social Policy (CEESP), a key part of its mission is to "support robust, equitable models of sustainable use that meet human needs and priorities" (IUCN SUli, n.d.).

Conservation Visions President and CEO, Shane Mahoney, is Global Vice-Chair of SULi, which affords direct access to the group. At present, SULi is collaborating with Oxford University on research into the relationship between hunting and wildlife conservation. Since Canadian sealing policy rests on an ecosystems-based approach, the industry in many ways exemplifies the kind of sustainable practice that SULi seeks to promote. Industry actors can turn to SULi precepts and practices to argue for the harvest; the specialist group often intervenes with policy- and decision-makers on issues of controversy. SULi draws on the knowledge and expertise of local communities and groups to promote the localized governance of biological resource.

Subsidiary Body on Scientific, Technical, and Technological Advice (SBSTTA)

The SBSTTA (https://www.cbd.int/sbstta) is another creation of the CBD. It is an advisory body that provides information, insight, and recommendations to CBD signatories at the Conference of Parties, which is CBD's governing body. SBSTTA provides scientific assessments on the status of biological diversity, on the effects of measures taken by the CBD, and provides advice to the CBD and responds to any questions that the Conference of the Parties to the CBD may have. The SBSTTA is a valuable resource for those who need scientific backing for their respective industry or practice, and is the primary source of information from which the CBD makes its decisions.

Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)

IPBES (https://ipbes.net/about) is similar to SBSTTA, although it is not governed by a single entity. Founded in 2012, it carries out research and advisory services for its membership, which

includes 134 nation-states as well as a host of non-governmental organizations and other groups. Mainly functioning as scientific support for policy decisions, it conducts assessments, builds capacity and knowledge and ensures wide communications and outreach for its findings (IPBES, 2019a).

For the purposes of the campaign to restore Canadian sealing, IPBES may be an invaluable resource, especially in terms of its communications and outreach activities.

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

CITES (https://cites.org/eng) is a highly impactful international legally binding treaty, created by UNEP, which serves to preserve biodiversity and sustainable use by monitoring the global trade in wild species and enforcing treaty prohibitions around the world.

With 183 member parties, CITES works on a system of Appendices, where Appendix 1 lists species that are threatened with extinction and Appendix 2 lists species that are of special concern. CITES facilitates conservation of its listed species by imposing trade regulations on signatories, helping ensure that all traded wildlife is legal, sustainable, and traceable.
As of 2023, no seal species in Canadian waters are listed in a CITES appendix, as they are not endangered or at risk. Importantly, in 1982, West Germany lobbied to have both harp and hooded seals listed in Appendix 2 of CITES at the Conference of the Parties in Botswana. If these species were listed, it would have legitimized the criticisms leveled against sealing, much like the EU bans on seal products have done. This motion was only narrowly voted down in a 27-against to 23-for vote decision (Wright, 1984b). CITES provides scientific backing for the sustainability of the seal harvest and is thus a useful resource in the campaign to restart the industry.

Convention on the Conservation of Migratory Species of Wild Animals (CMS)

The CMS (https://www.cms.int) has 132 members. The CMS is similar to CITES, because it was also established under UNEP, and uses an Appendix system to conserve species and biodiversity generally. The CMS is a framework Convention and may create legally binding treaties, or Memoranda of Understanding. Migratory species, such as harp and hooded seals, may be subjected to hunting and other anthropogenic pressures from many independent nations. The CMS was created to facilitate a united front to conserve migratory species, where the action of one nation alone is not sufficient to ensure their survival. Importantly, CMS is undoubtedly supportive of the sustainable use of wild animals.

> *"CMS provides a global platform for the conservation and sustainable use of migratory animals and their habitats".*

Like CITES, CMS lists species threatened with extinction on Appendix 1, and species of special concern on Appendix 2. No seal species in Canadian waters are currently listed in the appendices of CMS.

Canada is not a CMS signatory; however, it is still worthwhile for the Canadian sealing industry to at least explore its function on the world stage. Since it focuses specifically on migratory species, sealing advocates may find useful resources that can help support this sustainable wild harvest. The CMS meets every three years, where its members share research and information, and make policy decisions concerning the sustainable use of migratory wild animal species.

Collaborative Partnership on Sustainable Wildlife Management (CPW)

Dating back to 2011 in its earliest stages of development, the CPW (https://www.fao.org/forestry/wildlife-partnership/en/) is composed of thirteen important international organizations that focus on environmental and conservation issues. Notable members include the IUCN (Shane Mahoney, CEO of Conservation Visions, is the Representative of the IUCN at CPW), CBD, CITES, CMS, FAO, CIC, UNEP, and the World Organization for Animal Health. CPW creates mandates and programmes that promote the sustainable use of nature and the conservation of wild resources. Of relevance to the sealing industry, a few of its Objectives are:

> *"To raise awareness of the links between sustainable use of wildlife, food security, livelihoods and well-being, culture and the integrity of landscapes;*
>
> *To advocate for sustainable and inclusive wildlife economies;*
>
> *To embed the sustainable use and management of wildlife in the One Health agenda"*

CPW primarily exists to coordinate policies, decisions, and actions among its membership. This is an important task, as each member is a complex international organization. Importantly, the CPW acts as a bridge to engage in discussions, specifically on sustainable use, with the most influential organizations and environmental treaties in the world.

Food and Agriculture Organization of the United Nations (FAO)

The FAO (https://www.fao.org/home/en), founded in 1945, is a United Nations agency with the mandate of coordinating the effort to eliminate world hunger. Its key objective is to establish food security for all peoples everywhere on Earth. Its key priorities are to (FAO, 2019):

> *"1. Help eliminate hunger, food insecurity, and malnutrition*
> *2. Make agriculture, forestry and fisheries more productive and sustainable*
> *3. Reduce rural poverty*
> *4. Ensure inclusive and efficient agricultural and food systems*
> *5. Increase the resilience of livelihoods to threats and crises"*

Presently, the FAO is working with its *Strategic Framework 2022-2031* to facilitate the development of more sustainable and equitable food provisioning systems in order to achieve four aims (FAO, c2024):

1. ***Better production****: Ensure sustainable consumption and production patterns, through efficient and inclusive food and agriculture supply chains at local, regional, and global level, ensuring resilient and sustainable agrifood systems in a changing climate and environment*
2. ***Better nutrition****: End hunger, achieve food security and improved nutrition in all its forms, including promoting nutritious food and increasing access to healthy diets*
3. ***Better environment****: Protect, restore and promote sustainable use of terrestrial and marine ecosystems and combat climate change (reduce, reuse, recycle, residual management) through more efficient, inclusive, resilient and sustainable agrifood systems*
4. ***Better life****: Promote inclusive economic growth by reducing inequalities (urban/rural areas, rich/poor countries, men/women)*

In terms of Newfoundland and Labrador's poverty and food security issues, the FAO is the world's foremost authority and support strut. Seal harvesting fits under the FAO's preview because it helps eliminate malnutrition and food security, reduces rural poverty, and increases the resilience of livelihoods to threats and crises (for example, sealing can help maintain and income and food supply when other fisheries close or collapse). The organization offers a wealth of scientific, technical, and political resources in service of its aims.

North Atlantic Marine Mammal Commission (NAMMCO)

This organization (https://nammco.no) is considerably smaller than the others discussed in this section, having only four member states: Faroe Islands, Greenland, Iceland, and Norway. The sustainable use of marine mammals is important for its member countries, as it is for those in Newfoundland and Labrador and the Canadian Arctic. NAMMCO works with its member states to improve the conservation and management of marine mammals and to provide scientific advice to governments on marine mammal hunting.

NAMMCO's mission is, "[t]hrough regional cooperation […] to strengthen and further develop effective conservation and management measures for marine mammals. Acknowledging the rights and needs of coastal communities to make a sustainable living from what the sea can provide, such measures should be based on the best available scientific evidence and user knowledge. Additionally, the measures should take into account the complexity and vulnerability of the marine ecosystem" (North Atlantic Marine Mammal Commission, n.d.). NAMMCO is perhaps the most obviously relevant organization to the sealing industry in Canada, as it is an international body focused on the conservation of marine mammals (including seals) in the North Atlantic. Canada has been the nation that harvests the most marine mammals, both in terms of species diversity (including 6 seal species, walrus, and 4

whale species) and total offtake, in the Northwest Atlantic (Priest & Usher, 2004b). Despite this, Canada is only an observer of NAMMCO. As readers of this document may know, NAMMCO has held a seat open for Canadian membership for some years now; however, there is reluctance by the federal government to join the organization as a member.

Without being a member, Canada is unable to request scientific advice or information from NAMMCO or vote in NAMMCO decisions. NAMMCO has a team of scientists and experts that could facilitate Canada's research capabilities, and further, provide a united front to tackle issues on the trade of seal products. For example, NAMMCO scientists have conducted research on the animal welfare aspects of seal harvesting methods, and abundance estimates of seal species, bycatch of marine mammals, and struck and loss rates for marine mammals (Granquist, 2022; NAMMCO, 2009b). Membership in NAMMCO could facilitate research on the interactions between seals and groundfish, help provide population estimates of seal species, and provide management and policy advice. NAMMCO could be a powerful ally for the sealing industry, and it is unfortunate that membership has not been obtained. Membership in NAMMCO may prove to be invaluable.

United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)

UNDRIP serves as a framework that establishes the minimum standards that all members of the United Nations need to follow to ensure the survival, dignity, wellbeing, and rights of the world's Indigenous populations and to fundamentally protect their rights. It is a very important, relatively recent, General Assembly Declaration that was adopted by the United Nations in 2007. Canada initially voted against the Declaration, because of its potential implications for land ownership in Canada (The declaration states that Indigenous Peoples have the right to lands that they have traditionally owned or occupied, which in the case of Canada, would represent virtually all of the land that is currently settled). Nonetheless, after it passed, Canada has fully endorsed the Declaration and has taken many steps to implement the Declaration since the recommendation of the Truth and Reconciliation Commission in 2015 (D. of J. Government of Canada, 2021; United Nations, 2007).

Given that the case for rehabilitating the sealing industry is so deeply intertwined with the rights, interests, and concerns of Inuit, UNDRIP is *the* indispensable reference for engaging them responsibly and respectfully in campaigning to restore the harvest. The full participation of the world's ~476 million Indigenous Peoples in all future conservation projects is non-negotiable, and necessary to protect wild animal species, ecosystems, and biodiversity. It is essential to creating a just, equitable, and inhabitable world.

Because the EU is a signatory to UNDRIP, it is also committed to the principles within the Declaration. The bans on seal products within the EU in 1983 and in 2009 are clearly in contravention of various articles of the Declaration, for example (United Nations, 2007):

"Indigenous peoples have the right to participate in decision-making in matters which would affect their rights, through representatives chosen by themselves in accordance with their own procedures, as well as to maintain and develop their own indigenous decision-making institutions."

"Indigenous peoples have the right to maintain and develop their political, economic, and social systems or institutions, to be secure in the enjoyment of their own means of subsistence and development, and to engage freely in all their traditional and other activities"

"Indigenous peoples have the right to self-determination. By virtue of that right they freely determine their political status and freely pursue their economic, social and cultural development."

"Indigenous peoples deprived of their means of subsistence and development are entitled to just and fair redress"

To facilitate the line of argumentation that the Inuit have been unfairly disadvantaged, in contravention of UNDRIP, by the European ban, it is essential to demonstrate the negative impact that these bans have had on Indigenous Peoples. Measuring the deprivation incurred in Inuit communities by a loss in trading opportunities arising from traditional activities stands to provide a powerful rationale for seeking redress with the EU.

Section 11: International Treaties and Market Access Restrictions

North Pacific Fur Seal Convention

Considered a victory in conservation and diplomacy, the North Pacific Fur Seal Convention of 1911 was an international cooperative agreement between Canada (under the jurisdiction of Great Britain), the United States, Russia, and Japan to preserve and protect the northern fur seal in the Pacific Ocean (Bailey, 1935; Barrett, 2005). Among its various regulations, the North Pacific Fur Seal Convention notably created regulations for the pelagic harvest (i.e., the harvest at sea) of fur seals (Bailey, 1935). The pelagic hunt for fur seals, was dominated by Canada. Schooners would leave from Victoria, BC with canoes in tow and would follow fur seals northward on their migration route. Schooner operators employed Indigenous Peoples who would harvest seals at sea in canoes. This commercial practice reduced the population of fur seals from approximately 4,000,000 animals to only 100,000, and was a significant source of international conflict (Irwin, 2015). Before 1911, fur seals were harvested on land and sea, but the Treaty established an international ban on the harvest at sea and created international management and cooperation for land harvests (NOAA Fisheries, 2022a). Given its success,

later international treaties for sealing management were influenced by the North Pacific Fur Seal Convention.

The North Pacific Fur Seal Convention originated to mitigate international disputes over sealing jurisdictions and prevent further fur seal population declines. In the late 1890s, the United States and Canada were in conflict over the Pribilof Island sealing rights of the Bering Sea, because both countries wanted unrestricted commercial access to the resource (Barrett, 2005). Negotiations between these two nations resulted in the 1892 Treaty of Arbitration and a joint pelagic sealing ban in the region, such that both nations were unable to hunt fur seals in open water in the Bering Sea at any time of the year (Barrett, 2005). However, fur seals migrate to other regions in the winter, which made the ban ineffective (Barrett, 2005). With this, the seal hunt was not controlled, instead it had shifted to another region (Barrett, 2005).
During this time, Japan and Russia continued to hunt fur seals, which put further pressure on the fur seal populations that were already decimated by Canadian and American Sealers. International agreements thus became crucial to prevent over-exploitation of the resource (Barrett, 2005).

Great Britain (representing Canada), however, refused to negotiate (Barrett, 2005). Unable to establish a multilateral agreement, the hunt continued and the Pribilof herd declined (Barrett, 2005). However, Japan's interests changed after gaining possession of Robben Island (Barrett, 2005). Now in possession of a seal herd from Robben Island, Japan recognized the advantage of a four-party treaty to ensure stable populations (Barrett, 2005). Meanwhile, the shrinking fur seal population caused the Canadian sealing industry began to collapse (Barrett, 2005). With the decline of Canadian sealing, Canada and the United States negotiated an agreement for Canada to suspend pelagic sealing in exchange for a share of US profits from its hunt on the Pribilof islands, or minimum financial compensation (Barrett, 2005).

Discussions between Canada, the United States, Russia, and Japan began in 1910 and by 1911 all parties ratified the North Pacific Fur Seal Convention (Barrett, 2005). In sum, the nations mutually agreed on the prohibition of pelagic sealing in the North Pacific Ocean, including the Bering, Kamchatka, Okhotsk, and Japan seas (UK Government, 1912). To encourage compliance after limiting sealing opportunities, the treaty parties agreed to share revenue from land-based seal harvesting (Barrett, 2005). The United States paid Great Britain and Japan $200,000 each for compensation and agreed to provide Great Britain and Japan with either 15 percent of its annual harvest or 1,000 skins and to pay $10,000 to each treaty party any year that no sealskins were harvested if the United States' seal population was over 100,000 (Barrett, 2005). Russia agreed to give 15 percent of its annual harvest to Canada and Japan, and Japan agreed to share 10 percent of its annual harvest with the United States, Russia, and Canada (Barrett, 2005). Despite Canada not having a breeding population, Great Britain conditionally agreed to share 10 percent of annual sealskins with the United States, Japan, and Russia. In sum, each nation agreed to share 30 percent of the annually harvested sealskins (Barrett, 2005). From this, the North Pacific Fur Seal Convention demonstrated successful international cooperation and resource management.

Importantly, Article IV of the Convention provided an exemption for Indigenous sealing practices, so long as they conducted hunts in undecked canoes with oars, paddles, or sails, with a maximum of 5 people in each canoe, without the use of firearms, and not for commercial gain (Irwin, 2015):

> *"It is further agreed that the provisions of this Convention shall not apply to Indians, Ainos, Aleuts, or other aborigines dwelling on the coast of the waters mentioned in Article I, who carry on pelagic sealing in canoes not transported by or used in connection with other vessels, and propelled entirely by oars, paddles, or sails, and manned by not more than five persons each, in the way hitherto practiced and without the use of firearms; provided that such aborigines are not in the employment of other persons or under contract to deliver the skins to any person."*

With such regulations in place, the North Pacific Fur Seal Convention ultimately restricted alternative Indigenous hunting techniques and further excluded them from utilizing the resource for economic growth (Irwin, 2015). This was the beginning of the implementation of the "noble savage" ideology within legal frameworks that can be found in various international legislation, including the EU ban on seal products in 1983 and 2009. This ideology essentially states that the Indigenous harvest of seals is acceptable, so long as it is considered to be primitive, with the ultimate purpose of ensuring survival and not economic prosperity (i.e., for "subsistence" only) (Irwin, 2015). The division between non-Indigenous and Indigenous sealers within the North Pacific Fur Seal Convention was the beginning of inequity that Indigenous communities would face within domestic and international seal harvest legislation.
The North Pacific Fur Seal Convention was proven to be an overall success for seal conservation. By 1917, the Pribilof seal herd had more than tripled in population size and the North Pacific fur seals reached over two million by 1940 (Barrett, 2005). The North Pacific Fur Seal Convention was active for 30 years until Japan ended the Convention in 1941 (McHugh, 1984). The North Pacific Fur Seal Convention set a precedent for future national and international sealing negotiations, such as the Fur Seal Act of 1966 and the Marine Mammal Protection Act of 1972.

Fur Seal Act of 1966

The Fur Seal Act of 1966 was the result of past legislation and the need for federal sealing governance (Veltre & Veltre, 1987). In the years following the end of the North Pacific Fur Seal Convention of 1911, the Pribilof seal herd was protected by Canada and the United States under a provisional agreement from 1942 to 1957 (R. C. Baker et al., 1970). This agreement allocated 20 percent of the sealskin taken in the summer on the Pribilof Islands to Canada (R. C. Baker et al., 1970). A new North Pacific Fur Convention was created in 1957 between Canada, the United States, Japan, and the USSR (R. C. Baker et al., 1970). A Fur Seal Commission was established with representatives from each party to study and manage the seal populations (R. C. Baker et al., 1970). The Fur Seal Commission decided 15 percent of commercially harvested sealskins by the United States and the USSR would be distributed to Canada and Japan (R. C. Baker et al., 1970). The Fur Seal Act of 1966 was a US Act created to implement the

requirements of the newly formed North Pacific Fur Seal Convention and to provide domestic protection for fur seals on the Pribilof Islands (R. C. Baker et al., 1970). The Fur Seal Act manages northern fur seals in U.S. waters by prohibiting any person or vessel from taking fur seals in the North Pacific Ocean or anywhere within US jurisdiction (Environment and Climate Change Canada, 2017; NOAA Fisheries, 2008). This includes the transportation, importation, selling, or possessing of any part of fur seals (NOAA Fisheries, 2008).

Within the Act, the U.S. government established as the "operating authority" of sealing, but all labour for the harvest (apart from supervisory positions) was conducted by Indigenous employees from St. Paul and St. George (Young, 1981). This action aimed to increase the independence and local governance of the Pribilof Islands, which was a primary objective of the Fur Seal Act (Young, 1981). It is important to note that the harvest was under the provisions of the Secretary of the Interior (Rogers & Foote, 1968), therefore complete local autonomy was not the intended goal.

Much like the North Pacific Fur Seal Convention of 1911, the Fur Seal Act of 1966 provided an exemption for Indigenous Peoples with specific conditions (Veltre & Veltre, 1987). Under Section 103 of the Fur Seal Act, when not engaged in commercial sealing, Indigenous Peoples who lived on the coasts of the North Pacific Ocean were allowed to hunt seal for subsistence purposes, but sealing activities had to be done by canoe and with oars, paddles, or sails, with a maximum of 5 people (Veltre & Veltre, 1987). The Fur Seal Act additionally required Indigenous sealers to ensure that their skins were marked and certified by authorized personnel from the Secretary of the Interior (Veltre & Veltre, 1987):

> *"Indians, Aleuts, and Eskimos who dwell on the coasts of the North Pacific Ocean are permitted to take fur seals and dispose of their skins after the skins have been officially marked and certified by a person authorized by the Secretary: Provided, That the seals are taken for subsistence uses as defined in section 109(f)(2) of the Marine Mammal Protection Act of 1972, as amended (16 U.S.C. 1379), and only in canoes not transported by or used in connection with other vessels, and propelled entirely by oars, paddles, or sails, and manned by not more than five persons each, in the way hitherto practiced and without the use of firearms. This authority shall not apply to Indians, Aleuts, and Eskimos while they are employed by any person for the purpose of taking fur seals or are under contract to deliver the skins to any person."*

Despite the Fur Seal Act's objective to reduce St. Paul and St. George's dependency on the government (Young, 1981), it nonetheless imposed restrictions to keep Indigenous subsistence sealers subservient. The Act's distinction between Indigenous Peoples' role within government commercial sealing and Indigenous subsistence harvests highlights the government's intent of controlling the sealing industry over preserving the Pribilof herd or incorporating Indigenous participation.

Marine Mammal Protection Act of 1972

Established in 1972, the U.S. Marine Mammal Protection Act (MMPA) was the first ecosystem-based approach to marine resource management (Marine Mammal Commission, n.d.-b). According to the MMPA, ecosystem-based management considers the dynamics of an ecosystem and human involvement instead of focusing on one detached element (Marine Mammal Commission, n.d.-b). Before the MMPA, individual states regulated marine mammals in their coastal waters (Reynolds et al., 2009). The federal government created the MMPA because of concerns of human-induced impacts on marine mammal populations (Marine Mammal Commission, n.d.-b). In the late 1960s, marine mammal populations were considered to be significantly low within United States jurisdiction, and were subjected to culls (Ward, 2018). This, in addition to new studies showcasing the intelligence of marine mammals, encouraged legislation to increase their protection (Ward, 2018). Congress' management objective under the MMPA was to support the marine ecosystem and stabilize marine mammal populations (Marine Mammal Commission, n.d.-b). The MMPA issued a moratorium on various human interactions with mammals, such as the taking, hunting, capturing, harassment, collecting, killing, and importing of marine mammals and products into the US without a permit (Sec. 101 (a)) (Marine Mammal Commission, n.d.-b; National Oceanic and Atmospheric Administration Fisheries, n.d.).

Amendments to the MMPA in 1994 created an assessment system for marine mammals in the US and limited marine mammal bycatch in commercial fisheries (Marine Mammal Commission, n.d.-c). With this, certain organizations are responsible for the conservation of specific marine mammal species. Sea otters, walruses, polar bears, several manatee species, and dugongs are managed by the U.S. Fish and Wildlife Service (FWS) (Marine Mammal Commission, n.d.-b). In contrast, all pinnipeds (except walruses) and cetaceans are managed by the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) (Marine Mammal Commission, n.d.-b). Under Section 117 of the MMPA, the FWS and the NMFS are required to make regular updates through stock assessment reports (Marine Mammal Commission, n.d.-c).

The MMPA established the Marine Mammal Commission (MMC) in 1982 (Sec. 201, established Title II) (Jefferies, 2016; Marine Mammal Commission, n.d.-b). The purpose of the MMC is to be independent of the federal government and to provide policy oversight for conservation (Jefferies, 2016). The MMC is made up of three appointed members who are tasked with various responsibilities, such as reviewing existing laws and species' status, conducting studies on conservation, and providing recommendations (Jefferies, 2016; Marine Mammal Commission, 2019). Despite the MMPA's significant dedication to the protection of marine mammals within the US, many feel that it is overly restrictive. The MMPA is essentially a blanket ban on the utilization of all marine mammals. Marine mammals include a variety of species, ranging from critically endangered to overabundant, and their management, therefore, should require a more nuanced approach than a blanket ban.

Like the regulations preceding it, the MMPA allows an exemption for certain Indigenous Peoples under very specific circumstances (of which only a few are listed below) (Marine Mammal Commission, n.d.-b):

> *"(a) Taking.*
> *Notwithstanding the prohibitions of subpart B of this part 216, but subject to the restrictions contained in this section, any Indian, Aleut, or Eskimo who resides on the coast of the North Pacific Ocean or the Arctic Ocean may take any marine mammal without a permit, if such taking is:*
> *(1) By Alaskan Natives who reside in Alaska for subsistence, or*
>
> *(2) For purposes of creating and selling authentic native articles of handicraft and clothing, and*
>
> *(3) In each case, not accomplished in a wasteful manner."*

Addressing political problems related to the MMPA

The passing of the MMPA brought forth significant challenges. While many parties involved agreed with the intent to protect endangered marine mammals, a philosophical dispute became apparent during the formation of the MMPA on how such protections should be enacted (Manning, 1989). The MMPA prompted a significant divide between conservationists and protectionists (Manning, 1989). Though both conservationists and protectionists (also known as preservationists) emerged in the early 20th-century environmental movement and are closely related, they have opposing principles (U.S. National Park Service, 2019). The conservationist objective is to manage wildlife as a resource to sustain population sizes in the best interests of the species and humans, while protectionists see animals as having similar rights to humans and intend to remove wildlife from human interference, possibly influenced by the false ideology that humans are separate from the natural world (Manning, 1989). In sum, human influence is regulated by conservationists and removed by protectionists (U.S. National Park Service, 2019).

The opposition between the conservationists and the protectionists was most apparent in the suggestive bills presented to the U.S. Congress before the MMPA (Manning, 1989). The Harris-Pryor bill, a protectionist bill, was offered to Congress at the same time as the conservationist-approved Anderson-Pelly bill (Manning, 1989). Despite both bills addressing concerns for marine mammals, the Anderson-Pelly bill focused on marine mammal management by proposing a permit system and the Harris-Pryor bill was advocating for a moratorium (Manning, 1989). Both conservationist and protectionist groups lobbied Congress throughout this process in support of their preferred bill (Manning, 1989). Significant protests from protectionist wildlife organizations terminated the first version of the Anderson-Pelly bill; however, a modified draft was developed that included a 5-year ban on the taking and importation of marine mammals and was passed at the House and considered to be a "manageable effort" (Manning, 1989). The bill was passed in the Senate with a 15-year moratorium and the

accepted version of the MMPA established a permanent moratorium (Manning, 1989). The final version of the MMPA from the Conference Committee was significantly more protective than both proposed bills (Manning, 1989).

Once established, the MMPA sought to prevent conflicts with international agencies by utilizing the United States Secretaries of Commerce and State to pursue international agreements through the Act's International Program (Lones, 1989). The International Program is used to negotiate with regions where commercial fishing affects marine mammals, make amendments to established treaties, and create an international marine mammal summit (Lones, 1989). Canada has been vocally opposed to the MMPA and has expressed this through various international channels. This includes the Canadian government's work to increase U.S. market access for seal products and questioning the MMPA restrictions to the World Trade Organization (WTO) (House of Commons Canada, n.d.). The government of Nunavut has specifically requested that changes be made to the MMPA for northern Indigenous people because of cultural significance (Rumboldt, 2008). The MMPA has been a controversial legislative act since its initial drafting. The inherent strict protectionism of the MMPA has inhibited many opportunities for alternative marine mammal management and market access.

Seal product bans of the European Union

In 1983, the European Economic Community passed the first ban of seal products, the Seal Pups Directive, within the EU. This ban prohibited the sale of whitecoat (harp seal pups less than roughly 2 weeks old) and blueback pelts (hooded seals less than 2–3 years of age) within the EU. Importantly, it was the belief at the time that the Directive would not impact Inuit because they did not harvest whitecoats or bluebacks (Malouf, 1986a):

> *"Whereas the exploitation of seals and of other species, depending upon their capacity to withstand such exploitation and with due respect for the balance of nature, is a natural and legitimate occupation and in certain areas of the world forms an important part of the traditional way of life and economy; whereas hunting as traditionally practised by the Inuit people, leaves seal pups unharmed and it is therefore appropriate to see that the interest of the Inuit people are not affected"*

It is true that Inuit harvesters did not use clubs to harvest young seals and did not participate in the commercial hunt of whitecoat and blueback seal pups in the Front or in the GOSL. In spite of this, there was a derogation in the Directive which allowed whitecoat and blueback pelts from Inuit to be placed on the market (Malouf, 1986a):

> *"[Article 3] This Directive shall only apply to products not resulting from traditional hunting by the Inuit people."*

This Directive was initially only supposed to be in place until 1985, pending the results of scientific investigations into the *"scientific aspects and consequences of the culling of pups of*

harp and hooded seals" (Malouf, 1986a). However, it was after extended until 1989, and then indefinitely (Sellheim, 2014).

In 2006, without scientific rationale, European Parliament called on its Commission to implement a total ban on seal products (The European Commission, 2009):

> *Parliamentary Assembly of the Council of Europe recommended inviting the Member States of the Council of Europe practicing seal hunting to ban all cruel hunting methods which do not guarantee the instantaneous death, without suffering, of the animals, to prohibit the stunning of animals with instruments such as hakapiks, bludgeons and guns, and to promote initiatives aimed at prohibiting trade in seal products.*

This recommendation undoubtably was not based on science, because virtually all studies on the harvest methods of seals, including the European Union's own European Food Safety Authority have concluded that the hakapik, and other methods, are humane and cause death rapidly without suffering (P.-Y. Daoust et al., 2014b; EFSA, 2007b; NAMMCO, 2009b; B. Smith, 2005b).
In 2009, the European Union prohibited the placement of seal products on the EU market. The decision was largely based on the anti-sealing rhetoric (see section 9) that animal rights activists and protestors had spread (Wegge, 2013). The EU heard from its European Food Safety Authority in 2007 that the methods used to harvest seals in the Canadian seal hunt are humane; therefore, it could not justify the ban on this basis. Instead, the EU justified the general ban through the notion that it would not be possible to judge whether every seal hunted is killed humanely (Levy & Regan, 2015). According to the European Commission's judgment, it was not possible to reliably demonstrate that cruelty and inhumaneness have been avoided in the seal harvest. In other words, although fundamentally underpinned by reasons of morality, the concrete sticking point lies in this critical knowledge gap:

> *"Although it might be possible to kill and skin seals in such a way as to avoid unnecessary pain, distress, fear, or other forms of suffering, given the conditions in which seal hunting occurs, consistent verification and control of hunters' compliance with animal welfare requirements is not feasible in practice or, at least, is very difficult to achieve in an effective way, as concluded by the European Food Safety Authority on 6 December 2007."*

The European Commission, along with those who support Regulation 1007/2009 and/or helped bring it to fruition, contend that we have neither the policies and practices, nor the technology, to assuage fears revolving around animal welfare.

While the fundamental rationale for the ban was to address the public moral concerns of the seal hunt, from a legal perspective, the ban was implemented to harmonize the European market. This is because certain member states of the EU had already implemented national bans on seal products (The European Commission, 2009):

> *To eliminate the present fragmentation of the internal [i.e. European] market, it is necessary to provide for harmonised rules while taking into account animal welfare considerations. In order to counter barriers to the free movement of products concerned in an effective and proportionate fashion, the placing on the market of seal products should, as a general rule, not be allowed in order to restore consumer confidence while, at the same time, ensuring that animal welfare concerns are fully met. Since the concerns of citizens and consumers extend to the killing and skinning of seals as such, it is also necessary to take action to reduce the demand leading to the marketing of seal products and, hence, the economic demand driving the commercial hunting of seals.*

The ban was implemented for the reasons above with 3 exemptions: the importation of seal products purchased by travelling EU residents (travellers exception), products hunted for marine resource management (MRM exception), and products from Indigenous communities' traditional hunts (the Indigenous Exemption) (Mavroidis, 2015). In 2010, the Implementing Regulation was adopted, which established the rules for implementing the ban and provides certification documents for the seal products sold under the Indigenous Exemption (European Commission, n.d.-b).

Like many other Regulations pertaining to the harvest of marine mammals, the 2009 ban provided an exemption for certain Indigenous Peoples under specific conditions. Upon implementation of the ban in 2009, these conditions were (The European Commission, 2010):

> *"(a) seal hunts conducted by Inuit or other indigenous communities which have a tradition of seal harvesting in the community and in the geographical region;*
>
> *(b) seal hunts the products of which are at least partly used, consumed or processed within the communities according to their traditions;*
>
> *(c) seal hunts which contribute to the subsistence of the community."*

It is important to note that, because of the EU's previous experience with the 1983 ban, the 2009 ban was implemented in full knowledge that it would adversely impact Indigenous communities, even if a fully functional Indigenous Exemption were in place (which was not the case; see section 13). In 2007, the European Commission, through the consultancy firm COWI, conducted an "assessment on the potential impact of a ban of products derived from seal species", specifically to consider what impacts of a ban on seal products would have. The European commission was aware of the many negative impacts that came from the 1983 ban, despite the ban not targeting Indigenous communities and an exemption for Inuit products. In COWI's assessment, it was clear that Indigenous communities would be negatively impacted by the ban, regardless of any Indigenous exemptions (Commission of the European Communities, 2008):

> *"It has to be noted that even though derogation was provided, the Inuit suffered in the 80's from the adverse impacts of this Directive on the image of seal products in general."*

> *"the experience from the EU ban on certain seal products from 1983, which excluded this part of the hunt, is that policy measures that have adverse impacts on the image of seal skins and other seal products will have a negative impact on the Inuit population anyway."*

This knowledge that the ban would negatively impact Indigenous communities stands in stark contrast to the opinion of the European Commission, described within the ban itself (The European Commission, 2009):

> *"It was broadly recognised that the fundamental, economic and social interests of Inuit or other indigenous communities should not be adversely affected, in accordance with the United Nations Declaration on the Rights of Indigenous Peoples of 2007."*

Therefore, while the EU appeared superficially to aim to prevent impacts to Indigenous peoples, they implemented the ban despite official technical guidance to say that it would. The EU ban on seal products was met with strong antagonism from sealing nations. To begin, various Inuit from Canada and Greenland, as well as the Fur Institute of Canada and others (Inuit Tapiriit Kanatami, Nattivak Hunters and Trappers Association, Pangnirtung Hunters' and Trappers' Association, Mr Moesesie, Mr Kooneeliusie, Mr Newkingnak, Mr Kuptana, Ms Aariak, Canadian Seal Marketing Group, Ta Ma Su Seal Products, Inc., NuTan Furs, Inc., GC Rieber Skinn AS, Inuit Circumpolar Council Greenland (ICC-Greenland), Mr. Egede, and Kalaallit Nunaanni Aalisartut Piniartullu Kattuffiat) challenged the European Court of Justice to annul the ban on seal products (Regulation 1007/2009/EC) in 2013, and the implementing Regulation of the seal products ban (Regulation 737/2010.20) in 2015, on the basis that the fundamental economic and social interests of Inuit communities engaged in seal hunts were negatively impacted. Unfortunately, both cases were dismissed by the Court (Hennig, 2018).

The governments of Canada and Norway also challenged the EU measures by filing complaints to the WTO (Perišin, 2013). The government of Canada explained that it is positioned to defend the livelihoods of sealers and that the EU decision lacked scientific merit (Global Affairs Canada, 2009). These complaints created the EC-Seal Products case (Levy & Regan, 2015). The outcome of these challenges are discussed below.

The World Trade Organization decision (2013)

The EC-Seal Products case began in 2009 when Canada and Norway challenged the EU seal regime through the WTO Agreement on Technical Barriers to Trade with the claim that the EU seal regime was discriminatory and excessively restrictive (under Articles 2.1 and 2.2) (Shaffer & Pabian, 2015). Canada and Norway additionally argued that the EU Seal Regime violated Article I and Article III of the General Agreement on Tariff and Trade (GATT), which was established in 1947 (Shaffer & Pabian, 2015; WTO, n.d.-b). Article I is the General Most-Favoured-Nation Treatment Clause, which eliminates any national preferences regarding importation and exportation between WTO Members and Article III is the National Treatment on Internal

Taxation and Regulation clause, which requires equal treatment of imported and domestic products between WTO Members (Shaffer & Pabian, 2015; WTO, n.d.-b).

In October 2010, Canada and Norway requested consultations with the EU regarding the trade in seal products, (EC) No. 1007/2009, and (EU) No. 737/2010 (WTO, 2014b, 2014c). Both nations claimed that the EU seal regime was inconsistent with multiple Articles of the Technical Barriers to Trade (TBT) Agreement, additional Articles of the GATT 1994, and Article 4.2 of the Agriculture Agreement (WTO, 2014b, 2014c). To address these concerns, the World Trade Organization's (WTO) dispute settlement body (DSB) created a panel in 2011 (WTO, 2014c). The panel report was distributed to Members on November 25, 2013 (WTO, 2014c). The panel responded to Norway and Canada's complaints. According to the DSB panel, the EU Seal Regime did not violate Article 2.2 of the TBT Agreement because it addressed the EU's public morality concerns for seals and there is no other regulation that fulfills this objective better (WTO, 2014b).

However, the panel found that the EU Seal Regime's exceptions violated several GATT regulations. First, it was concluded that the Indigenous Exemption effectively only allowed seal products from Inuit in Greenland, not Canada, to be sold in the EU, which violated Article I:1 of the GATT (WTO, 2014b). This was because, despite the Indigenous Exemption, Indigenous Peoples in Canada were unable to sell seal products to the EU market because the EU did not initially establish a suitable verification system to ensure that Inuit in Canada had access (Hennig, 2018). In contrast, the EU facilitated the sale of seal products from Greenland, from which all seal products are considered acceptable, and their access to the EU market was not impacted (Note: although Greenland maintained access to the EU market, the market for seal products crashed. Greenland did not support the ban and experienced negative consequences because of its enactment. More information on the barriers Canadian Inuit faced to access the European market are found in section 13) (European Commission, 2023; WTO, 2014a).

Secondly, the ban violated Article III:4 of the GATT because it favoured domestic seal products more than imported seal products (WTO, 2014c). The DSB panel also found that the Indigenous and MRM exceptions were not merited under Article XX of the GATT (WTO, 2014b). The panel found that the exceptions are not merited under Article XX(a) of the GATT 1994 because the exceptions do not meet Article XX's requirements of being applied in a justified and equal manner (WTO, 2014b). The panel also found that the EU did not possess enough evidence to justify Article XX(b) of the GATT as being essential to protect the life and/or health of an animal and that Article 5.1.2 of the TBT Agreement was not followed because the EU Seal Regime failed to facilitate trade with qualifying seal products (WTO, 2014b).

The DSB panel rejected multiple complaints from Canada and Norway. The panel found that there was not enough evidence that the ban was inconsistent with Article 5.2.1 of the TBT Agreement and that the EU did oblige to the conformity assessment procedures (WTO, 2014b). The panel rejected claims under Articles XI:1 of the GATT, which means that the EU was not found to be implementing restrictions other than the required measures and charges (WTO,

2023). The panel did not find it necessary to rule on the non-violation claims under Article XXIII:1(b) of the GATT 1994 because of other findings (WTO, 2014b).

WTO Appellate Body Secretariat decision (2014)

Canada and Norway appealed the DSB panel report to the Appellate Body on January 24th, 2014 (WTO, 2014b). WTO's Appellate Body was established in 1995 under Article 17 of the Understanding on Rules and Procedures Governing the Settlement of Disputes (DSU) (WTO, n.d.-a). The standing body consists of seven individuals who handle appeals from panel reports in disputes concerning WTO Members (WTO, n.d.-b). The Appellate Body rejected Canada and Norway's claims against the EU Seal Regime and accepted that the objective of the ban is legitimate and is not excessively restrictive (European Commission, n.d.). The Appellate Body upheld the panel's decision by finding that the ban violated Article I of the GATT 1994, the most-favoured-nation treatment obligation, by not giving the same market access to Inuit in Canada as it did to Inuit in Greenland (European Commission, n.d.; WTO, 2014b). The Appellate Body found that the EU ban did not prevent arbitrary discrimination and should have further encouraged the Canadian Indigenous communities to use the exception (European Commission, n.d.). The panel additionally found that the exemptions to the seal regime were discriminatory. Specifically, the MRM exception violated Article 2.1 of the TBT Agreement and Article III:4 GATT (European Commission, n.d.). A notable difference between the Panel and the Appellate Body's findings was that the Appellate Body reversed the Panel's findings that the ban was a "technical regulation," which resulted in the Panel's findings that the TBT Agreement had no legal effect (European Commission, n.d.).

The DSB adopted the panel report with the changes made by the Appellate Body report in June 2014 (WTO, 2014b). The EU agreed to implement the DSB recommendations concerning the WTO obligations in July 2014, and Canada and the EU agreed that the DSB recommendation would be implemented by 18 October 2015 (WTO, 2014b).

In the deliberation of the WTO, the EU was unable to produce any evidence to demonstrate how the Indigenous Exemption was in any way related to the policy objective of addressing public moral concerns regarding animal welfare (Hennig, 2018). To attempt to reconcile this apparent discrepancy, the EU modified the requirements of the Indigenous Exemption to specifically include an animal welfare requirement. These new requirements have been in place since 2015 (The European Commission, 2015):

> *"(a) the hunt has traditionally been conducted by the community;*
> *(b) the hunt is conducted for and contributes to the subsistence of the community, including in order to provide food and income to support life and sustainable livelihood, and is not conducted primarily for commercial reasons;*
> *(c) the hunt is conducted in a manner which has due regard to animal welfare, taking into consideration the way of life of the community and the subsistence purpose of the hunt."*

In addition, after the WTO ban, the European Commission became concerned that if they allow seal products to be placed on the market from marine management hunts, this may eventually lead to them placing seal products on the market from the Canadian seal hunt, if it were argued that the Canadian seal hunt was also conducted for Marine Resource Management. As a result, the European Commission further amended the 2009 ban in 2015 to remove the MRM Exemption (The European Commission, 2015):

> *"While recognising the importance of hunts conducted for the purpose of the sustainable management of marine resources, in practice those hunts may be difficult to distinguish from the large-scale hunts conducted primarily for commercial reasons. This may lead to unjustified discrimination with regard to the seal products concerned. Therefore, that exception should no longer be provided for."*

Public Morality

Public moral concerns were the grounds for EU argument in the EC-Seal Products case. The public morals clause was first introduced to the WTO trade regime in 1945 and resulted from the development of the International Trade Organization (ITO) (Jakobsson, 2013). General exceptions to the rules of the ITO were included in the first draft of the ITO, one of which was "necessary to protect public morals" (Jakobsson, 2013). It was believed that the U.S., who drafted the charter, included the public moral exception to secure restrictions on domestic products that were already in place (Jakobsson, 2013). Nevertheless, the exception was accepted at a preparatory meeting in 1946 (Jakobsson, 2013).

The Vienna Convention found that it is difficult to distinguish the meaning of the public morals clause, specifically regarding what the morals are and who is guiding them (Serpin, 2016). The purpose of the moral exception's inherent vagueness has been debated. Some scholars suggest that its ambiguity is a result of a failure to reach a mutual agreement on the definition, while others argue it is unnecessary to clarify it at all (Serpin, 2016). Nevertheless, the moral exception's lack of distinction has led to the criticism of how it can be used to rationalize a member state's objectives. The open-ended nature of the exception allows it to be used by any state that can moralize its intended measures (Jakobsson, 2013). The moral exception has been used in international trade policy. The US-Gambling case was brought to the DSB in 2003 when Antigua and Barbuda inquired about the U.S. measures that affected cross-border gambling (Jakobsson, 2013). In response, the U.S. defended its measures as a response to "a threat to public morale and public order" (Jakobsson, 2013).

The EC-Seal Products case is the first to utilize a public morality exception to animal welfare (G. Shaffer & Pabian, 2015). The Appellate Body's decision to accept the moral exception under GATT Article XX(a) ultimately justified the use of public morality within international trade policy (Sellheim, 2018a). The use of morality as legislative fact blurs the distinction between concept and law (Herwig, 2016). Reliance on public morality as a rationale for the EU Seal regime created a significant divide, with some arguing that WTO members should have the right to use their discretion to interpret public morality with evidence of public support

(Herwig, 2016). In contrast, others contend that past or present universal agreement is necessary to define public morality (Herwig, 2016). There is concern that the ruling on public morals may be used to justify "protectionist trade measures" in the future, despite the Appellate Body's requirement for evidence to implement the morality exception (Serpin, 2016). Nonetheless, the use of public morality is convoluted, and the practicality of its application is inherently difficult to determine when designing a policy that will represent the morals of 28 member states (Seals and Sealing Network, 2014). As the effects of the EU decision are still felt today, the question of *who determines what is moral* is an ever-present discussion within the seal hunt controversy and international regulations.

IUCN Intervention

Importantly, the IUCN wrote a letter in 2014 to the WTO's appellate body, in support of Canada's and Norway's efforts to have the seal ban overturned, after the WTO had refused the appeal. Aroha Te Pareake Mead, Chair of the IUCN Commission on Environmental, Economic and Social Policy, and Simon N. Stuart, Chair of the IUCN Species Survival Commission, wrote that the WTO's decision to uphold the ban on the basis of public morality sets a dangerous precedent that threatens sustainable use, humane treatment of wildlife, biodiversity conservation, and human livelihoods and culture. Within this letter, the IUCN has outlined three of its adopted Recommendations that were violated by the EU ban and the WTO decision to uphold the EU ban (Hutton, 2014):

> *"Recommendation 2.92: Indigenous peoples, sustainable use of natural resources and international trade. Adopted at the 2nd IUCN World Conservation Congress (Amman, 2000). This recommendation "urges governments to put their sustainable use principles into action in order to improve the viability of indigenous and local communities, which depend on the harvesting of renewable resources, by eliminating tariff, and non-tariff barriers, which discourage the sustainable use of natural products derived from non-endangered species."*
>
> *Recommendation 3.092: Conservation and sustainable use of seals. Adopted at the 3rd IUCN World Conservation Congress (Bangkok, 2004). The recommendation "urges in particular IUCN members to put their sustainable use principles into action by not introducing new legislation that bans the importation and commercialization of seal products stemming from abundant seal populations, provided that obligations and requirements under other international conventions such as CITES are met."*
>
> *Recommendation 179: Respecting ecologically sustainable use of abundant biological resources. Adopted at the 5th IUCN World Conservation Congress (Jeju, 2012). This recommendation "Urges States within their existing legal framework and international obligations and without compromising their sovereign rights, if seeking to take measures for the use, conservation and sustainable management that may negatively impact local/indigenous communities and conservation incentives within other States whenever*

possible, to offer consultation with those States, and fully taking into account sound science and indigenous/traditional knowledge."

Proponents of the seal hunt challenge the one-dimensionality of the EU's use of the public morals exception. For instance, the International Union for Conservation of Nature (IUCN) reported in 2015 that the EU ban and subsequent WTO ruling had negative effects on the livelihoods of individuals in circumpolar regions (Cumming, 2015). Despite the EU Seal Regime exception for subsistence hunting, the IUCN demonstrated that the ban reduced the market value of seal furs, and had negative consequences on regional economies (Cumming, 2015). The IUCN has acknowledged the complexities surrounding the term "subsistence" concerning harvesting and marketing, and that alternative interpretations have only worsened the issues of the IC exception (Cumming, 2015). The Indigenous Exemption focuses solely on sealing for personal use, despite sealing providing numerous benefits. As the IUCN report explains, sealing not only provides for households but seal products have a market value (Cumming, 2015). Income from these products helps to ensure successful future harvests (Cumming, 2015). The report additionally acknowledges the need for more research on the topic of subsistence hunting, such as with the full spectrum of sealing impacts on households, for both Indigenous and non-Indigenous communities (Cumming, 2015). Such recognition of the various benefits sealing has for Indigenous communities and the need for in-depth research demonstrates the Indigenous Exemption's lack of nuance.

Section 12: Seal Harvests Around the World – A Situational Overview

This global overview illustrates key themes pertaining to seal harvesting. First, it is important to note that there is an extensive history of seal harvesting in nearly all nations discussed and that this practice still holds important roles in many of these countries today. Of note, the EU ban and subsequent decline in seal harvesting has led to reduced economic opportunities in rural communities and increases in seal populations worldwide. These dense populations negatively affect commercial fisheries, with negative economic impacts. Despite many countries banning the killing of seals, exceptions are being made to mitigate seals' damage to fishing equipment and predation of fish. This is commonly established through nuisance licenses. Some nations, such as Sweden and Finland, provide financial compensation for these killings, oftentimes in exchange for the seal carcasses. Because of this, seals are being killed with no utilization of their bodies. This is effectively no different than bounty programs that have been historically implemented in various nations. Seal harvesting policies penalize hunters harvesting seals for personal and financial use, but exceptions are made if it is profitable for fishing industries. While these exceptions may benefit fisheries, they do not address other issues that have arisen from the EU seal ban.

The similarities and differences between seal hunts in the nations discussed illustrate the complexities surrounding seal harvesting. For instance, seal hunts conducted in all nations are

heavily managed to ensure humane harvests. Regulations include the supervision of hunts by third parties, harvest reports and hunter training courses. Despite these similarities, each nations' harvest differs. For example, seals are considered recreational game in Finland and Sweden, in contrast to very limited opportunities in other nations such as Scotland.

Greenland

The vast majority of the Greenland population is Inuit, and thus their relationship to sealing is similar to that of Inuit in Canada. Seal harvesting in Greenland has been an important resource for coastal communities for over 4000 years (Tejsner, 2014). It remains a vital traditional and cultural component for the people of Greenland today (WWF, 2013). Along with harvesting of other marine mammals, seal harvesting provides significant socioeconomic stability to these communities, and is an important aspect of Greenland's economy (Graugaard, 2021; Tejsner, 2014). In general, all seal meat is eaten or preserved and thus contributes significantly to the food supply (Danielsen, 2018b). Seal skin is also used to make clothes, particularly footwear and gloves, which are vital resources for Artic living (Danielsen, 2018b). Seal hunters in Greenland depend on income from selling seal products to further support their traditional hunting practices (Greenland Ministry of Fisheries and Agriculture, 2012). The selling of seal skins is particularly important in Eastern, Northern, and Southern Greenland communities and villages (Graugaard, 2021). This is true for communities such as Qeqertarsuarmiut, whose locals are economically dependent upon the sea and its resources (Tejsner, 2014).

Subsistence sealing in Greenland has been strongly impacted by international seal harvesting bans. Since the EU ban on seal products, subsistence hunting in Greenland has been subsidized to assist Inuit hunters who rely on seal harvesting (Greenland Ministry of Fisheries and Agriculture, 2012). It has been argued that contemporary policies view seal harvesting practices in Greenland as a historical tradition, rather than an ongoing activity that supports local livelihoods (Graugaard, 2021). The government of Greenland has long supported the practices of Indigenous hunters and continues to promote the selling of their seal products. As Emil Bluhme, a former member of the Danish Parliament, stated, "without seals, there are no Greenlanders". (Graugaard, 2018).

In response to the European seal ban, an Inuit-led campaign, Inuit Sila, was initiated in 2012 to support sealers and their families in over 60 settlements in Greenland (Graugaard, 2018). The objective of the campaign is to raise awareness of the sustainability of the Inuit seal hunt and to showcase the effects of the ban on these communities (WWF, 2013). The campaign plans to continue until Greenlandic hunters receive "fair conditions" (WWF, 2013).

In response to the EU seal ban, the Government of Greenland has put initiatives in place to participate in the international seal product market, working within the Indigenous Exemption. The Government of Greenland recognizes the economic impacts of the EU ban and works to support seal hunters' livelihoods by using Great Greenland to subsidize seal skins from seal

hunters (Graugaard, 2021). Great Greenland is a government-owned company and the only tannery in Greenland (Graugaard, 2021). It was established in 1977 with an aim to address the growing anti-sealing rhetoric and to support Indigenous economies (Graugaard, 2021; Greenland Ministry of Fisheries and Agriculture, 2015). Roughly half of the harp and ringed seal skin harvested in Greenland are sold to Great Greenland (Graugaard, 2021). In an effort to combat a diminished market for seal skins, they are subsidized to make up three-quarters of the price that a seal hunter would have received in 1985 (Graugaard, 2021). Great Greenland works to support and maintain the livelihoods of hunters through socioeconomic management (Graugaard, 2021).

Like in Canada, there are currently no hunting quotas for seals in Greenland due to high populations and the low impact of hunting on seal populations (WWF, 2013). However, hunters in Greenland harvest a large number of seals—their harvest far surpasses the Canadian harvest of hooded, ringed and bearded seals, and, in recent years, have regularly surpassed the Canadian harvest of harp seals (see section 4). It seems that Canada has competition for the title of the largest sealing nation in the world. However, harbour and grey seals have been protected in Greenland since November 2010 (WWF, 2013). Hunting licenses are issued to control the harvest, and hunters must submit an annual catch report to the Government of Greenland, Ministry of Fisheries, Hunting, and Agriculture (WWF, 2013). The reporting system is used to monitor and manage the status of seal populations locally and nationally (WWF, 2013).

Seals remain a vital commercial resource for many Greenlanders (WWF, 2013). It was reported in 2013 that the seal hunt provided income for around 2,000 full-time hunters in Greenland (WWF, 2013). However, the market for commercial seal products has experienced declines which has affected the economic viability of the practice (WWF, 2013). Subsidies are ultimately needed to mitigate the hunters' losses. Small communities in Greenland have become dependent on these subsidies. If the government did not subsidize products, hunters and their families would be more negatively affected by the EU trade ban (Greenland Ministry of Fisheries and Agriculture, 2015).

Denmark

There is a long history of seal harvesting in Denmark. It has been suggested that harp seals were an important game species to inhabitants of Denmark during the Pitted Ware Culture Period, c. 2300-2300 BC (Bennike et al., 2008).

While there is no commercial seal hunt in Denmark today, it was a major industry in the past. The economic importance of seal harvesting in Denmark can be seen in historical examples. For example, in 1523, the Danish king claimed property of half the seals on the island of Hesselø, and in the 18th century, up to 1,000 seals would be harvested in a single day in the Kattegat and southwestern Baltic regions (Olsen et al., 2018).

Today, seal harvesting is, for the most part, illegal in Denmark. There is currently no hunting season and no quota set for sealing in Denmark (European Commission, 2023). However, fishermen can apply for licenses to kill "problem seals" that can affect fishing equipment (Olsen

et al., 2018). This results in a relatively small harvest of only 134 Harbour seals and 9 Grey seals over the last 4 years. Seal shooting must be authorized through a derogation that facilitates the prevention of damage to important fishing equipment (European Commission, 2023). Specifically, seals can be shot if they are within 100 meters of fishing equipment (European Commission, 2023). Derogation shooting of grey seals is allowed at any time of year; however, shooting is prohibited in the species' designated sites (European Commission, 2023). Derogations have also been allowed in streams to mitigate stress to fish populations (European Commission, 2023). Derogation shootings require approval for the rifle being used, as well as the passing of a rifle test and a Danish hunting license (European Commission, 2023). It has been reported that derogation shooting allowances have not impacted seal population size (European Commission, 2023).

This is not the first time that seals have been involved in human-wildlife conflict in Denmark. The Danish government previously implemented a seal culling program in 1889 (Olsen et al., 2018). Both the government and the Danish Fisheries Organization supported the culls by supplying fishermen and hunters with rifles and ammunition, paying bounties, and financially awarding the best hunters (Olsen et al., 2018).

Being a constituent country of the Kingdom of Denmark, Greenland exports virtually all of its pelts to Denmark to enter the EU. Danish customs has recorded seal products from Greenland totaling DDK 8,347,944 (European Commission, 2023).

Iceland

Sealing has been an integral part of Icelandic culture and history for generations. Throughout history, seals were used as subsistence and were often the only resource available (Hauksson & Einarsson, 2010). Historical use of seals as a resource is evident with the finding of northeast Atlantic and grey seal remains in human middens in Iceland from 800-1000 AD (Winsnes, 2016). Organized sealing was a key resource during the famine in the 1780s as well (Hauksson & Einarsson, 2010). Seal harvesting was a critical food resource historically, with meat and fat from seal pups being commonly consumed (NAMMCO, 2016). The traditional seal hunt focused on the hunting of pups (NAMMCO, 2018). Harbour seals were historically hunted for skins, blubber and meat (Granquist, 2022). Harbour seal skins have also commonly been exported ((NAMMCO, 2016). Seals have been found in Icelandic folklore, as well, which further illustrates the cultural importance of seals in this country (Bugéia, 2021).

Seal harvesting has decreased substantially in recent decades (Granquist, 2022). Restrictions have been placed on Icelandic seal harvesting in recent years and harbour seals became protected in 2019 (NAMMCO, 2016). However, landowners can apply for exceptions for the traditional use of seals (Granquist, 2022). Licensing is issued each year by the Directorate of Fisheries as an exception for own consumption (Bugéia, 2021; Directorate of Fisheries, 2023). Seal harvesting is otherwise prohibited in Iceland and seal products can no longer be sold (Directorate of Fisheries, 2023).

For years, seal fur was a valued export from Iceland; however, the decline of the international commercial seal market had significant repercussions for this export (Lukkutangi, n.d.). Seal harvesting was banned in Iceland in 2019, largely due to a significant decline in seal populations, resulting in harbour and grey seals becoming vulnerable (Granquist, 2022). In 2018, the Icelandic Natural History Museum reported that the harbour seal population had dropped by 77% within the past 35 years (Iceland Magazine, 2018). Prior to this, there was no hunting management framework in place in Iceland (Granquist, 2022). Specifically, no training requirements were in place for hunters and reporting of harvested seals was not required (Lukkutangi, n.d.). Because of the lack of regulations, it is uncertain exactly how many seals were killed in the seal harvest (Lukkutangi, n.d.). In the years leading to the ban, the largest cull of seals in Iceland was of harbour seals around rivers to alleviate predation pressures to salmon for anglers (NAMMCO, 2018).

Norway

The meat and skin of harbour seals have been used in Norway for thousands of years (NAMMCO, 2016). Seals were hunted in Western Norway at least 7,200 years ago (NAMMCO, 2016). Harbour seals were the second most harvested mammal by early Norwegians, after the red deer (NAMMCO, 2016). Seal harvesting in Norway's Arctic held cultural and economic importance in the early 20th century (University of Tromsø, 2023). Cities, such as Tromsø, attribute their growth to sealing (University of Tromsø, 2023).

For the Sámi people of Northern Norway, seals are still considered an important natural resource (Arctic Culture Lab, n.d.). However, with the restrictions in place, seals are becoming less relevant for these communities (Arctic Culture Lab, n.d.). Nonetheless, seals remain a valued resource for many local communities, where seal skin is used to make clothing and boots, and seal meat is consumed (Starr, 2018).

Though it has a lucrative history and importance to locals, commercial seal harvesting in Norway is considered to be no longer economically viable (Madslien, 2017). It was reported in 2014 that only three boats took part in the annual hunt that year (Fergus Murray, 2019). In 2015, 12-million-kroner of Norwegian government subsidy was removed (Madslien, 2017). This has permanently impacted the industry, as subsidies had accounted for approximately 80% of sealers' incomes (Madslien, 2017).

Seal harvests in Norway are ongoing but significantly diminished. Suggested quotas for harbour seals and grey seals in 2021 were 257 and 200, respectively (Øien & Haug, 2020). One Norwegian vessel participated in sealing in the Greenland Sea in 2023, with 1,877 seals harvested (Norwegian - Russian Fisheries Commission, 2023). This is a stark comparison to historic reports: for example, 300,000 seals were harvested and processed in 1955 (Starr, 2018).

Those who still participate in the commercial seal hunt must abide by strict regulations. Hunters must pass an annual shooting proficiency test and the master of the vessel must attend the

Directorate of Fisheries' annual training course, with their crew attending every two years (Nunny et al., 2018). A veterinarian must also be present on any commercial sealing vessel to monitor the hunt and evaluate the meat's quality for the Food Security Authorities (Nunny et al., 2018). Any seals that have been shot in fish farms because of their effects on fishing equipment must be reported to the Directorate of Fisheries (Nunny et al., 2018).

Finland

Seal harvesting had great significance for the livelihoods and culture of Finnish coastal people. Seal harvesting is an ongoing practice in Finland and anyone with a permanent residence can hunt in public waters (Eräluvat, n.d.). Hunting seasons and regional quotas for grey and ringed seals are put into place and monitored through catch reports (Eräluvat, n.d.; European Commission, 2023). The hunting process is strictly regulated, requiring specific weapons, and for hunters to complete exams and courses on hunting ethics and proper killing techniques (European Commission, 2023). Catch reports are used to monitor quotas, and any harvest of a grey or Baltic ringed seal has to be reported to the Finnish Wildlife Agency within three working days (Eräluvat, n.d.). In Finland, the quota for grey seals is 1,385 per year and for ringed seals it is 335 per year. The hunt is purportedly for the purpose of marine resource management, specifically to prevent seals from damaging commercial fisheries, and to reduce seal predation on fish stocks (European Commission, 2023), although seals are also recreationally hunted in Finland (Eräluvat, n.d.). Finland also offers recreational seal harvesting tourism opportunities. For example, one agency offers a guided grey seal hunt in Finland for USD 930 (bookyourhunt, c2024). While this does not involve the commercial trade of seal products, it is undoubtably a commercial seal harvesting industry.

Like in Canada, seals were considered pests in Finland and were hunted by bounties. Bounties were put in place for them from 1882 to 1948, and even as late as the mid-1970s (Eräluvat, n.d.; Scientific American, 2010). Today, Finland still has what effectively amounts to a bounty program (European Commission, 2023):

> *Compensation can be given for the costs incurred for salvaging and submitting seal carcasses of legally hunted seals to an approved facility for destruction. No compensation is given for the hunt itself. The support is intended to encourage increased seal harvesting, but Finland considers that lifting the seal trade ban would be an even stronger incentive.*

It is clear from the above wording that the EU does not wish this program to appear as a bounty. While *"no compensation is given for the hunt itself"*, it is of the authors opinion that this is effectively no different than a bounty, especially since "*The [financial] support is intended to encourage increased seal harvesting*" (European Commission, 2023). Today, high populations of seals in the Baltic Sea have caused significant damage to fishing gear, causing issues for commercial fisheries (Eräluvat, n.d.). Finland is supportive of a lift of the 2009 EU ban.

Sweden

Seals have played an important role in Swedish livelihoods and culture for coastal communities (Northern Wilderness Skills and Traditions, 2018). Seal harvesting, notably in the Gulf of Bothnia, has been a significant source of income for communities into the 20th century (Northern Wilderness Skills and Traditions, 2018).

The hunting restrictions and seal product ban have affected the livelihoods of Indigenous communities in Sweden. The Sámi people, for instance, have expressed that the limitations on their handmade seal products are hindering their income (Eye on the Arctic, 2010). While the EU ban has made an exemption for Indigenous hunting, the ban itself has diminished opportunities within the seal market, pushing Indigenous peoples, like the Sámi, out of the market.

Since the EU ban, the sale of most sealskin products is prohibited (Eye on the Arctic, 2010). Seals are hunted in Sweden either through "protective hunts" which are for marine resource management to eliminate pressure on the fishing industry, or through "license hunting" which is the recreational hunting of seals. In Sweden, seals are considered big game and hunters require special permits from the Swedish Environmental Protection Agency (EPA) and the Swedish Sea Water Authority (Hans Högman, 2022; Sellheim, 2015e). The Swedish EPA controls all seal harvesting and decides on licensed hunting for grey seals (Naturvårdsverket, n.d.). Ammunition and killing methods are heavily regulated to ensure an immediate death (European Commission, 2023). In Sweden, annual seal harvesting quotas are 1,692 grey seals, 712 Harbour seals, and 346 ringed seals. Sweden reports seals have impacts on fishing gear, fish stock abundance, and seal worm infection, and have negative economic consequences (Jansson & Waldo, 2022).

Like Finland, Sweden also has what effectively amount to a bounty program in place and is supportive of a lift of the EU ban (European Commission, 2023):

> *To alleviate the situation, Sweden enacted a national decree in 2020, which provides that, if a male Grey seal causing damage to fisheries or to aquaculture is legally hunted, the prejudiced party is entitled to financial aid for the appropriate processing of the carcass.*

Estonia

The seal hunt in Estonia has a long history of providing for inhabitants, having been the main source of livelihood for islanders even up to the 1930s (Vetemaa, n.d.). Seal harvesting was important in many coastal areas (Vetemaa, n.d.). The seal hunt in Estonia is still viewed as an important subsistence resource for hunters and local communities that helps sustain the country's culture and traditions (European Commission, 2023). Recognizing this, the government of Estonia permits seals to be hunted for subsistence purposes (European Parliament, 2023).

In addition to sustenance hunts, seals are hunted in Estonia to manage marine resources, which are heavily regulated to ensure animal welfare (European Commission, 2023). The seal hunt in Estonia is designated to specific areas during hunting seasons (European Commission, 2023). Hunters are required to use certain weapons and pass shooting tests before the hunt (European Commission, 2023). Estonia recognizes the importance of marine management through seal harvests, and has reported that a small-scale hunt, with an annual quota of 1% of the seal population, is needed to reduce damage to fisheries (European Commission, 2023). However, there are protected areas in which the hunt is not permitted (European Commission, 2023).

Recently, there has been significant contention surrounding commercial seal harvests in Estonia. A petition was filed in the European Parliament against the Republic of Estonia, which claimed that commercial seal harvesting and the sale of seal products is ongoing in Estonia, which infringes on Regulation (EC) No 1007/2009 - the European ban (European Parliament, 2023). Tanned sealskins were imported to Estonia from Canada and Norway "for inward processing by a show manufacturer which then re-exported all the processed goods" (European Parliament, 2023). This included 2,405 pieces in 2019, 1,682 in 2020, 2,020 in 2021, and 1,875 in 2022 (European Parliament, 2023). However, processing and re-export of processed goods are not banned under the regulation, only the placement of seal products on the market (European Parliament, 2023). Estonia is also supportive of a lift of the 2009 EU ban.

Latvia

There is no commercial hunt for seals in Latvia. No seal management plans have been implemented because of the significant absence of breeding stock and haul-out sites, which are areas that would need protection (Suuronen et al., 2023). However, over 10 years ago, seals became a primary issue for coastal fisheries in Latvia, as their damage to fishing equipment reduced catches (Plikshs & Pilāts, 2017). This created significant economic consequences for the fishing industry (European Commission, 2023). As of 2023, a small hunt of adult Grey seals is permitted as a last resort to prevent damage to fisheries (European Commission, 2023). Latvia is also supportive of a lift of the 2009 EU ban.

The United States

The United States has a long sealing history. Indigenous Peoples of Alaska have historically relied on sustenance seal harvesting. The Indigenous Yup'ik People in Alaska travelled to seasonally hunt seals in the springtime and used seal products for food, sod houses, lamps, weapons and clothing (Travel Alaska, n.d.). Trading seal oil and meat was and still is a component of Yup'ik Peoples' economy and culture (Travel Alaska, n.d.). Today, sustenance sealing has been delegated to Indigenous governments and organizations, and typically occurs in 55 communities across the North Slope, the Northwest Arctic, Bering Strait, the Yukon-Kuskokwim Delta and Bristol Bay (Nelson et al., 2019).

The U.S. government recognizes the importance of seal harvesting as a necessary resource for coastal Indigenous Alaskan communities (Nelson et al., 2019). Alaskan seal subsistence hunting

is managed by the U.S. National Marine Fisheries Service (NMFS) (Alaska Department of Fish and Game, n.d.). While all marine mammals are protected in the United States under the Marine Mammal Protection Act (MMPA) of 1972, the Act makes an exemption for Indigenous Peoples of coastal Alaska for subsistence hunting with very specific conditions (Nelson et al., 2019). In Alaska, subsistence hunting can only be regulated if seal populations are deemed to be at risk by the MMPA or listed by the ESA. Notably, both ringed seals and bearded seals have recently been classified as threatened or depleted on both of these lists, to much controversy (Nelson et al., 2019).

It is illegal to hunt seals in the United States under the regulations of the MMPA. This has put the sustenance and cultural harvest of fish at risk in several states. The decrease in sealing has led to massive increases in seal populations and, consequently, increased salmon predation and reduced fishing opportunities (Pailthorp, 2022).

While seals are protected in the US, exceptions have also been made to the MMPA through Section 120-Pinniped Removal Authority, which allows strategic removals to reduce pinniped predation of salmon to help recovery (Anderson, 2018). Washington and Oregon have both been successful with this conservation method in the past (McDonald, 2023). The removal of seals was common in the United States throughout the 19th and 20th centuries, especially in Maine and Massachusetts where bounties were put in place to manage depletions in marine fisheries (Lelli et al., 2009; Lelli & Harris, 2006).

Russia

Seal harvesting for subsistence has been an important part of the culture of coastal communities in Russia. Before the 1950s, it was estimated that Indigenous sealers harvested 25,000-35,000 seals each year in the Northern Sea of Okhotsk (Trukhanova et al., 2017). Today, coastal Indigenous groups like the Buriat depend on the Baikal seal harvest for both tradition and resources (Nomokonova et al., 2015). Hunting Baikal seals reportedly provides work for many local people (Gertcyk, 2015).

The commercial seal-harvesting industry in Russia was a result of coastal seal harvesting that experienced significant growth within settlements in the early and mid-20th century (Trukhanova et al., 2017). From this, the Russian sealing industry increased development of specialized sealing vessels (Trukhanova et al., 2017). The commercial seal harvest in the Russian Far East was unregulated from 1932 to 1968 and, until the late 1960s, harvests were conducted for blubber and skin (Trukhanova et al., 2017).

Since 1995, seal harvesting in the Sea of Okhotsk has been exclusively done by businesses supporting Indigenous interests (Trukhanova et al., 2017). The total allowable catches (TAC) declined from 50,000 seals previously to 7,800 in 2008 and 2,100-2,200 between 2009 and 2012 (Trukhanova et al., 2017). The TAC system for this region has changed to “possible catches” to accommodate for the recent decrease in commercial value and harvest interest

(Trukhanova et al., 2017). Russia ceased harvesting harp seals in the White Sea in 2009 (Norwegian - Russian Fisheries Commission, 2021, 2022; The Guardian, 2009).

Namibia

Namibia has an extensive history of seal subsistence hunting, especially among the Topnaar People (Ocean Conservation Namibia, 2023). For generations, sealing has provided Indigenous communities with the resources needed to sustain their livelihoods and cultures (Ocean Conservation Namibia, 2023). As of 2023, the Namibian Government recognizes the importance of the annual Namibian Seal Harvest and defends its vital role in supporting livelihoods within local communities (Ocean Conservation Namibia, 2023). Namibia's Fisheries Ministry recognizes the seal hunt as a critical activity for local hunters (Specialist Writer, 2019).

Namibia is the only country within the cape fur seal's range that takes part in commercial hunting, which occurs on two main colonies: Cape Cross and Wolf/Atlas Bay on the DeBeers company property – the region where 75% of seal pups are born (Specialist Writer, 2019). Namibia has a significant sealing industry, with hunts typically occurring to commercially supply seal pelts to the international fur market (Campbell et al., 2011). Seal meat, bone meal, leather, genitalia and oil are also exported (Campbell et al., 2011). Between 2005 and 2015, Namibia exported approximately 400,000 seal skins (Specialist Writer, 2019).

The commercial harvest of seals in Namibia is heavily regulated. Total allowable catches (TACs) are established annually (Campbell et al., 2011). For instance, the TACs in 2007 were 85,000 pups and 6,000 bulls (Campbell et al., 2011). The Ministry of Fisheries and Marine Resources (MFMR) supervises the hunt to ensure humane practices are implemented (Campbell et al., 2011). Sealers are required to participate in training and are tested at the start of, as well as during, the hunting season (Campbell et al., 2011).

The seal hunt has economic benefits for Namibia. From July to November, it employs around 81 people seasonally and an additional 100 people in processing plants (Specialist Writer, 2019). The Fisheries Ministry has also reported that the harvest contributes to the tourism industry and has contributed directly to foreign investments (Specialist Writer, 2019). The Fisheries Ministry has made a clear distinction that Namibia's seal hunt is a harvest and not a cull (Specialist Writer, 2019). The Fisheries Ministry has also ensured that the hunt is monitored to follow applicable legislation (Specialist Writer, 2019).

The economic impact of the commercial harvest of seals in Namibia includes royalties to the government and revenues from sales of seal products (Campbell et al., 2011). The market for seal pups has recently diminished, which led to a decreased pup quota in Namibia (Ocean Conservation Namibia, 2023). Seals have been blamed for declining fish stocks and it has been speculated that the government may implement bounties to regulate seal populations (Ocean Conservation Namibia, 2023).

Scotland

Archeological findings have indicated that humans have a long history of sealing in Scotland. Archaeologists have discovered flipper bones alongside human remains in a 6,000-year-old shell midden on the island of Orasaighm, 1,300-year-old seal teeth buried beneath an Iron Age stone tower on the Isle of Lewis, and a 2000-year-old pendant made of a seal tooth (Dig It!, 2022). These findings, along with Scottish oral traditions, illustrate the cultural importance of seals in Scotland (Dig It!, 2022). Humans in Scotland and around the United Kingdom have harvested seals for their fur and meat (Macdonald, 2015). Historical documents dating back to 1549 indicated the importance of seals as a resource in places such as St. Kilda and Soay Sound, Scotland (Fleming, 1999). Of note, the sustainable harvest is thought to have changed when human populations and demands increased (Macdonald, 2015).

Though today the seal hunt is limited, high numbers of seals were historically killed in Scotland to keep pace with the increasing commercial fur trade (Macdonald, 2015). Culls were additionally put into place to ensure that seal populations would not interfere with commercial fisheries, which resulted in culls in Orkney and Western Isles during the 1960s and 1970s (University of Nottingham, n.d.). As a result, by the late 20th century, the population of Scottish grey seals had drastically declined and was on the verge of extinction; this led the British government to pass the Conservation of Seals Act in 1970 (Macdonald, 2015). The Conservation of Seals Act prohibited the killing of any seal within the United Kingdom, with the exception of killings to prevent damage to fishing equipment, for scientific research or to prevent disease (Macdonald, 2015). Many hunters used this exception inappropriately to kill seals, leading to new legislation once again (Macdonald, 2015). In 2010, the Marine Scotland Act was passed, which made it necessary for hunters to apply for seal harvesting licenses to protect and prevent damage to fish and fisheries (Macdonald, 2015). In 2011, the first year in which the Act was implemented, licenses were issued for the killing of 1,339 grey seals (Macdonald, 2015). Both the allowable quotas and number of licenses distributed has decreased in recent years. In 2011, Marine Scotland received 74 applications for seal licenses of which 66 were granted, whereas, in 2020, 47 applications were received of which all 47 were granted (Scottish Government, 2019). Amendments were made to the Marine Scotland Act in February 2021 that removed “protecting the health and welfare of farmed fish” and “preventing serious damage to fisheries and fish farms” as reasons that licenses were to be granted (Scientific American, 2010). With this, it is considered an offence to kill or harm a seal without a license unless it serves to alleviate its suffering (Scientific American, 2010).

Faroe Islands

Seals have had significant importance to the inhabitants of the Faroe Islands. Seal harvesting was an important resource, particularly for food and to provide oil for indoor lighting (Mikkelsen, 2010). In the past, harbour and grey seals were abundant; however, harbour seals were extirpated by 1845 and the traditional grey seal hunt ended in the early 20th century (Mikkelsen, 2010). Seals’ importance to the Faroe Islands is well-documented in folklore, as well, with stories such as that of Kópakonan, a seal woman who was trapped on land in a human body after shedding her skin (Visit faroe islands, 2022).

Today, grey seals in the Faroe Islands are intentionally killed only as nuisance animals on fish farms (NAMMCO, 2018). It is permitted to kill seals with rifles of at least 6.5 mm caliber and hollow pointed bullets (NAMMCO, 2018). Individuals killing seals in fish farms must have completed the necessary training courses, possess the required firearms licenses, and report any killings to the Ministry of Fisheries (NAMMCO, 2018).

There has been recent discussion about sealing and commercial harvests in the Faroe Islands. In March 2019, the Fisheries Minister, Hogni Hoydal, introduced a bill that allows people of the Faroe Islands to hunt seals, but a special permit and assessment of populations is necessary (Joensen, 2019). This legislation aimed to ensure salmon exports to the United States in compliance with the MMPA Import Provisions (Joensen, 2019). The permit can be granted to breeding facilities and farmers if their catch is sustainable (Joensen, 2019). By requiring increased knowledge and recording of killings, the legislation mitigates any potential issues with the US and ensures a management plan for seals (Joensen, 2019). In April 2019, Faroese Minister of Foreign Affairs and Trade, Poul Michelsen, argued that sealing is in line with the United Nations Sustainable Development Goal 14 of the sustainable use of marine resources (The Government of the Faroe Islands, 2019).

Section 13: Global Markets

State of play of current markets

Canada is both a primary producer and processor of raw seal products. Since the early 20th century, the market for seal oil (which was predominantly used as a fuel) collapsed, and seal pelts drove the industry (Ryan, 1994b). In the mid 20th century, seal oil began to be used in the food industry, for example, to produce margarine, but was priced similarly to other food oils, and was less profitable than the pelts (Ackman, 1997). Most recently, seal oil has gained traction in the market as an omega-3 health supplement.

Seal processors typically receive seal pelts with the blubber still attached. These are processed by removing the blubber from the skins and refining the blubber into oil of four possible grades: crude, food grade, RBD (refined, bleached, and deodorized), and pharmaceutical grade. The RBD oil is typically used for human consumption, while the food grade is typically used for pet consumption, because it still has a fishy smell and may contain higher levels of contaminants (C. Moores, personal communication, 2023). Pharmaceutical grade is of a higher purity than RBD. Seal oil is sold exclusively for use as a dietary supplement (specifically an omega 3 supplement) for either people or pets. The processing of seal oil, from its initial blubber state to its final packaged product, is sometimes done entirely in Canada, entirely in Newfoundland, or in several countries, depending on the product.

Between 2000–2019, approximately half of the revenue from seal products was derived from pelts, and the other half was derived from seal oil. After this time (and to present), seal pelts

likely generate most of the revenue in the sealing industry (D. Dakins, personal communication, 2024); however, without comprehensive domestic and export sales data, it is impossible to know for certain. Canadian export data of "marine mammal fats & oils & their fractions, refined or not, but not chemically modified" can be used as a proxy for seal oil export data, if we assume that seal oil represents the vast majority of the marine mammal oil exported from Canada. These data suggest that exports peaked in 2007, with most going to China and South Korea, but decreased drastically in 2013 (Figure 1). After 2019, Canadian exports to China decreased significantly, and as a result, Norway likely began to occupy this market, using the oil it imported from Canada. While utilizing Norway as an intermediary maintains market access to China, it also cuts into Canadian profits (Figure 2). The increased trade to Norway in 2020 was likely facilitated by the finalization of the export certificate for seal oil products to Norway in 2020 (Canadian Food Inspection Agency, 2020).

Most of the demand for seal oil products is international (D. Dakins, personal communication, 2024). Norway imports more seal oil from Canada than any other country (Table 1). Seal oil is exported to processors in Norway who then refine and package this oil for export to other countries, predominantly China (Table 2). The reason for Norway being the intermediary is partly attributed to Norwegian companies outcompeting Canadian companies on the Chinese market, and better trade relations between Norway and China than between Canada and China (D. Dakins, personal communication, 2024; R. Vaugeois, personal communication, 2023). China is a large market for seal oil, however, it is only accessible through a Blue-Hat Certificate (which very few Canadian companies have, and are no longer granted), or through via cross-border e-commerce, which only allows direct sale to the consumer.

Canadian export records for marine mammal oil are consistent with Chinese Import records for marine mammal oil from Canada and suggest that approximately CAD 25,000 of marine mammal oil are exported to China from Canada (Figure 3). However, Canada does not report any Seal Oil Capsule export data, whereas Chinese data suggest that roughly 2 million USD of seal oil capsules were imported into China each year from Canada (Figure 2). The reason for this discrepancy is unclear but perhaps Canada does not adequately account for the export of marine mammal oil through e-commerce platforms.

Asian countries are important emerging buyers of seal products, especially oil. Japan, South Korea, Hong Kong, and China have been the next 5 largest importers of marine mammal oil from Canada over the last 5 years (Table 1). Other Asian markets for seal oil include the Philippines, Indonesia, Vietnam, and Singapore (Table 1). There is reportedly plenty of international demand for seal oil, but many countries are hesitant to import products due to controversy surrounding the seal products, and public backlash (D. Dakins, personal communication, 2024; C. Moores, personal communication, 2023; B. Penney, personal communication, 2023). Approximately 1/3 of global production of fish oil is derived from wild anchoveta fishery in Peru, which has seen declines in recent years. This has led to a shortage of fish oil, demand outweighing supply of omega-3 health supplements, and higher prices for these supplements (Holland, 2023).

Table 1. Average annual export of "Marine mammal fats & oils & their fractions, refined or not, but not chemically modified" from Canada between 2019–2022 (source: Statistics Canada, c2023)

Export Country	CAD (2023 equivalents)	Quantity exported (kg)
Norway	123,840	12,664
Japan	41,622	2,984
South Korea	22,608	1,909
Hong Kong	51,008	1,753
China	22,755	723
South Africa	9,754	483
Indonesia	3,570	146
Viet Nam	1,424	65
Singapore	1,046	27

Table 2. Average annual export of "Marine mammal fats & oils & their fractions, refined or not, but not chemically modified" from Norway between 2019–2022 (Statistics Norway, c2023)

Export Country	CAD (2023 equivalents)	Quantity exported (kg)
China	793,375	11,110
Hong Kong	19,652	493
Czech Republic	2,471	342
Lithuania	887	336
Iceland	6,738	256
Sweden	2,911	197
Netherlands	9,126	150
Poland	574	53
New Zealand	1,508	46
United States	3,373	38
Vietnam	432	30
Bulgaria	2,656	14
Australia	377	1

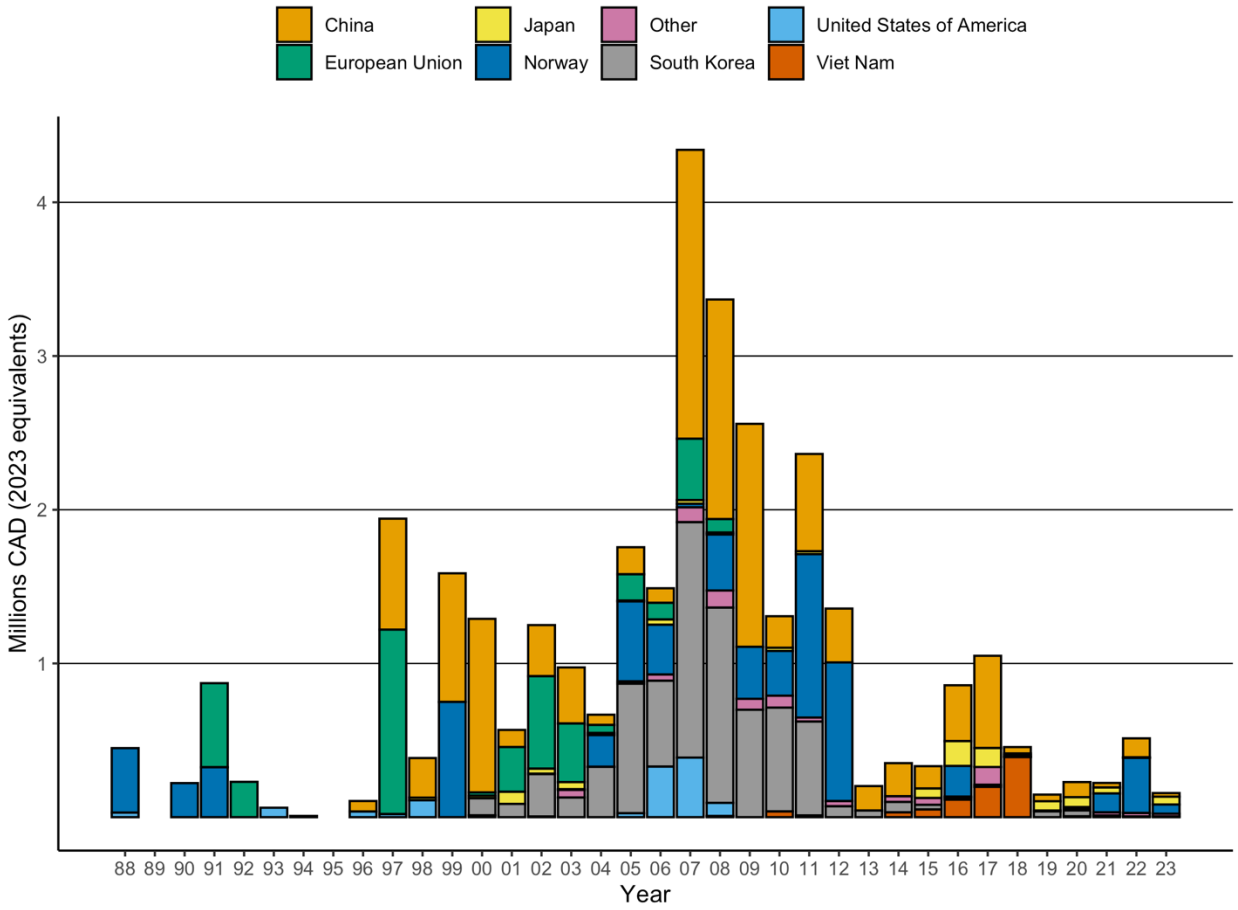

Figure 1. Value of exports of " Marine mammal fats & oils & their fractions, refined or not, but not chemically modified" from Canada, by destination region (product cod 15043000). Stacked bars show the total value of all exports from Canada. In 2009, the European Union implemented a ban on seal products. In 2013, Taiwan implemented a ban on seal products. Data obtained from Statistics Canada, c2023. China includes the regions of Hong Kong and Taiwan.

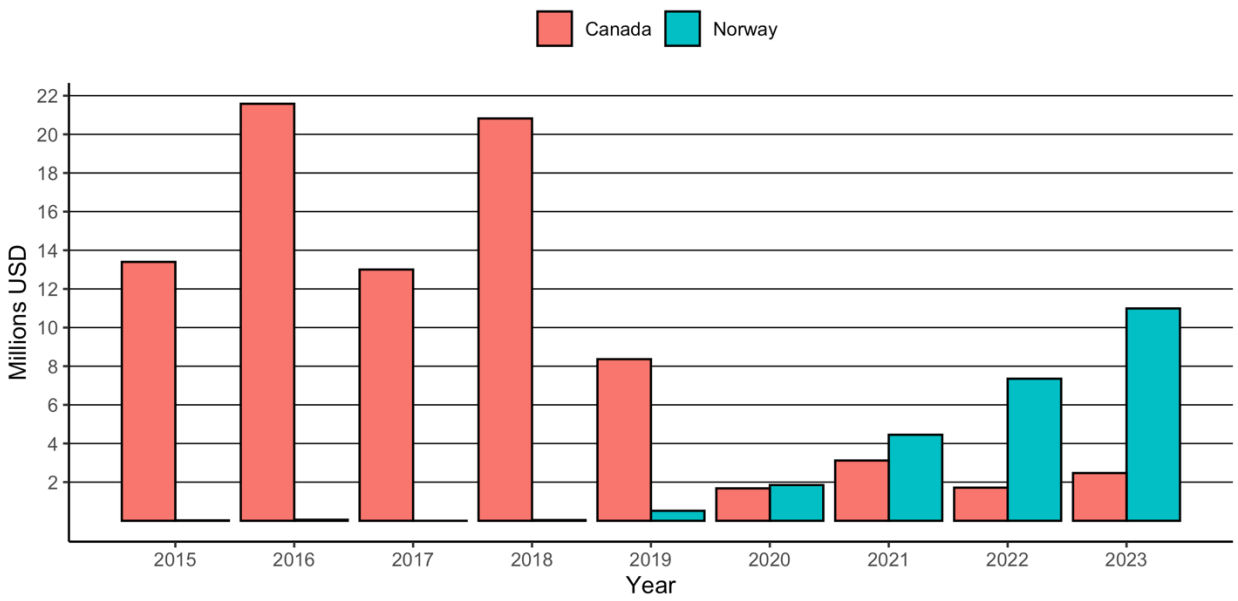

Figure 2. Annual value of seal oil capsules imported into China from Canada and Norway between 2015–2023. Data were obtained from the General Administration of Customs of the People's Republic of China, product code 21069050 (http://stats.customs.gov.cn/).

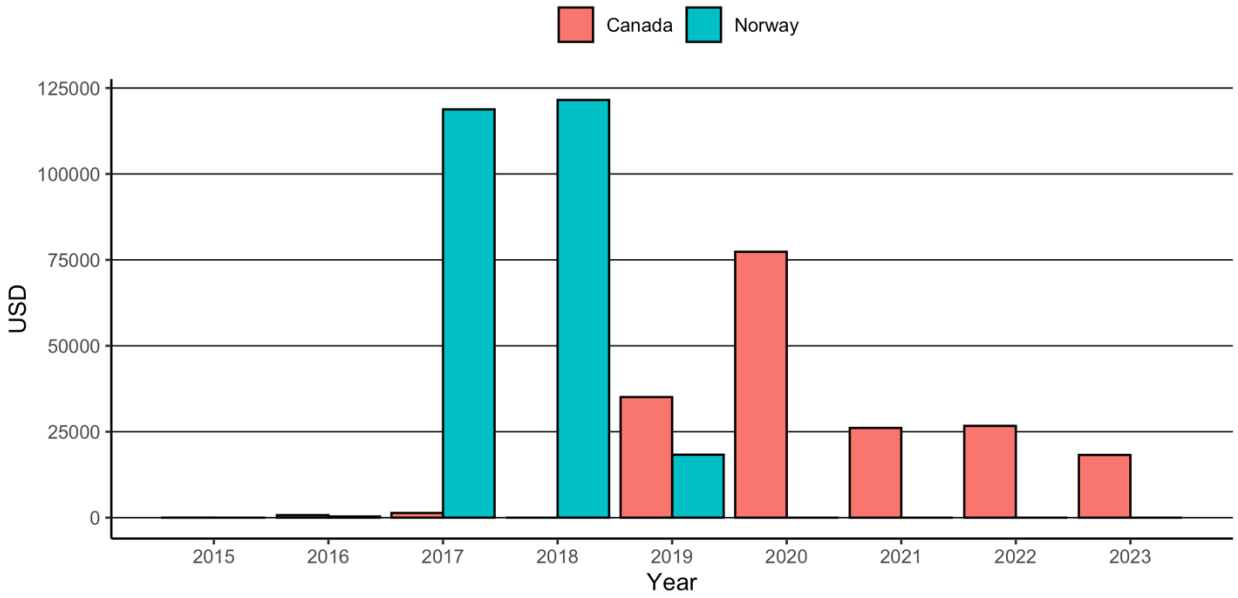

Figure 3. Annual value of "Marine mammal fats & oils & their fractions, refined or not, but not chemically modified" imported into China from Canada and Norway between 2015–2023. Data were obtained from the General Administration of Customs of the People's Republic of China, product code 15043000 (http://stats.customs.gov.cn/).

From 2019–present, seal pelts are likely again driving the commercial sealing industry. De-blubbered seal pelts must be processed to be suitable for consumer use. Processing involves either tanning the skins to create leather, or dressing (a multi-step process of cleaning, stretching, and treating) the skins to make the fur marketable (Barzdo, 1980). This processing may be done entirely in Canada; however, a variable number of raw seal skins are exported from Canada each year. For example, in 2013, 721 raw seal skins were exported to Turkey and Switzerland, and in 2015, 686 were exported to China, while in 2022, only 8 were exported to the US (specifically Utah) (Statistics Canada, c2023). Importantly, none of these products were exported from Newfoundland, because since 2008, provincial legislation requires seal pelts be fully processed within the province (Fisheries and Aquaculture, 2006).

Processed fur or leather pelts can then be sold domestically or internationally to facilities that produce clothing, accessories, or other products. The biggest market for fur products is currently domestic (C. Moores, personal communication, 2023). On the international market, it can be difficult to determine the countries driving demand for the final seal fur products, because of the complexity of the supply chain (Barzdo, 1980; R. Cahill, personal communication, 2023; M. Nielsen, personal communication, 2023). There were many brokers located in Europe who historically purchased pelts from Canada, and exported these pelts to other countries or processed the pelts into articles of clothing and exported these items. This may have made it appear as though the European market for seal fur products was larger than it was (M. Nielsen, personal communication, 2023).

Canada reports export data for raw sealskins, which allows us to determine which countries are buying this raw product (Table 3). This does not necessarily reflect where the demand for finished products is, because raw seal skins need to be tanned and then crafted into clothing or other goods, and may be travel through several countries before being purchased by customers. Canada also does not track exports of processed seal fur, or seal fur products, which makes it very difficult to determine which countries are driving demand for these products. Canada does, however, report export data for raw fur skins of many other species, and finished fur products from all species (Tables 4 and 5, respectively). These statistics may provide insights as to where demand for sealskin products lie, under the assumption that buyers of fur products would also purchase seal fur products. This is supported by market research demonstrating that 81% of consumers who were enthusiastic about purchasing animal leather and fur were also open to purchasing seal products (Abacus Data, 2020b). Currently, the two largest importers of animal fur products, the US and the EU, have bans on the sale of seal products, which likely eliminates much of the potential market for sealskin products (the EU and the US; Tables 4, 5).

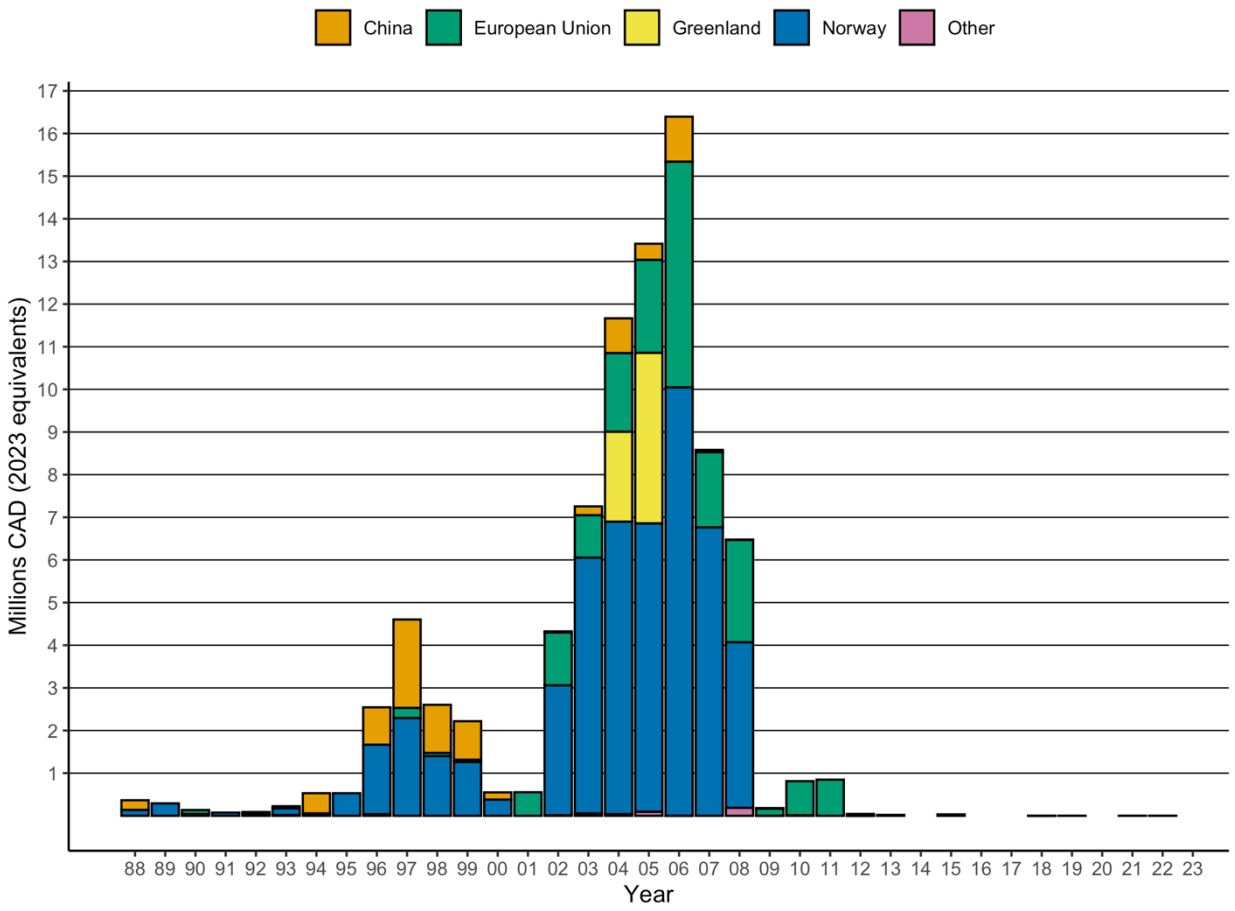

Figure 4. Value of exports of "Raw seal furskins, whole" from Canada, by destination region. Staked bars show the total value of all exports of raw seal skins from Canada. Starting in 2008, all seal skins in Newfoundland and Labrador needed to be tanned within the province, to satisfy provincial legislation. In 2009, the European Union implemented a ban on seal products. Both factors may have contributed to the reduction in exports observed after 2009. Data obtained from Statistics Canada, c2023. China includes the regions of Hong Kong and Taiwan.

Table 3. All exports of "Raw seal furskins, whole" from Canada since 2009 (source: Statistics Canada, c2023)

Year	Country	CAD (2023 equivalents)	Quantity
2022	United States of America	1,987	8
2021	Ukraine	1,631	54
2019	Ukraine	1,645	46
2018	Denmark	3,108	102
2018	Australia	81	3
2015	China	34,176	686
2013	Turkey	21,661	714
2013	Switzerland	250	8
2012	Lithuania	44,062	2,543
2012	South Korea	40	1
2011	Finland	379,831	12,679
2011	Germany	263,464	8,814
2011	Lithuania	135,730	4,588
2011	Estonia	69,152	2,305
2010	Germany	666,110	22,553
2010	Finland	137,348	4,578
2010	Japan	5,994	201
2010	Namibia	2,373	79
2010	Norway	1,156	40
2009	Estonia	149,170	4,972
2009	France	15,400	513
2009	China	13,694	625
2009	Norway	1,609	54
2009	Sweden	1,364	45

Table 4. Average annual export of whole, raw, fox, beaver, wolf, lynx, mink, muskrat, opossum, fisher, marten, and otter pelts from Canada between 2019–2022 (source: Statistics Canada, c2023)

Destination Country	CAD (2023 equivalents)	Quantity
United States of America	57,390,880	1,675,676
European Union	55,248,226	1,241,306
China	34,564,737	943,978
Thailand	23,492,518	639,951
Cambodia	20,616,030	584,387
South Korea	8,834,358	252,658
Viet Nam	5,954,780	157,626
Malaysia	5,264,775	116,772
Hong Kong	4,787,376	126,959
Russian Federation	1,316,710	30,848
Japan	635,176	12,842
Turkey	628,468	12,644
United Kingdom of Great Britain and Northern Ireland	433,219	10,673
Seychelles	101,237	2,008
Kiribati	56,269	1,643
United Arab Emirates	43,385	1,024
Ukraine	25,663	290
Georgia	12,250	27
Lebanon	3,875	8
Norway	2,925	20
Colombia	2,920	117
Jordan	2,125	5
Dominican Republic	1,720	4
Mexico	339	2
United States of America Minor Outlying Islands	175	0
Costa Rica	154	1
Australia	84	1
New Zealand	19	0
Switzerland	19	0

Table 5. Average annual export of "Articles of apparel and clothing accessories, of furskin" from Canada between 2019–2022 (source: Statistics Canada, c2023)

Destination Country	CAD (2023 equivalents)
United States of America	12,447,778
European Union	410,526
Hong Kong	229,389
United Kingdom of Great Britain and Northern Ireland	111,777
China	107,598
Japan	75,370
South Korea	52,576
Switzerland	26,108
Australia	18,801
United Arab Emirates	5,838
Russian Federation	5,603
Macao	5,128
Saudi Arabia	4,894
Taiwan, Province of China	3,566
Kuwait	3,010
Ukraine	2,669
Albania	2,252
Kazakhstan	2,081
Qatar	1,479
Norway	1,252
Brazil	1,178
Greenland	1,018
Yemen	834
New Zealand	785
Cambodia	732
Israel	668
Bahrain	661
Singapore	548
Guyana	525
Argentina	438
United States of America Minor Outlying Islands	187
Lebanon	88
Viet Nam	42

Unlike seal oil and pelts, seal meat has never been the economic driver of the seal harvest. Unfortunately, a large proportion of the available meat from harvested seals is not utilized for consumption. Seal meat has great potential to be an environmentally friendly sustainable food

source, as it is a wild food that can be procured without land-use change, and with relatively little greenhouse gas emissions when compared with conventional agriculture (Hilborn et al., 2018b).

Due to the potential benefits of utilizing seal meat as a food source, and because not utilizing seal meat attracts significant negative media attention, the Canadian government has spent a large amount of money to grow the seal meat market, both nationally and abroad. Government assistance to grow the seal meat industry dates at least as far back as the 1970s (Barzdo, 1980). Following the recommendations of the Royal Commission on Seals and Sealing in Canada, more than $3 million in government subsidies were paid to the sealing industry from 1986 to 1999, with a particular focus on growing the seal meat industry. For example, in 1996, an estimated $1.72 million was provided in subsidies to support meat transport and processing. Further, seal meat production between 1994–2000 was closely associated with the level of subsidies received (McLaren et al., 2001). The industry has also been subsidized at the provincial level, although, records of these contributions are largely unavailable (McLaren et al., 2001). Between 2015–2020, CAD 790,032 was allocated to supporting marketing activities of the broader sealing industry, which may have included seal meat. In 2021, CAD 2.64 million in funding was received through the Canadian Fish and Seafood Opportunities Fund, and in 2023, an additional 1.8 million was received through this same fund.

Historically, more seal meat was likely consumed in Newfoundland than today but a strong commercial market for seal meat has likely never existed. Based on a 1976 survey of sealers, it was estimated that 59,594 carcasses were landed (22% of total seals harvested) yielding $490,000 in profit. In the same year, three canneries in Newfoundland purchased over 300,000 lbs of seal meat, but only canned 128,000lbs—even this exceeded demand. In 1978, no seal meat was canned due to a lack of demand (Barzdo, 1980). Today, seal meat is rather difficult to purchase domestically. In Newfoundland, it is only sparsely available from stores as a fresh product during the sealing season, which only lasts a couple months. Restaurants may make requests for seal meat from certain seal processing companies (D. Dakins, personal communication, 2024). Seal meat is marketed on the Canadian Seal Products website, but no seal meat can be purchased on the site, unlike other seal products, because current no companies offer an e-commerce seal meat product. It seems the only place that seal meat can be purchased out of season is in Quebec, where seal meat is incorporated into the fine dining scene (Canadian Seal Products, c2023). A small, but not insignificant amount of seal meat is also exported from Canada each year (Table 6). There are several policy barriers that may impede the growth of the seal meat industry; however, the ultimate challenge is as it was in the past—a lack of demand. Seal meat may find other uses besides “on the plate”, such as protein powder, pet food, or iron supplements. Creating a market for seal meat will require something the sealing industry has historically not had, and that is a strong marketing campaign.

Table 6. All exports of seal meat products from Canada since 2009 (source: Statistics Canada, c2023)

Year	Commodity	Country	CAD (2023 equivalents)	Quantity (kg)
2023	Seal meat and edible seal offal, fresh, chilled or frozen	South Korea	38,404	8,402
2023	Seal meat, meat offal or blood, prepared or preserved	Hong Kong	37,500	3,538
2021	Seal meat, meat offal or blood, prepared or preserved	Hong Kong	732	69
2020	Seal meat, meat offal or blood, prepared or preserved	China	1,411	133
2018	Seal meat and edible seal offal, fresh, chilled or frozen	China	91,791	24,870
2018	Seal meat and edible seal offal, fresh, chilled or frozen	South Korea	71,881	15,000
2018	Seal meat, meat offal or blood, prepared or preserved	China	38,796	14,108
2018	Seal meat, meat offal or blood, prepared or preserved	Hong Kong	214	78
2018	Seal meat, meat offal or blood, prepared or preserved	Netherlands	5	2
2017	Seal meat, meat offal or blood, prepared or preserved	China	11,345	4,153
2017	Seal meat, meat offal or blood, prepared or preserved	Hong Kong	4,023	1,463
2016	Seal meat, meat offal or blood, prepared or preserved	Japan	79,607	7,510
2015	Seal meat, meat offal or blood, prepared or preserved	Hong Kong	993,740	210,887
2015	Seal meat, meat offal or blood, prepared or preserved	South Korea	45,000	20,000
2015	Seal meat, meat offal or blood, prepared or preserved	China	20,000	2,847
2015	Seal meat, meat offal or blood, prepared or preserved	Viet Nam	10,000	943
2014	Seal meat and edible seal offal, fresh, chilled or frozen	South Korea	103,809	18,980
2014	Seal meat, meat offal or blood, prepared or preserved	Burkina Faso	8,727	3,173
2013	Seal meat and edible seal offal, fresh, chilled or frozen	China	145,688	25,900
2013	Seal meat and edible seal offal, fresh, chilled or frozen	South Korea	38,250	9,000
2013	Seal meat, meat offal or blood, prepared or preserved	Burkina Faso	1,414	514

2012	Seal meat and edible seal offal, fresh, chilled or frozen	South Korea	32,000	20,000
2012	Seal meat, meat offal or blood, prepared or preserved	Burkina Faso	3,179	1,156
2011	Seal meat, meat offal or blood, prepared or preserved	Burkina Faso	7,223	2,627
2010	Seal meat and edible seal offal, fresh, chilled or frozen	South Korea	69,596	18,340
2010	Seal meat, meat offal or blood, prepared or preserved	France	2,101	836
2010	Seal meat, meat offal or blood, prepared or preserved	Saint Pierre and Miquelon	1,101	388
2010	Seal meat and edible seal offal, fresh, chilled or frozen	France	690	123
2009	Seal meat, meat offal or blood, prepared or preserved	Saint Pierre and Miquelon	2,096	586
2009	Seal meat, meat offal or blood, prepared or preserved	France	1,430	342
2009	Seal meat and edible seal offal, fresh, chilled or frozen	France	1,176	209
2023	Seal meat and edible seal offal, fresh, chilled or frozen	South Korea	38,404	8,402
2023	Seal meat, meat offal or blood, prepared or preserved	Hong Kong	37,500	3,538
2021	Seal meat, meat offal or blood, prepared or preserved	Hong Kong	732	69
2020	Seal meat, meat offal or blood, prepared or preserved	China	1,411	133
2018	Seal meat and edible seal offal, fresh, chilled or frozen	China	91,791	24,870
2018	Seal meat and edible seal offal, fresh, chilled or frozen	South Korea	71,881	15,000
2018	Seal meat, meat offal or blood, prepared or preserved	China	38,796	14,108
2018	Seal meat, meat offal or blood, prepared or preserved	Hong Kong	214	78
2018	Seal meat, meat offal or blood, prepared or preserved	Netherlands	5	2

The state of the Canadian sealing industry can also be seen through participation and through the total landings. It has been negatively affected by the anti-sealing campaigns leading to the 2009 EU ban, and the subsequent bans and regulations put in place in other jurisdictions since this ban went into place. The impact of this ban is apparent in the number of active seal harvesters in Newfoundland, which has been reduced by over half since 2009 (Tables 7, 8, 9).

Table 7. Number and type of seal harvesting licenses issued in Newfoundland and Labrador since 2009. Data received from the SSN.

Year	Commercial Assistant	Commercial Professional	Temporary	Personal Use
2009	3,336	7,810	315	1,085
2010	3,104	7,564	188	1,457
2011	2,869	7,271	167	1,705
2012	2,660	7,022	227	1,864
2013	2,462	6,759	144	1,990
2014	2,225	6,416	180	2,012
2015	1,554	5,505	105	1,721
2016	916	3,993	128	1,920
2017	798	3,760	185	1,888
2018	694	3,462	148	1,523
2019	687	3,493	N/A	1,573
2023	603	2,995	N/A	1,497

Table 8. Number and type of seal harvesting licenses issued in Quebec since 2015. Data received from the SSN.

Year	Commercial Assistant	Commercial Professional	Personal use
2015	0	974	565
2016	9	991	539
2017	30	971	571
2018	27	958	539
2019	39	959	593
2020	39	944	554
2021	20	931	547
2022	15	812	468
2023	21	800	539

Table 9. Canadian seal landing and landed value between 2004–2020. Data received from the SSN.

Year	Landings		Landed Values ($)
	Number of Pelts	Meat (kg)	
2004	319,885	176,476	14,862,415
2005	290,242	6,725	16,293,459
2006	297,252	27,001	30,090,106
2007	223,641	51,154	11,731,050
2008	215,440	35	6,773,439
2009	53,531	144,427	816,222
2010	67,007	53,788	1,292,389
2011	37,918	1,751	657,710
2012	67,567	9,647	1,524,659
2013	95,221	19,961	2,635,339
2014	59,486	27,720	1,665,867
2015	35,842	3,645	1,126,912
2016	69,948	N/A	1,748,700
2017	83,167	N/A	2,079,175
2018	61,149	N/A	1,528,725
2019	33,336	N/A	860,000
2020	2,524	N/A	63,100

Regulatory challenges to the seal product market

The sealing industry has faced numerous laws and regulations that have negatively impacted the trade of seal products. In 1972, the US banned the importation of marine mammal products, which caused Canadian exports to the US to crash. The United States, however, appeared to be a relatively minor consumer of Canadian seal products, as the US only accounted for 3.7% of Canadian seal exports in 1970, with most seals being exported to the UK, Norway, and Belgium/Luxenbourg. While fur products may have entered the US through an intermediate country, Norway was a large importer of Canadian seal products, and the US only accounted for 5% of exports of processed sealskins from Norway; therefore, this is unlikely. Exports of processed sealskins from Norway were mainly to west Germany, the USSR, and Italy. While the impact of the US ban appears to be minimal, it may have impacted the market, as in 1973, the year after the ban, Canadian sealskin exports were less than half of those in 1970 (193,701 skins vs 81,188 skins). The market rebounded quickly however, and Canadian exports in 1977 surpassed those in 1970 (Barzdo, 1980).

Prior to 1983, the EU was the largest importer of sealskins. Between 1979 to 1982, they imported 432,088 skins per year, on average, which represented 70–75% of all international trade in sealskins. After 1983, the year the EU banned the importation of whitecoat and blueback products, the market for sealskins in Europe declined precipitously, and the EU only

imported 118,608 skins in 1984 (Malouf, 1986a). Seal products became associated with poor animal welfare and conservation practices. While the ban was only meant to target non-Indigenous commercial sealers in Canada, it also had a significant negative impact on Indigenous sealers in Canada. Mexico and Croatia then banned the importation of many seal products in 2006. Later, from ongoing pressure from the anti-sealing industry, in 2009, the EU passed regulation to ban the importation of all seal products, with exception for certain Indigenous communities that met rigorous guidelines. The value of seal landings prior to the ban ranged from CAD 16.6 million in 2004, to a high of 33.9 million in 2006. It started decreasing in 2007, likely a result of ongoing anti-sealing campaigning, and after the ban, the landed value of seals only reached CAD 1.1 million in 2009, and has not meaningfully recovered since (DFO, 2011b).

Following the EU ban in 2009, other countries then followed suit. The Customs Union of Russia, Belarus, and Kazakhstan (EEC) banned the import and trade of harp and hooded seal products in August of 2012. At the time, Russia was the destination for 90% of Canadian seal fur products, therefore, this was a devastating blow to the industry. Like the EU seal regime, the EEC ban also had an exemption for Indigenous seal products (DFO, 2011b; Sellheim, 2015d), although it is unclear from their website whether this exemption is still in place, or if there are any systems in place to utilize it. For example, on the EEC website, the list of goods subject to prohibitions or restrictions on import only mentions seals from Greenland, with no further details (EEC, c2023). In January 2013, Taiwan also followed suit, banning all marine mammal products, except those stemming from Indigenous communities. More recently, in 2017, Switzerland banned the importation of non-Indigenous seal products and, in 2018, India banned the importation of seal skins in any form (Kalvapalle, 2018; The Federal Council, c2023). The primary impediment to the sealing industry today is likely lack of access to international markets.

Recent responses to controversies

China is a very important market for Canadian seal products, but it is shrouded in legislative and bureaucratic challenges. Prior to 2008, seal oil was effectively exported to China through export certificates issued by the CFIA. Following a risk assessment in 2001, China stopped recognizing these Canadian export certificates in 2008. After this time, the CFIA worked with China's General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ), to allow edible seal products to be exported to China. This took several years of negotiation and on-site visits to Canadian seal processing facilities. The agreement was initialled, and exports were set to begin in 2011, but it was impeded by the suspension of imports of edible seal products in China (Personal communication, CFIA, 2023).

In 2011, the Animal Rights movement in China were displeased with the new agreement to import edible seal products. After the European ban in 2009, several members of the Animal Rights movement felt that it was insulting and even racist that Canada was seeking to sell seal products in China, where it has been banned in other nations for ethical considerations (Watts, 2011). The Beijing Capital Animal Welfare Associations submitted a proposal to the Chinese

People's Political Consultative Conference to ban seal products in China, which ultimately resulted in the suspension of imports of edible seal products into China from brands that do not already have a Blue-Hat Certificate. There is currently nothing the CFIA can do that would allow edible seal products (which do not already have a blue-hat certificate) to be exported to China (Personal communication, CFIA, 2023). The power to allow seal products to be exported to China lies in the political relationship of China and Canada.

Today, companies that possess a previously issued Blue-Hat Certificate (more recently called a Health Products Certificate) are eligible to export specific seal oil capsules to China with a specific brand and packaging; however, only two companies in Canada currently possess a Blue Hat License to export seal oil to China. It is only with a Blue-Hat Certificate that seal oil products can be placed for sale in a retail setting in China, such as in pharmacies, or grocery stores.

Under the current regulatory framework, there is a mechanism in place for new Health Product Certificates to be issued, were seal products eligible for export to China (which they are currently not). However, before a Certificate could be issued, first, seal oil must be registered in the Chinese Catalogue of Raw Materials for Health Food Products. This catalogue currently only contains 5 raw materials: Coenzyme Q10, melatonin, fish oil, *Ganoderma lucidum* spore powder and spirulina. The few materials listed in this Catalogue is a testament to the difficulty of registering new materials.

Registering new products in the catalogue requires a long and expensive review process. For example, to register a seal product as a pet food in China, it would cost roughly $250,000. To register a seal product as a product for human consumption in China it would cost significantly more money and take roughly 3–4 years to implement, by which time the regulations may have changed. Importantly, there is also no guarantee that this investment will result in a registered product—the review process may deem the product unsuitable for import. Further, after the product is registered, then the facility must be registered, which has its own review and audit process (R. Vaugeois, personal communication, 2023). It is highly unlikely that seal products would be granted inclusion into the Catalogue, even if all regulatory steps were underdone, because seal products are listed as ineligible for export to China (Government of Canada, c2023).

Seal oil is currently being exported to China through cross-border e-commerce. Omega-3 health supplements made of seal oil may be exported to neighbouring regions of China, such as Hong Kong. Then, once someone orders the product online, it can be imported into China and shipped directly to the customer (R. Vaugeois, personal communication, 2023).

Trade to China has been made even more challenging on Jan 1, 2022, when China implemented new trade regulations. Fish and seafood products are classified as "High Risk" to China, and must meet rigorous export requirements, including through registering all manufacture (i.e., fishing vessels) processing, or storage establishments with the China's General Administration of Customs China (GACC). Many requirements need to be met and all establishments are subjected to audits by the GACC. None of this is currently relevant to seal products, however,

because all edible seal products are listed as ineligible for export to China (Government of Canada, c2023).

Indigenous exports

Prior to the 1983 EU ban on whitecoat and blueback pelts, seal harvesting greatly contributed to the economies of Inuit communities. Historically the Government of Northwest Territories (which included the region of Nunavut prior to 1999) would purchase pelts from seal harvesters and sell them at Canadian fur auctions, after which point they would ultimately be distributed worldwide through the international fur industry. This generated, on average, 2.85 million dollars (2023 equivalents) per year of revenue for seal harvesters, between 1961–1982 (Personal communication, Government of Northwest Territories). The 1983 EU ban, and the activism leading to it, completely collapsed the market for all seal products, even though this ban did not specifically target Indigenous seal skin products (Figures 5, 6). To ameliorate the impacts of this collapse on Inuit communities, the DFO instituted a seal-pelt price-support program, paying Inuit harvesters an average of $6.00 per pelt; the Government of Northwest Territories offered an additional $5.00 per pelt, in addition to the market value. These initial assistance programs were not nearly sufficient to replace the commercial market for seal pelts. This resulted in severe economic and social hardship in these communities.

The commercial market for Indigenous seal skins likely never fully recovered from this original 1983 ban; however, a lesser number of seal skins were still sold on at fur auctions after the 1983 ban, bringing outside funds into the local economies. This again changed after the EU implemented an additional seal-product ban in 2009. After the EU banned the placement of seal products on its market in 2009, this eliminated the remainder of the international commercial market for Indigenous seal products. This ban, and the activism leading up to it, severely impacted the Inuit seal product market. For example, in 2008, 11,000 sealskins from Nunavut were left unsold after the 2008 fur auction (Personal communication, Government of Nunavut). Without a viable international market, after the 2009 ban, the territorial governments ceased to export Inuit seal pelts to fur auctions for sale. Instead, they implemented social programs, which aimed to meet the demand for seal pelts by local crafters and artists and provide income for seal harvesters. In 2009, the Government of Northwest Territories established the Hide and Fur Program. Through this program, seal harvesters could sell their seal pelts to the government for a set price ($55 per pelt from 2010–2015, and $70 per pelt thereafter). The government pays for the tanning of these pelts, then sells them back to local crafters and artists at cost. The Government of Nunavut implemented a similar program, the Dressed Sealskins For Nunavummiut Program in which the government purchases pelts from sealers, pays for them to be tanned and then sells them to local crafters and local businesses at cost. The price that the government of Nunavut pays to seal harvesters depends on the quality and size of the pelt, and the cost of shipment and processing. These systems provide a monetary incentive for harvesters, meet the demand of local crafters, and help to maintain seal harvesting culture and traditions in Inuit communities (Government of Northwest Territories, n.d.; Government of Nunavut, 2021).

After 1999, the below figures only include data from the contemporary region of the Northwest Territories (and thus do not include Nunavut). An economic assessment of the sealing industry in Nunavut in 2006 revealed that the sealing industry resulted in CAD $400,000 in sealskin purchases, $25,000 in commercial meat sales, $30,000 in Nunavut Inuit Collection, $50,000 in Arts and Crafts, and $300,000 through clothing production (Personal communication, Government of Nunavut). More recently it was estimated that sealskin products are worth 1 million to the arts and crafts sector in Nunavut, and it would cost roughly $5 million to replace the meat derived from seal harvesting in Nunavut with commercial alternatives (Government of Nunavut, 2021b).

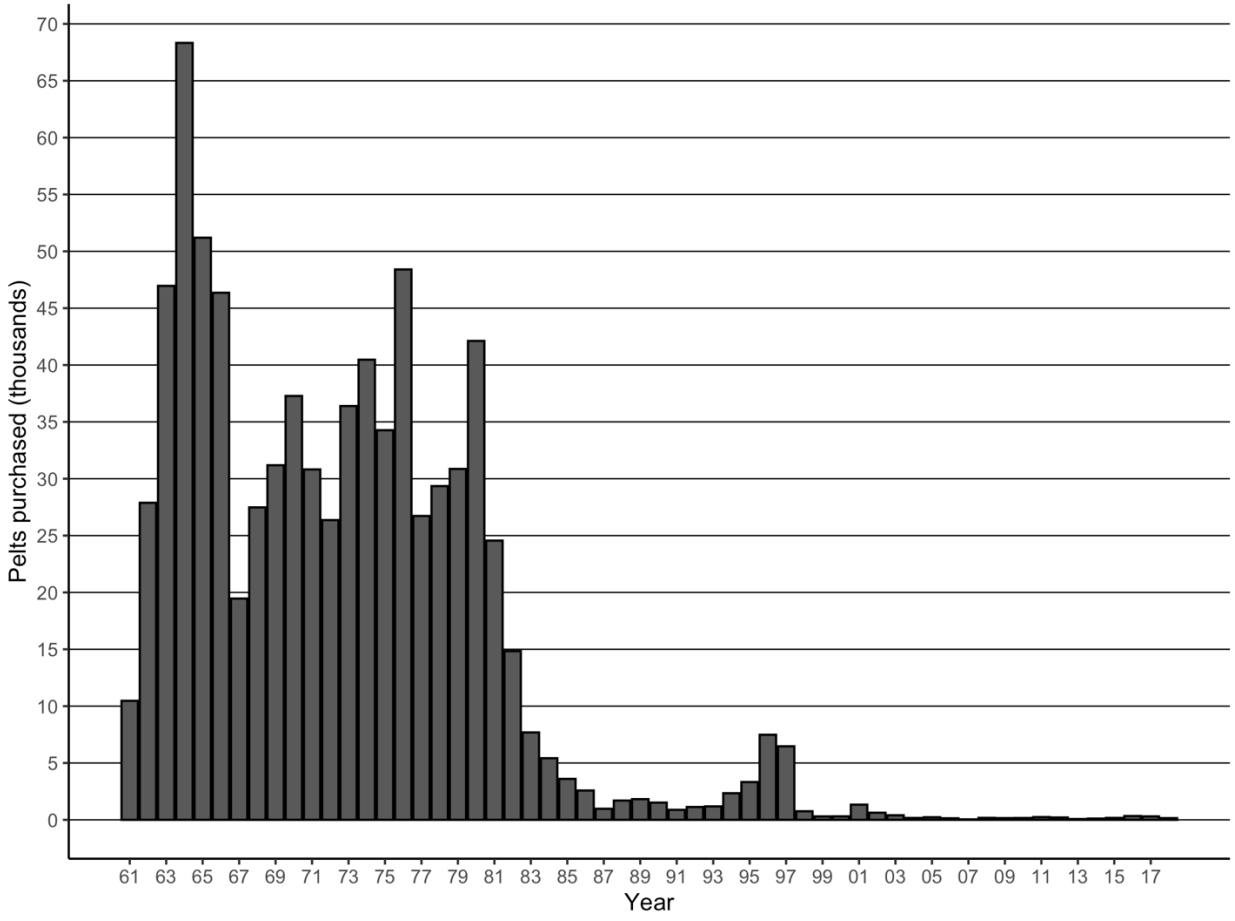

Figure 5. Number of pelts purchased from the Government of Northwest Territories between 1961–2018. The number of pelts does not represent the total number of seals harvested in the Northwest Territories, because seal skins are also processed and sold without the sale to the government, and not all pelts from all seals harvested are sold. Prior to 1999, the Northwest Territories included the region of Nunavut. Prior to 2009, pelts were sold to fur auctions; after, pelts were sold to crafters at cost through the Hide and Fur Program. The EU implemented bans in seal products in 1983 and 2009. Data received from the Government of Northwest Territories.

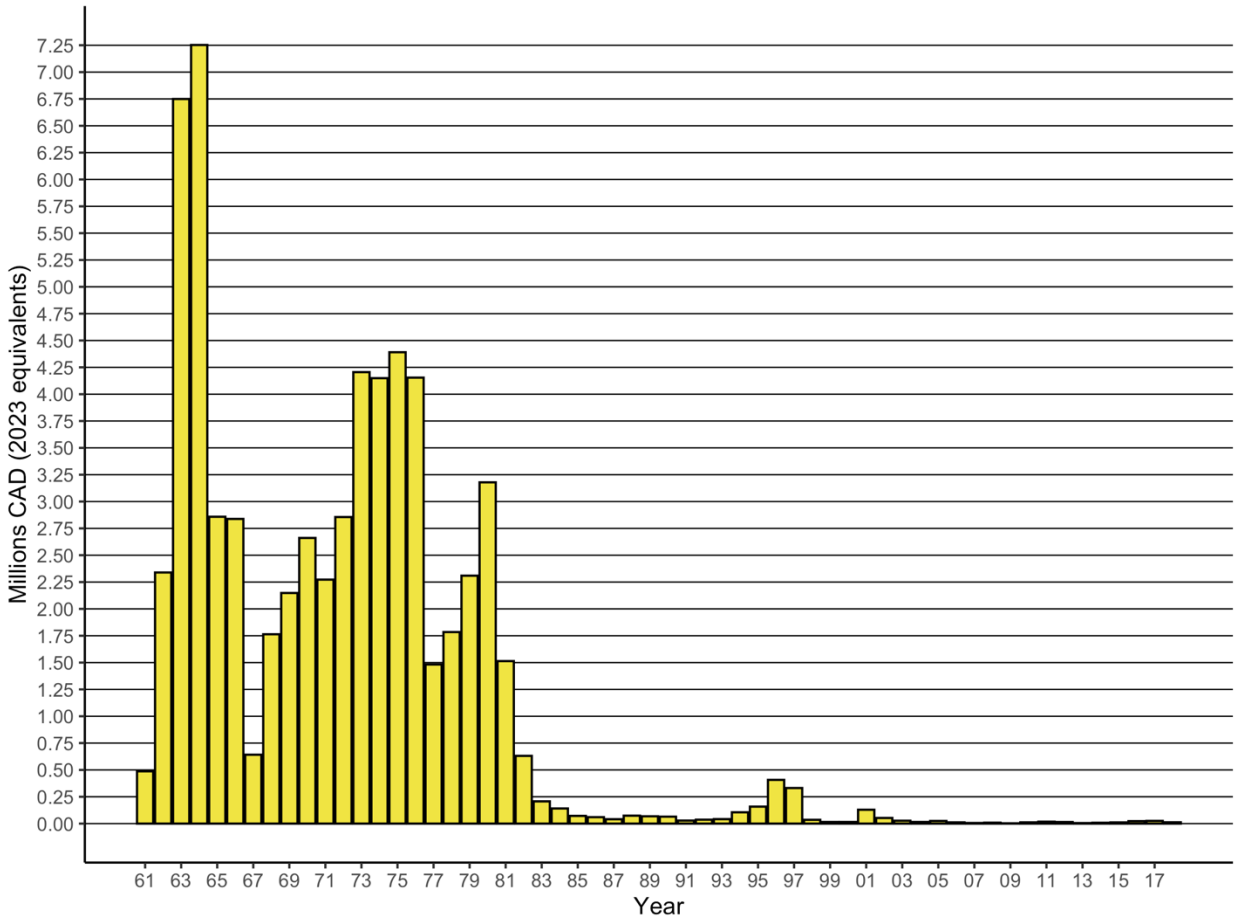

Figure 6. Seal harvester revenue from the sale of pelts to the Government of Northwest Territories between 1961–2018 (data adjusted for inflation to 2023 equivalents). This does not represent the total economic value of seal harvesting in the Northwest Territories, because it does not account of the sale of crafts and clothing made of seal skin. Prior to 1999, the Northwest Territories included the region of Nunavut. Prior to 2009, pelts were sold to fur auctions; after, pelts were sold to crafters at cost through the Hide and Fur Program. The EU implemented bans in seal products in 1983 and 2009.

There remain many issues surrounding the exportation of Indigenous seal products. After the European Union banned the placing of non-Indigenous seal products on the EU market in 2009, Inuit communities in Canada were left unable to export their products to the EU, because there was no Recognized Body in Canada. A Recognized Body is a status awarded by the EU, through an application process. This Body is required to certify that the products being exported to the EU for sale are from an Indigenous community that meet the requirements of the Indigenous Exemption (European Commission, 2023).

The pathway to become a Recognized Body was cumbersome and unclear, and Indigenous sealing communities did not have the funding, resources, or knowledge of the EU legal processes that would allow them to become a Recognized Body. While the EU assisted Greenland in becoming a Recognized Body, no such assistance was given to Canada. In contrast to Greenland, not all seal harvesting in Canada is done by Indigenous Peoples, and thus the certification process is much more complicated. In a small victory, the WTO ruled that the EU seal regime violated the "most-favoured-nation" principle, because Greenland was able to export Indigenous seal products, while Canada was not (Hennig, 2018).

In response to this decision, the EU engaged with Canada to facilitate the establishment of a Recognized Body in Canada. However, this alone was not enough to establish a Recognized Body in Canada. Therefore, the DFO launched the Certification and Market Access Program for Seals, a 5.7-million-dollar program spanning 2015–2020. This program was designed to help Indigenous communities gain access to the EU market and support the seal industry as a whole by improving market conditions for seal products (DFO, 2019a). The program assisted the Government of Nunavut and the Government of the Northwest Territories in becoming Recognized Bodies. There are 8 legal requirements to become a Recognized Body. Recognized Bodies must have a certification process, be able to track Indigenous seal products through the production chain, and prove the products' origin. These Bodies are subject to third-party auditing and must report to the EU at the end of each reporting cycle. This Canadian Program resulted in the Government of Nunavut becoming a recognized body in 2015 and the Government of the Northwest Territories in 2017. This once again allowed Inuit in these regions to access the EU market after 5 and 7 years of exclusion, respectively, following the 2009 ban (DFO, 2019a).

Despite regaining access to the market, challenges remained. Finding buyers for Indigenous seal products in the EU proved difficult because consumers were biased against seal products and did not differentiate between Indigenous seal products and other products, and importers and retailers were unclear on the regulations and the legality of seal products (DFO, 2019a). Further, boarder service agents within EU countries were often unclear on exemptions and have stopped certified seal products on route to their destination country (Z. Martin, personal communication, 2023). These problems were exacerbated by 5 years of Inuit exclusion from the EU market following the ban. Once potential buyers were established in the EU, there were too few Inuit seal hunters to fulfill the orders, although, the Certification and Market Access Program only engaged with government authorities in Nunavut and the Northwest Territories, and it was thought afterwards that engagement with local organizations and sealers themselves, especially in Inuktitut, would have fostered better results (DFO, 2019a).

While the Indigenous Exemption allows all seal products stemming from Indigenous communities to be sold on the EU market, logistically, only certain seal fur products could be sold there. Seal oil, meat, organs, and many crafted fur products are not readily identifiable to a species of seal (a ringed seal product was likely derived from an Indigenous community). These products may be transported far from the place of origin for tanning and processing and may be

processed along with non-Indigenous seal products. This makes it very difficult to track and verify which products came from Inuit communities. Inuit communities also utilize harp seal pelts for clothing, which cannot be distinguished from harp seal pelts derived by a non-Indigenous harvester (DFO, 2019a). For this reason, these products remain unable to be imported into the EU.

Between 2015–2018, 172 seal products were certified and imported into the European Union under the Indigenous Exemption with the assistance of the Certification and Market Access Program (DFO, 2019a). In this same time, no seal products were certified and exported into the European Union from the Northwest Territories. After the Certification and Market Access Program ended, exports decreased significantly. Between 2019–2023, only 5 products have been exported to the EU from Nunavut, all of which occurred in 2020. The Northwest Territories have only exported 2 products to the EU since the ban (European Commission, 2020, 2023).

The value of these exports does not come close to the financial burden of exporting products to the EU under the Indigenous Exemption. As noted above, 5.7 million dollars were allocated under the Certification and Market Access Program from the federal government to allow exports of seal products to the EU. In addition to this, the Government of Nunavut reports that the electronic system required to track and verify products destined for the European Union cost $250,000 annually in Nunavut. The program also requires two full-time employees to manage the system, issue attestation documents, participate in audits and create reports to the European Minister (Z. Martin, personal communication, 2023). Assuming these employees are paid the median wage of an administrative assistant in Nunavut ($30 per hour), this would add an additional CAD 124,800 in funding required to operationalize the EU exemption, bringing the total annual cost to CAD 374,800 (Government of Canada, Employment and Social Development, 2023). Under the current regulations, we find that the expense of certifying and exporting products to the EU far outweighs any benefits that could be achieved from accessing the market in its current state.

Inuit sealers in northern Quebec (Nunavik), northern Labrador (Nunatsiavut) and other Indigenous communities in Newfoundland and the east coast of Canada have not been able to export their products, because no Recognized Body exists in these regions. In Greenland, Indigenous People have utilized the Indigenous Exemption to some benefit, as they have exported 52,341 products to the EU between 2015–2018, and an additional 43,423 between 2019–2023. Importantly, however, all three Recognized Bodies (Nunavut, the Northwest Territories and Greenland) indicate that the 2009 EU ban has had a major negative socio-economic impact. For example, the Government of Greenland indicated that the number of seal skins sold on the international market decreased by 92% in 2010, when the ban was implemented, and all three regions report difficulties selling their products because of reduced demand following the ban, and a lack of awareness of the Indigenous Exemption in Europe. The Indigenous Exemption in Nunavut and the Northwest Territories has resulted in far greater financial costs than it has benefits, because of the burden of certifying products as Indigenous. The Recognized Bodies have outlined multiple areas where the certification process could be improved to reduce this burden, in 2020 and again in 2023 (European Commission, 2020, 2023).

New and emerging markets and opportunities

The pet industry is a very large market with great potential for meat and oil seal products. The pet population in Canada has grown (now standing at 27.9 million pets), and so have pet food sales. Pet food sales have increased from CAD 3.4 billion in 2016 to CAD 4.2 billion in 2020, and are forecasted to be CAD 5.3 billion by 2025 (Government of Canada, c2021). One advantage of engaging with the pet industry is that consumers are generally comfortable with their pets consuming meats and animal products that they themselves may not wish to consume. For example, animal by-products, including liver, kidney, lungs and spleen, are commonly used in dog and cat foods (Purina, 2017).

Wild Kangaroos are harvested in Australia and the meat from these animals is widely used in the pet industry. Like seals, kangaroos are considered a nuisance species by some in Australia, because of their competition with domestic sheep for forage and water. Like seals, kangaroos have been subjected to culls and bounties because of their perceived economic impact on the livestock industry. The practice of hunting and consuming the Kangaroo meat has since gained widespread acceptance and has been in place since 1959. Typically, only the loin fillet on a Kangaroo is tender enough for human consumption, and the remainder of the meat (roughly 1.5kg per carcass) is used for pet food (Ben-Ami et al., 2010). The industry is worth roughly 200 million dollars, and Europe is the primary consumer of kangaroo meat and pelt products. However, there has been growing pressure from many animal rights organizations in the last 2 years to ban kangaroo imports into the EU (Whitworth, 2023).

In the pet industry, Kangaroo has had great success, as it is highly desired for its hypo-allergenic properties. The acceptability of kangaroo meat is partly attributable to media uptake documenting the perceived environmental benefits of kangaroo meat as an alternative to conventional agriculture. Specifically, increasing kangaroo consumption is thought to contribute to reducing sheep farming, and thus concomitantly reducing greenhouse gas emissions from agriculture (Ben-Ami et al., 2010).

Seal meat in pet food may be an important future market for seal meat products. Many controversial or unappetizing products, such as animal entrails, kangaroo, and horse are used for pet foods. Research into whether seal meat has the same hypo-allergenic properties as kangaroo meat may prove promising for marketing efforts. If seal meat is hypo-allergenic, seal meat may be advertised as an environmentally friendly alternative to kangaroo-based pet food, considering the greenhouse gas emissions associated with shipping kangaroo products from Australia to Canada. Veterinary endorsements of seal meat may go a long way in promoting the product.

Using seal meat as an alternative bait source in the crab and lobster fisheries has been considered since at least 1995. Using seal meat as bait has potential to improve the full utilization of harvested seals and reduce the cost and environmental impact of using squid, mackerel, and herring as bait. Research on seal meat as bait on the North coast of

Newfoundland found it to be ineffective for snow crab and lobster in 1995 (DFO, 1995); however, seal fat was found to be just as effective as squid for bait in the snow crab fishery in Norway (Araya-Schmidt et al., 2019). More recently, the use of seal meat as bait has been investigated by a company from Prince Edward Island. Seal meat processed into bait sausages has been shown to be an effective bait for lobsters. Unfortunately, the National Oceanic and Atmospheric Administration stated that they would not import lobster that were caught with seal products, which put a stop to the use of seal meat as bait (Russell, 2023).

The US currently represent 80% of the market for Canadian lobster. The MMPA prohibits the importation of any marine mammal or marine mammal product; however, lobster are neither of these things. The reason these lobsters would not be allowed to be exported to the United States is a result of new Import Provisions to the MMPA. These Provisions require that fisheries exporting products to the US follow the same regulatory standards as US-based commercial fishing operations. The Import Provisions were effective in 2017, but a grace period to December 31, 2025 is currently in place to allow nations time to change their fishing practices (NOAA, c2023). To be in accordance with the Import Provisions, a *"nation must demonstrate it has prohibited the intentional mortality or serious injury of marine mammals in the course of commercial fishing operations in the fishery"*. Fisheries that use seal bait could be said to result in intentional mortality of marine mammals, therefore, these products are not allowed to be imported into the US under the new regulations (NOAA, c2019). This policy has also been extended to seal culls. The legal and purposeful killing of seals that interfere with fishery or aquaculture equipment would prevent this fishery from exporting its products to the US, under the new Import Provisions. In fact, this was the reason why Nova Scotia banned Nuisance Seal harvesting permits in 2020 (C. Boudreau, personal communication, 2023).

Section 14: Resetting the Debate: Changing Public Perceptions and Policy to Open Global Markets

Reality and public perceptions of the seal fishery

The Newfoundland and Labrador seal harvest is ecologically sustainable, and seals are likely harvested with better animal-welfare outcomes than most other wild species harvests (Daoust et al., 2002). The hunt provides high-quality pelts, oil and meat which have the potential to positively impact human health and the environment. These products may be obtained with relatively little environmental impact compared to other methods of meat, fabric, and fish oil production. Further, the seal hunt is considered by many to be important to reduce predation on, and competition with, other commercially important fish species. Unfortunately, none of these benefits are appreciated around the world. Globally, many consider the seal hunt to be inhumane, unnecessary, unsustainable, and wasteful.

Many surveys were conducted to assess public opinion on sealing in the 1980's, in the aftermath of the first EU ban on seal products. These surveys consistently showed a lack of

support for sealing. A Canadian survey, paid for by the Canadian Sealers Association, excluded all individuals who had donated funds to an animal-rights organization; anyone who objected to the use of animals for food or clothing; and professional hunters, anglers, and trappers. Of the 1092 survey contacts, 23% were excluded because they donated to an animal-rights organization or did not approve of animal use for one or more reason; and 1% were excluded because they were professional hunters, trappers, or anglers. Therefore, this survey was not representative of the population, and was far more likely to include individuals who might support the seal harvest. Even with this bias, the survey still revealed that 65% of respondents had either great or some interest in the Canadian seal hunt, and at least 51% of respondents were opposed to the hunt because of inhumane methods (more than 51% of respondents may have been opposed to the hunt for other reasons; the total percentage of people opposed to the hunt for any reason was not asked) (Malouf, 1986b).

Widespread disapproval for sealing was also found in two other surveys. In an international survey conducted by IFAW with 4,932 respondents. This survey demonstrated that 60% of Canadians, 68% of respondents from the UK, 90% of Americans, and 94% of respondents from West Germany were opposed to the hunt. In a more detailed survey, conducted by the Royal Commission itself, it was found that support for the seal hunt depended both on the motivation for the hunt and who participates in the hunt. In Canada, for a hunt conducted by Inuit, 19% were opposed to a hunt for food and clothing, and 72% were opposed to a hunt for cash. Opposition to the hunt in Canada was much stronger when it was conducted by local communities in Newfoundland and Quebec: for this group of people, 53% were opposed to a hunt for food and clothing and 81% were opposed to a hunt for cash. While this demonstrates very little support for seal harvesting in Canada at the time, support was even lower in Europe. For example, 42% of respondents from West Germany were opposed to Inuit seal harvesting for food and clothing (vs. 19% of respondents in Canada), and 92–95% of respondents from the UK, France and West Germany were opposed to a hunt by local communities in Newfoundland and Quebec for cash (vs 81% of respondents in Canada). All countries exhibited strong disapproval of a large commercial harvest: between 93–99% of respondents in each of Canada, the US, the UK, France, West Germany, and Norway were opposed to a seal hunt conducted purely for commercial purposes by large-scale operations (Malouf, 1986b).

The EU conducted a public consultation on sealing using their Interactive-Policy Making Tool, between Dec 20, 2007– Feb 13, 2008. This survey influenced their decision to ban trade in seal products in 2009. They received 73,153 responses from 160 different countries—likely the largest survey ever conducted on sealing. The survey revealed that 87.4% of respondents did not support commercial seal harvesting. While most responses were from Canada, the US and the UK, over 50% of respondents from all countries (except Sweden and Namibia) were in favour of a ban on seal harvesting (Commission of the European Communities, 2008). Importantly, however, the survey was likely biased, because animal-rights organizations campaigned to encourage their supporters to participate in the survey (Sellheim, 2013). Therefore, the survey likely did not accurately reflect the global perception of seal harvesting at the time. Nonetheless, these results demonstrate, at the very least, that many people from all

over the world were strongly opposed to seal harvesting prior to the implementation of the ban.

In Newfoundland, the story is rather different. In a 2021 survey of 773 residents, 71% of respondents either strongly agreed or agreed that seals were important for the economy, and only 8% of respondents would like to see a ban on seal harvesting. Importantly, these results were consistent for respondents from both rural and urban settings (Engel et al., 2021b).

Marketing

Most funding and advocacy pertaining to seal products has undoubtably been to condemn them, rather than to promote them. For example, both IFAW and the Humane Society of the United States have annual budgets exceeding $100 million, and have allocated significant funds to ending the Canadian seal hunt (Livernois, 2010). Anti-sealing marketing campaigns have gone on for over 60 years and were highly successful at influencing public opinion, which ultimately resulted in bans on seal products in 36 countries, and dramatically reduced the demand for seal products.

To begin to counter this anti-sealing propaganda and rebuild the sealing industry, the Fur Institute of Canada (FIC) established the Seals and Sealing Network (SSN). The FIC is the national voice for the fur sector, including the seal industry, through the SSN. The SSN brings together Canada's sealing industry harvesters, processors, manufacturers, retailers, and Indigenous Peoples to promote and market Canadian seal products (seal oil, meat, and fur products) through the Canadian Seal Products and Proudly Indigenous Crafts & Designs brands (Seals and Sealing Network, 2024). The SSN utilized roughly 5 million in funding from the Canadian Fish and Seafood Fund since 2019 to support marketing efforts.

To guide marketing efforts, the SSN hired Abacus Data to conduct market research on seal products in Canada and gain insight into Canadian perceptions of the industry. This survey was conducted in 2020 and included 3,502 Canadians mostly located in Ontario and Quebec. It revealed that the impact of anti-sealing campaigns is still pervasive in Canada: 52% of Canadians believe that seals are endangered by the seal harvest and 46% considered seal meat to be unethical to eat. When asked to select one word (out of two possible) that best describes the seal hunt, 70% of respondents indicated that the hunt was "cruel" rather than "relatively painless", 67% indicated that sealing was "violent and painful to the seals" rather than "responsible and measured", and 66% indicated that it was "bad for the environment" rather than "good for the environment". The sealing industry was considered to be ethical by only 26% of respondents. Respondents considered the sealing industry to be about as ethical as the fox and mink fur industry, but reported farming salmon, pork, beef, and game species to be more ethical. Despite these common misconceptions, the survey revealed that 23% of Canadians were open to purchasing seal products in 2020, and this group formed the target market for the SSN marketing strategy (Abacus Data, 2020b).

After the survey, seal products were intentionally marketed to two target populations: “Ethical Millennial Foodies” (millennials who care about supporting local, helping Indigenous communities, and reducing their environmental footprint), and “Natural Health Groupies”, (middle-aged Canadians who purchase products because of their superior health benefits, because they are natural/organic, and, to a lesser degree, because they are ethical) (Abacus Data, 2020b). Together, these two groups comprise 57% of the target market for seal products. The remainder of the market consisted of “pelt and fur enthusiasts”, who do not require marketing to convince them to purchase a seal product, and “seal generalists”, a mostly male cohort, who are indifferent to the industry but are open to trying seal products.

Part of SSN’s marketing plan involved the development of two brands for seal products in Canada. The first is a general brand called Canadian Seal Products that sells Indigenous and non-Indigenous seal products. The second is called Proudly Indigenous Crafts and Designs and is used exclusively for the sale of Indigenous products. Both brands have their own unique website, where people can learn more about seal products and make purchases. The benefit of the Indigenous platform is that the website could facilitate the sale of certified Indigenous products to countries with seal product bans (e.g., the EU, the UK, or Taiwan). Unfortunately, due to the complexity of getting products certified and exported to the EU, no sales have been made to countries with a ban on seal products through this platform (R. Vaugeois, personal communication, 2023). The Proudly Indigenous Crafts and Designs website, currently sells seal fur products only. The “Canadian Seal Products” website currently sells seal fur and oil products.

In addition to these websites and market research surveys, the marketing plan includes weekly posts from the Canadian Seal Products and Proudly Indigenous Crafts & Designs brands on a variety of social media platforms, the use of influencers to promote products on social media, blog articles, brochures, and an email campaign with newsletters. The marketing plan also involves the creation of paid picture and video advertisements that run on digital platforms such as Bell Media/CTVNews.ca, The Globe & Mail, La Presse, Quebecor/TVA Nouvelles/Le Journal de Montréal, social media (such as Facebook and Instagram), Google Search and Programmatic advertising platforms such as Illumin (Seals and Sealing Network, 2024). These efforts were focussed in Canada, but also included outreach in China.

In addition to these efforts, many in-person events were conducted. The SSN organized the 3rd edition of Seal Fest in Montreal, Quebec, Toronto, and St. John’s, where 22 restaurants sold seal meat dishes at a low price with an alcoholic beverage. The SSN also promoted seal oil supplements at the Canadian Health Food Association Expo in Toronto in 2022 and seal-based pet foods and supplements at the National Pet Industry Show in 2022. Further, in 2023, Proudly Indigenous Crafts & Designs artists participated to the Northern Lights Festival in Ottawa and the Vancouver Indigenous Fashion Week. Lastly, the SSN conducted a lot of research, including multiple market research surveys, a focus group, a risk assessment on registering seal oil products in China, research and development on various pet food products, and two different seal oil clinical studies: one on the impact of seal oil and rheumatoid arthritis and one on the impact of seal oil on canine osteoarthritis. Both clinical studies will be completed in 2025.

After two years of marketing efforts, the SSN again hired Abacus Data to conduct another survey in 2022. The results suggested that marketing efforts were successful. For example, more people considered seal meat to be healthy in 2022 (54% of respondents), compared to 2020 (48% of respondents); further, less people considered sealing to be unsustainable in 2022 (25% of respondents), compared to 2020 (32% of respondents).

Not all survey results were unequivocal. For example, even though less people considered seal meat to be *unethical* in 2022 (39% of respondents) compared to 2020 (46% of respondents), less people also considered seal meat to be *ethical* in 2022 (22% of respondents) compared to 2020 (31% of respondents). The reason for this discrepancy lies in a large increase in the number of people unsure about whether seal meat is ethical (which increased from 23% in 2020 to 39% in 2022).

Most importantly, the survey revealed that the number of Canadians open to buying seal products increased from 23% of Canadians in 2020 to 29% in 2022, representing growth in the target market of seal products (Abacus Data, 2022). This represents a 26% increase from 7.13 M Canadians to 8.99 M Canadians. According to the Abacus Survey from 2020, with a good marketing campaign, there is an opportunity to increase the number of Canadians open to buying seal products to 15 M Canadians (18 and older).

The effectiveness of the marketing efforts is also apparent in website traffic. Growth in traffic on the Canadian Seal Products website increased from less than 20,000 in 2020 to over 215,000 in 2023. Traffic on the Proudly Indigenous Crafts & Designs grew from 0 in 2020 to over 45,000 in 2023. There is also some evidence that sales in seal products have increased since the beginning of this campaign. The brand Waspu has reported doubled its sales every year (B. Penney, personal communication, 2023). Further, Chinese seal oil imports have increased from USD 3.7 million in 2019 to over USD 13 million in 2023 (Figure 1). Likewise, in recent years, exports of marine mammal oil have increased each year, from CAD 146,775 in 2019 to CAD 512,873 in 2022 (Statistics Canada, c2023), although, these exports are highly variable year to year, and likely do not include Chinese sales that are primarily conducted on e-commerce websites.

The true growth of the industry is difficult to assess, because of a lack of available data. There is no data available on domestic sales in seal products, which reportedly represents most of the commercial market for seal fur products. There is no export data available for tanned seal pelts, which is critically important to have, considering that in Newfoundland and Labrador, provincial law requires seal pelts to be tanned within the province. There is no data available on the export of finished seal fur products, and there is no export data available for seal oil, which is reported as marine mammal oil (although, we assume that virtually all marine mammal oil exports in Canada are seal oil) (C. Moores, personal communication, 2023; B. Penney, personal communication, 2023; R. Vaugeois, personal communication, 2023). This lack of data prevents a comprehensive assessment of the value of the industry.

Marketing and science: reducing and preventing cognitive dissonance

The 2022 Abacus survey demonstrated that 29% of respondents were open to purchasing seal products; however, it also demonstrated that 36% of Canadians would probably not purchase seal products, and 35% of Canadians would never purchase any seal product, and likely strongly oppose seal harvesting, due to pervasive misinformation. There are two groups of people interested in seal products: those who may purchase seal products (i.e., the target market) and those actively against seal products. This can make it difficult to influence the target market, because this group can also be influenced by anti-sealing campaigns and social pressure.

People may purchase seal products because of their benefits (e.g., improving human health through omega 3 fatty acid supplementation, water-resistant fur, highly nutritious meat, etc.). People may also be deterred from purchasing a product because of perceived cons (e.g., poor animal-welfare, unsustainable, wasteful, socially unacceptable, etc.). Marketing efforts in the past have focussed on targeting these deterrents, and the misinformation therein, without success. Over the last 4 years, there has been a shift in marketing efforts to focus on the benefits of seal products, rather than refuting arguments made against the hunt. This is a strategic move to shift efforts from defence to offence.

Many people who find the seal hunt to be inhumane, do not understand that striking young seals with a club or hakapik causes a rapid death with little suffering (Daoust, personal communication, 2023). This is supported by the Royal Commission survey, which found the most cited objection to seal harvesting was “inhumane methods” (cited by 61% of those opposed to the hunt and 47% of all respondents), and a more recent Canadian survey which revealed that 70% of respondents thought the seal hunt was “cruel” rather than “relatively painless”(Abacus Data, 2020b). However, even if the public understood and accepted that seals are slaughtered quickly and painlessly, many peoples’ opinion of the hunt would not change. If killing an animal is perceived to be unnecessary, then, even the most humane slaughter in the world would cause unnecessary suffering. For this reason, disseminating factual animal-welfare aspects of the seal hunt may do little to improve perceptions of the hunt, if people do not agree that seals should be harvested in the first place. In fact, it may only serve to remind the public that seals need to be slaughtered to produce the product.

Over the last few decades, there has been great interest in reducing consumption of all kinds of animal meat and fur products for environmental and ethical reasons. At the same time, there has been a surge in scientific research to explain why consumers are willing to purchase meat that stems from industrial agriculture (“factory farms”) associated with poor animal-welfare and environmental impacts (for a review, see Rothgerber, 2014, 2020). When someone is confronted with information that the animals they consumed were harmed or mistreated, they experience cognitive dissonance. That is, their action of eating meat is inconsistent with their feelings of sympathy for the animal: they do not want the animal to be mistreated but supported this mistreatment by purchasing the meat. This is known in the scientific literature as the “meat paradox” and even has its own term, called “meat-related cognitive dissonance” (MRCD) (Rothgerber, 2014, 2020). When faced with dissonance, consumers utilize dissonance-reduction

strategies. These are essentially thought processes which reduce feelings of guilt and allow the consumer to continue to consume meat. This field of psychology has been utilized by animal-rights organizations in marketing efforts to target dissonance-reduction strategies and thereby reduce meat consumption (Buttlar et al., 2021). While framed in the context of conventional meat production, this research is relevant to understand consumer behavior when purchasing seal products.

First and foremost, consumers actively try to prevent MRCD. MRCD can be prevented by avoiding information on the origin of meat products. In one study, 28% of consumers willingly ignored information about the treatment of farmed animals, and many respondents expressed that they did not wish to learn more about the treatment of farmed animals, because it would make consuming them more difficult. Other surveys have found that the more a food product resembles an animal, the more respondents are likely to consider it disgusting. Further, when consumers are reminded that meat is derived from animals, they purchase less meat (Rothgerber, 2020). The purposeful avoidance of the origin of meat is also structured into society. Using alternative names for meat products can prevent consumers from associating a meat product with an animal (for example, the term “bacon” instead of “pig stomach”, or “veal” instead of “calf flesh”). Further, abattoirs exist in plain-looking windowless buildings, away from the public eye (Rothgerber, 2020).

When a consumer is finally confronted with information suggesting that the meat they consumed came from a mistreated animal, they must use one or more dissonance-reduction strategies if they are to continue to eat this meat. Researchers in the field have categorized these strategies as follows. Briefly, the first of three main strategies is “animal based”. In this reduction strategy, consumers argue that the conditions of the animals are not that bad; or that animals are less-than humans, that they are unintelligent, do not experience pain, emotions, and thus do not suffer (at least not to the same extent as humans can).

The second is strategy is meat/product based. In this strategy, people may rationalize consuming meat from mistreated animals with anthropological, or religious arguments. For example, humans have consumed meat over the entire course of their evolution (anthropological argument), or certain animals exist specifically for the purpose of human consumption (religious argument). People may also rationalize meat consumption because of its good taste. The last strategy is called “denial of responsibility”. In this strategy, consumers may blame others for poor animal-welfare practices or consider meat consumption to be necessary for good health, and thus survival. They thus do not have a choice in consuming the product (Rothgerber, 2020).

Importantly, the more socially acceptable meat consumption is, the less people experience MRCD in the first place, and the more people consume meat, the stronger they adhere to dissonance-reduction strategies. For example, researchers found that participants considered animals to be less capable of experiencing sensations when the participants themselves were eating meat during the experiment (Rothgerber, 2020).

Reflecting on anti-sealing campaigns in the 1980s and 2000s from a scientific perspective can offer insights as to why they were so successful, and how they can be countered. Knowingly or not, anti-sealing campaigns were very effective at establishing cognitive dissonance in the first place. This was done by providing constant reminders that seals are killed, and (while not true) that they were killed in a brutal and painful way (Hennig, 2018). This creates cognitive dissonance in any consumer who does not wish harm to befall seals.

Once this dissonance is established, people must rely on dissonance-reduction strategies to justify their use of seal products. Many of these strategies were targeted by anti-sealing organizations. For example, many advertisements humanized seals, by calling them “baby seals”, showing them crying, and emphasizing that they suffer. This prevented consumers from considering seals to be less-than human or incapable of pain (i.e., the animal-based strategy above). Anti-sealing organizations also emphasized that seals were used only for the fashion industry, which made it difficult to argue that seal products were essential to human health, at least for most of the global population (i.e., the “denial of responsibility” strategy).

To effectively promote seal products, it is important to keep these ideas in mind. Specifically, marketing efforts should avoid causing cognitive dissonance in the first place and reinforce dissonance reduction strategies. Reminding potential consumers that products are derived from seals that were killed may not be effective. For this reason, the humaneness of harvest methodologies (i.e., clubbing or shooting) need not to be emphasized as it may only serve to remind consumers that seals are killed. Further, reminding consumers that seal products come from seals may not be effective. This is supported by a 2020 Focus Group which did not like the use of an image of a seal on a product because they “don’t want to be thinking about cutesy seals when I look at a seal product” (Abacus Data, 2020a). Further, using alternative terms for seal meat, such as “loup-marin”, “veal of the sea”, “Atlantic sirloin” or the term “shoulder” instead of “flipper”, where appropriate may help prevent cognitive dissonance from occurring by not reminding consumers they are eating seal, and by positioning seal meat in the context of other accepted meats.

To reinforce dissonance-reduction strategies, it should be emphasized that seal products are necessary to human health. This would reinforce the “denial of responsibility” strategy. Reminding consumers that seals have been consumed by humans for thousands of years may reinforce anthropological arguments. Imagery of seals, if any are to be included, should be as dissimilar to humans as possible (e.g., images of seals in water may be more effective than on land). Lastly, sealing has an advantage over many other meat production practices because seals are wild. Therefore, emphasis may be placed on how the seals live (i.e., pain free). This may reinforce the idea that seals do not really suffer to create seal products. It is also important to note that people are more likely to find and adhere to dissonance reduction strategies if they themselves are participants in the practice. For this reason, it is important to continue to provide as many opportunities for consumers to try seal products as possible.

What makes a seal hunt acceptable

As evidenced above, when people are faced with cognitive dissonance pertaining to seal products, they use a variety of mechanisms to justify that killing a seal is acceptable. It is therefore critical to understand what people consider acceptable, and why people object to the hunt. In a Canadian Sealers Association survey done in the 1980s, which purposefully excluded any individuals that donated funds to any animal-rights organization, it found that 54% of people agreed that wild animals should not be used for luxury fur products, and 58% agreed that it is wrong to kill wild animals for commercial purposes. In the Royal Commission survey, there was relatively high acceptance of hunting seals for food or clothing when done by Inuit (which 81% of Canadians agreed with), and by local Newfoundland communities (which 47% of Canadians agreed with), when compared to seal harvesting for cash. This was only considered acceptable by 28% of Canadians when done by Indigenous communities, and by 14% of Canadians when done by local communities in Newfoundland and Quebec. Further, only 4% of Canadians agreed that large-scale seal fishery should be done purely for commercial purposes (Malouf, 1986b). More recently, the European public consultation survey in 2007 revealed that less than 1% of respondents accepted seal harvesting if only the skins were used, while over 15% of respondents accepted seal harvesting if the whole seal was used (Commission of the European Communities, 2008). Based on these surveys and literature on meat-related cognitive dissonance, people are more likely to be supportive of seal harvesting if the products are easily associated with human health and survival. For this reason, full utilization of seal meat, fur and oil will greatly improve the acceptability of the hunt.

Leveraging increased international support for sustainable use

Globally, there has been a rise in support for the sustainable use of wild resources. Sustainable use has gained widespread acceptance with increasing awareness of importance of sustainable use for food security, biodiversity and mitigation of climate change (FAO, 2022b; IPBES, 2019b; IPCC, 2021). There has also been much research in the Arctic, South America and Africa documenting the importance of sustainable use for Indigenous Peoples and local communities (Abensperg-Traun, 2009; Clements et al., 2023b; IUCN, 2016b; Rosol et al., 2016b). This movement has resulted in sustainable use being an important aspect of numerous legally binding international agreements and declarations. Some of these institutions should be engaged to foster increased international support for sustainable use, while the policy, frameworks, and guidelines of international treaties and declarations can form the basis for challenging seal harvesting bans in signatory countries (see section 10).

Stakeholder engagement

To establish a strong market for seal products in the wake of 60 years of anti-sealing campaigns, ongoing and effective marketing is essential. The SSN has effectively marketed seal products and improved Canadian perception of seal products in a period of 4 years; however, this effort will not be sufficient to maintain the industry. The SSN advertising campaign has relied on government funding and there is currently no funding for marketing efforts after March 2024.

To keep marketing efforts going, additional funding will be required. If funds cannot be obtained through grants, these funds will need to come from industry.

Revising current policies

Several provincial and national policies have been raised by industry that may impede the sealing market. First, members of the sealing industry have remarked through our interview process that the regulations the application process for a fish processing license was overly burdensome, that brine water used to cure seal pelts cannot be disposed of in the ocean, despite only being comprised of salt (K. Flood, personal communication, 2023).

In addition, there are several logistical barriers associated with bringing seal meat to market (A policy review can be found in section 6). Some members of industry reported market-access barriers because seal meat is treated as a fish product in Newfoundland and Labrador and federally. For example, anyone transporting seal meat would require a fish processing license or a commercial seal harvesting license, which can make it difficult to acquire transportation for seal meat products. In addition to this, because seal is treated as a fish product, cannot be mixed with animal products, such as pork or beef fat, in a fish processing facility if it is to be exported outside of Newfoundland. This is because these processors must be certified by the Canadian Food Inspection Agency, which does not allow animal products in fish processing facilities. This prevents seal meat from being made into value-added products, such as hamburgers and sausages for export outside of Newfoundland (D. Dakins, personal communication, 2024; R. Vaugeois, personal communication, 2023). Creating value-added products is essential to create a market for seal meat, because it is an unfamiliar and difficult meat to cook with, for many people. For this reason, it was suggested that treating seals as a meat product, instead of a fish product may help eliminate market-access barriers. In Quebec, seal meat is considered a meat product (not a fish product). Quebec has the greatest seal meat industry in Canada, therefore, considering seal meat as a meat product in Newfoundland and Labrador may be beneficial. However, the ramifications of such a change would require a thorough examination of the current laws and may also have drawbacks.

Due to limited space on a sealing vessel, and the relative value of seal pelts compared to meat, it may not always be economical for a sealer to land entire seals. Implementing a system that would allow harvesters to process seal meat on some sealing vessels may facilitate increased meat landings. For example, if sealers can process and store seal flipper, seal loin, and seal heart aboard the vessel for packaging and sale by seal processing companies, this may allow sealers to increase the value of their catch without restricting space aboard the vessel.

Lastly, there is an inconsistency in provincial legislation pertaining to the processing of seal products. Currently, all seal pelts must be processed to the tanned stage in Newfoundland, while seal oil can be exported as a crude product for processing in other countries, such as Norway (Fisheries and Aquaculture, 2006). This multi-step export process is important for Canadian oil to reach international markets, such as China, with which Canada has poor trade relations. There are economic and environmental benefits associated with processing all seal

pelts locally; however, in some instances, these regulations have resulted in seal processing companies disposing of seal pelts, because they do not have the means of processing them. The requirement for seal pelts to be processed domestically requires significant capital. With the sealing industry in the state that it is, it may be more detrimental than beneficial to implement this restriction on the industry. As the industry grows, more processing may move within the province naturally, through the process of vertical integration. For the reasons above, this policy may need to be revisited, perhaps with the consultation of an expert in economics.

Areas for improvement in current marketing approaches

It is very important to establish a commercial meat market, if seal products are to gain the same acceptance as other sustainable use activities. The SSN utilized some of its funding to promote the benefits of seal meat. These efforts have shown that there is great interest in seal meat, perhaps even more than seal oil and fur. For example, the seal meat page on the Canadian Seal Products website had more sessions than seal oil in the first three flights of its marketing campaign (September 2021–December 2022) and had more sessions than seal textiles in the second two flights of its marketing campaign (February 2022–December 2022). The seal meat page received over 37,292 sessions while seal textiles received 33,211 and seal oil received 19,376, despite seal meat receiving far more marketing efforts than other products (Flight marketing results can be found here https://canadiansealproducts.com/app/uploads/2023/01/seal-1002m-09-rl-flight-3-media-results_2023-01-20.pdf) . While these results are encouraging for establishing a market for seal meat, no seal meat products were available for sale, even though an online sales platform was created for seal meat. This represents a missed opportunity to capitalize on these marketing efforts and grow the market for seal meat. For marketing efforts to be effective, they must first have a product to market.

There are many difficulties to producing seal meat, and efforts have been focussed on promoting seal meat consumption in Canada and abroad. However, perhaps a market for seal meat products should first be established in Newfoundland. It is surprisingly difficult to find any seal meat in a province where many seals are harvested and processed and where the industry is supportive of full utilization of the harvest. No other region in the world is likely as supportive of the Newfoundland seal hunt, or as open to purchasing seal products, as are Newfoundlanders (Engel et al., 2021b). Further, in Newfoundland, shipping, and handling of seal meat products is likely easier and less expensive than shipping these products off island. It is also true that this is a small area with few buyers; however, seal meat markets have been established in Quebec, and especially in the Magdalen Islands.

Vendors on the Canadian Seal Products website must pay a 10% commission on each sale and a mandatory Stripe fee of 3%, while vendors on the Proudly Indigenous Crafts & Designs, must pay a 3% Stripe fee on each sale. This 3% fee is mandatory for any e-commerce website using international payment system such as Paypal, Stripe or other payment system.

Lastly, to reach ethical millennial foods, marketing efforts should place more emphasis on the environmental benefits of seal products that matter most to the target market. In terms of the environmental benefits of seal products, marketing efforts have highlighted that seal products can reduce your carbon footprint, are biodegradable, and reduce the impact of fisheries involved in the fish oil market. However, the environmental benefit of seal products currently emphasized most in marketing efforts pertains to reducing the impact of seals on fish populations. While this may be an important environmental benefit for people who rely on fish populations for their livelihoods, most ethical millennial foodies are not directly impacted by the limited availability of wild fish products; therefore, this narrative may not be as effective compared to other environmental benefits that have been gaining worldwide momentum, such as reducing global warming, biodiversity impacts, and bycatch. It is also possible that portraying seals as a nuisance/overabundant species with a population that needs to be controlled may have negative marketing impacts. Further, the environmental benefit that seal products reduce pressure on fish populations is not currently true, as the current offtake of both grey and harp seal populations do not influence or limit the population size of either species. This narrative may even be contradictory to marketing the seal hunt as sustainable. To reduce the impact of seals on fish populations, the seal population would need to decrease. Therefore, seal harvesting would need to be unsustainable, at least for a period, to reduce seal population size.

A growing trend among consumers has been to focus on the environmental implications of their products, particularly in terms of greenhouse gas emissions and biodiversity. Seal products may be marketed for their environmental benefits, because the meat and clothing produced from seal products may reduce greenhouse gas emissions or land-use change compared to other forms of meat, oil, and textile production (Moazzem et al., 2022b; Tubiello et al., 2021). The benefits of reducing land-use change are two-fold because it itself prevents greenhouse gas emissions, but also prevents biodiversity loss (FAO, 2021b). Using seal oil production compared to fish oil may also alleviate bycatch from commercial fisheries, which could also be marketed as a significant environmental benefit. Scientific research to quantify these benefits to use in marketing campaigns may be effective to increase interest in seal products for their environmental benefits. This research could also be used to demonstrate the benefits of the sealing industry to the international community to foster increased public support for sealing. This research is especially important, as many media groups require scientific evidence for all claims made through advertisements.

Apart from the environmental benefits of seal products, the SSN should continue to emphasize the other benefits (e.g., healthy oil, nutritious and delicious meat, warm and waterproof clothing, etc.,) of seal products that are most important to the consumer, like they have been doing.

Should seal harvesting be promoted as a hunt for marine management

A recurring theme from this research paper has been the controversy in whether to consider the seal hunt as an ecosystem approach to wildlife management, or as an isolated sustainable

use activity. Both approaches have benefits and drawbacks. Considering the seal hunt to be an ecosystem approach to marine management is to consider human hunting of seals as a necessary part of a healthy ecosystem—or perhaps more candidly—as necessary for humans to harvest larger quantities of various types of fish. Under this ideology, seals are harvested primarily to maintain a heathy ecosystem, and secondly for their products. In contrast, when considering the hunt to be an isolated sustainable use activity, seals are harvested primarily for their products. The marine management approach would better align us with current policies in the European Union, because the EU allows the hunting of seals for marine management purposes, and many EU nations are lobbying to open the market for seal products derived from marine management hunts (European Commission, 2023).

The downside of this approach is that marine management hunts are unfavourable in the eyes of the US. The US are currently implementing a new Import Provisions to their MMPA, which would prevent the import of all fish products that were produced by marine mammals being killed either intentionally or unintentionally. Therefore, considering the seal hunt as an ecosystem management hunt may allow the US to prevent the importation of many fish species, if they are perceived to be derived from the intentional killing of marine mammals (See section 13 for more information on these Import Provisions).

Whether to treat seal harvesting as a marine management hunt or as a sustainable use harvest also has implications for marketing. Consumers may not look more favourably on purchasing seal products, if seals are considered a nuisance species. For one, consumers may feel that a nuisance species is of lower value than a species which is purposely harvested for its products. Secondly, consumers may not wish to purchase seal products that were harvested for marine management if they do not agree with the practice. A hunt for marine management is likely synonymous with culling to many consumers.

Section 15: Bridging Science and Policy

Addressing Barriers and Challenges

The sealing industry faces challenges stemming from a lack of demand for seal products, closed or highly restrictive international markets, and certain provincial and federal policies (see section 14). The EU ban of seal products in 2009 paved the way for bans in many other countries. Recent support for sustainable use activities and rural and Indigenous livelihoods from various international organizations may make the EU seal regime susceptible. This may be amplified by recent opposition to the ban from members of the EU.

In the latest report from the Commission to the European Parliament and Council on the Implementation of the European seal Regime, EU member states were asked to give an assessment of the functioning, effectiveness, and impact of the ban. Estonia, Finland, Latvia, and Sweden all reported negative impacts of the ban. Specifically, they argued that the ban caused a reduction in seal harvesting in their nations, which has increased damage to fishing

gear, increased seal worm infection, and decreased fishery catches (see section 4 for a review of seal population impacts in Canada). They also complained that, because there is no demand for seal products, parts of the seal are going to waste. Two of these member states, Finland and Sweden, reported offering compensation to hunters for seal carcasses as an incentive, which effectively amounts to bounty programs (technically funds are designed to cover "*financial aid for the appropriate processing of the [seal] carcass*" in Sweden, and "*the costs incurred for salvaging and submitting seal carcasses … [and] no compensation is given for the hunt itself*" in Finland) (European Commission, 2023).

All four nations have indicated that they would like a complete lift of the 2009 ban on seal products; if that not is not possible, they have requested that the Marine Resource Management Exemption be re-instated (European Commission, 2023):

> *These Member States [Estonia, Finland, Latvia, and Sweden] consider that a seal hunt carried out to sustainably manage marine resources, with full respect of animal welfare and with all parts of the caught animal being used instead of wasted, should not raise public moral concerns … [a] lift of the ban would help exploit this potential, create a national market and export opportunities for seal products, and increase the value of seal products and even the volume of imports to the EU from Inuit or other indigenous communities, as the placing on the EU market of seal products would not be wrongly perceived as totally banned anymore … [i]f a lift of the ban is not possible, Estonia, Finland, Latvia and Sweden advocate for considering the reinstatement of the sustainable management of marine resources exception for Member States that include protective and licence seal hunt in their wildlife management plans.*

In 2013, the World Trade Organization found, in favour of Canada and Norway, that the exceptions to the European seal regime violated the Most-Favoured Nation clause with regard to the Indigenous Exemption and the Marine Resource Management Exemption. The European Commission was given 16 months to either modify or remove these exemptions. While the Indigenous Exemption was modified to allow Canadian Inuit to utilize it, the Marine Resource Management Exemption was removed. This was likely done to avoid any non-Indigenous Canadian harvests from entering the EU market (see section 11 for details). Therefore, if the EU member states that oppose the ban succeed in having the Marine Resource Management Exemption reinstated, it stands to reason that there would be a strong legal basis for Canadian harvests to be included—provided we made the case that seal harvesting was essential for marine management. While the authors of this report have not reviewed the scientific evidence that member nations of the EU have compiled regarding the impact of seals on their fisheries, it is difficult to image that any nation has conducted as much research on this topic as has Canada (see sections 4 and 6). Therefore, it would be difficult for the EU to argue that seals are negatively impacting fisheries in Europe, but not in Canada.

The case for removing the European seal ban is further strengthened by support from the Indigenous sealing nations, Greenland, Nunavut, and the Northwest Territories. The governments of these three nations all support a complete removal of the EU seal regime, and

they have all reported significant negative impacts that derived from the ban. Further, the ineffectiveness of the Indigenous Exemption within Nunavut and the Northwest Territories is a current reminder of the EU ban's overall ineffectiveness, as well as its lasting negative impact on Indigenous communities (see sections 9 and 13). Both Nunavut and the Northwest Territories export virtually no products to Europe, and the cost to Inuit nations in Canada to comply with EU regulations far outweigh any benefit derived from accessing the EU market (European Commission, 2020, 2023). It is noteworthy that Denmark also harvests grey and harbour seals for marine resource management despite not opposing to the ban. Denmark's position may be susceptible to change, with the right inducements, given their close relation with Greenland.

Clearly, the EU seal regime is vulnerable to substantive challenges. Lifting the EU ban would set a precedent for other nations around the world to reconsider their sealing policies and it would certainly help to prevent further bans. It is important to consider that the EU seal regime was implemented because of opinion from a misinformed public not directly impacted by seal populations. Ensuring broad public support is not just important for increasing demand for seal products, it is also critical for ensuring the creation of positive sealing policy.

Ensuring public support

Widespread public support for sealing exists in Newfoundland, but there are also widespread misconceptions about the industry in Canada. Most Canadians are not open to purchasing seal products and likely do not support the industry (Abacus Data, 2020b; Engel et al., 2021b). To ensure public support, it is crucial that marketing efforts continue to educate the public on the benefits of seal products. This will be an uphill battle. Increased demand for seal products, increased seal offtake, and progress towards removing or changing the EU seal ban will foster increased scrutiny and opposition from anti-sealing organizations. When this occurs, it is important the industry be ready to counter misinformation with strong evidence.

The sealing industry is targeted on three fronts: (1) that the hunt is unsustainable; (2) that the hunt is inhumane; and (3) that the hunt is wasteful/unnecessary. A large body of scientific evidence suggests that the hunt delivers very positive animal-welfare outcomes for yearling seals and is sustainable. Many studies have concluded that seals (specifically beater harp seals) can be harvested with strong animal welfare outcomes (see section 7); however, the European Commission has argued that, due to insufficient data, it is not clear how consistently these outcomes are realized. The Commission's position is evident in *Regulation (1007/2009)* on trade in seal products (The European Commission, 2009):

> *"Although it might be possible to kill and skin seals in such a way as to avoid unnecessary pain, distress, fear or other forms of suffering, given the conditions in which seal harvesting occurs, consistent verification and control of hunters' compliance with animal welfare requirements is not feasible in practice or, at least, is very difficult to achieve in an effective way, as concluded by the European Food Safety Authority on 6 December 2007."*

In contrast to this opinion, there has been research to demonstrate that the vast majority of beater harp seals are killed humanely during the hunt (Daoust et al., 2002; Daoust & Caraguel, 2012). More research on this topic may help bolster arguments that the seal hunt is conducted with optimal animal welfare standards that are, in fact, observed during the hunt. Undoubtably, however, the animal welfare standard in the seal hunt is well studied and better than many other wild harvests around the world, including in Europe (see section 21).

Many people will be opposed to the seal hunt when they view a seal being hunted, regardless of the standard of animal-welfare involved in the harvest. Bans on seal products in many countries have demonstrated that human emotion—especially the emotions of those unaffected by the hunt itself—plays a strong role in policy decisions. The best way to change public perception is likely to increase the use of seal meat and oil products, because people are more accepting of practices that obviously benefit human health (see section 14). Utilizing as much meat as possible from the harvest will go a long way in ensuring public support for seal harvesting. Even when no market exists, donating this seal meat and oil products to charitable organizations may increase positive publicity for the sealing industry, positively influence public opinion, and spread awareness of seal products. It is of note that, although four EU member states support overturning the ban, one of their criteria for an acceptable seal hunt is one in which the whole seal is utilized, with minimal-to-zero waste (European Commission, 2023). The amount of meat utilized should also be formally documented, with robust government oversight, to prove that seals harvested are fully utilized. Absent this information, anti-sealing interests may use existing data to document how little meat is utilized from the hunt, and this data may inform international policy decisions (Fink, 2016).

Lastly, emphasising the environmental benefits of seal products, specifically in terms of greenhouse gas emissions, biodiversity impact, land-use change, and bycatch, will align sealing with the current social climate, and help facilitate acceptance of the industry (see section 14).

Effective counterintuitive arguments

One counterintuitive argument that may be used to promote the sealing industry is that hunting seals is good for the environment. A similar argument has been used by recreational hunting and angling organizations and related industries (e.g., firearms manufacturers and outdoor gear manufacturers). The slogan, “hunting is conservation”, can be found on many outreach products from these organizations (Gladkowski, 2022). The reasoning behind this argument stems in part from the history of hunting and angling in North America. In the 18th and 19th centuries, wildlife populations in North America were overexploited to the brink of extinction (or to actual extinction, in the cases of the great auk, passenger pigeon, Merriam’s elk and Audubon bighorn) by European colonists for sale on the market (Hewitt, 2015; Hughes & Lee, 2015; Hurley et al., 2015). Responding to the excesses of commercial hunting, recreational hunters and anglers formed various conservation organizations. Through these organizations, they successfully lobbied for laws and regulations that resulted in the restoration of many species populations; those laws are still in place, and helping provide positive conservation outcomes, today (e.g., the Lacey Act, the Migratory Birds Convention Act, etc.). The efforts of recreational hunters and

anglers also resulted in excise taxes on hunting (the Pittman-Robertson Act) and fishing equipment (the Dingell-Johnson Act) in the US that are allocated specifically to conservation programs (Mahoney & Jackson, 2013b). Additionally, hunting and angling license fees and donations from hunters and anglers help fund conservation work and secure wildlife habitat (Arnett & Southwick, 2015; Tufts et al., 2015).

Historically, the commercial sealing industry in Newfoundland was unsustainable and resulted in overexploitation of the resource (Hammill et al., 2011b; Ryan, 1994b). Unless a system were established whereby a small amount of proceeds from the commercial harvest went back to marine conservation, it would be difficult to make the case that this industry has facilitated seal conservation. From a different perspective, there is strong evidence that significantly reducing seal populations may result in the recovery of certain fish populations, such as Atlantic Cod in the southern GOSL (DFO, 2010b; Hammill & Swain, 2011a; Senate of Canada, 2012). Logistically, however, it is highly unlikely that the commercial harvest of harp or grey seal populations will have any impact on groundfish recovery in the foreseeable future, even if seal offtake were increased substantially (see section 4). Therefore, while seals are very likely negatively impacting fish populations, the commercial seal industry is not necessarily reducing this impact at present.

Many species in North America that are perceived to be a nuisance are also perceived as unappetizing, despite their widespread consumption in other areas of the world (e.g., Canada goose, pigeon, sculpin, and wild pig). For this reason, marketing seal products as a nuisance species may decrease demand for seal products. In contrast, consumers may be motivated to consume nuisance species, if they think this consumption contributes to alleviating the species' negative impacts. Market research on lionfish, an invasive fish species in North America, has demonstrated that consumer knowledge about the damage these fish inflict on ecosystems can increase consumers' willingness to pay for lionfish, and participation in the market (Simnitt et al., 2020). Seals differ substantially from lionfish in that they are not invasive, their complete eradication is unwanted, and they foster far more sympathy. For this reason and others (see section 14), marketing seal products as being derived from a nuisance species should be avoided.

As previously discussed, it is possible to market seal products for their other benefits, such as reduced greenhouse gas emissions, reduced land-use change impact, reduced biodiversity impact, zero fishery bycatch, sustainably and locally sourced, free-range, and organic. These benefits have been shown to be advantageous for business performance and corporate image (Mukonza & Swarts, 2020; Zhang & Berhe, 2022). For example, the Dairy Farmers of Canada's marketing campaign "Net Zero by 2050 – We're In", emphasizes the industry's commitment to reducing their climate change impact. This is especially important for the dairy industry, as well as the adjacent beef industry, which are both scrutinized for their climate impacts. The "Net Zero by 2050" campaign won the award for Best Marketing Campaign at the World Beverage Innovation Awards in Germany (Dairy Farmers of Canada, 2023b).

Stakeholder communications

Effective marketing is needed to increase demand for seal products. It is clear from recent marketing efforts that there are widespread misconceptions surrounding sealing; however, marketing efforts are effective in changing these perceptions and increasing demand for products (see section 14). Without ongoing marketing efforts, demand for seal products will likely stagnate and so will the industry. A collaborative marketing effort by all industry players, through the Seals and Sealing Network, may be most effective at maintaining and enhancing marketing efforts. Brand-specific advertisements could be displayed in proportion to the contribution from each brand. Importantly, increasing demand for seal products and improving perception of the industry will likely benefit everyone in the sealing industry.

There is insufficient information on the seal market, which leaves many questions unanswered. In particular, the economic impact of the sealing industry is largely unknown. Improving the tracking of import, export, and domestic sales data for seal products, or a data-sharing agreement among stakeholders, may be effective to fill these data gaps. Strong economic data may be used to gain better insights on the effectiveness of marketing efforts. It could also be used to demonstrate the contribution of the sealing industry to the Canadian economy, which may be used in marketing efforts, and to influence international policy. Collaboration within the sealing industry is essential to grow the market for seal products. For example, Dairy Farmers of Canada and the Kangaroo Industry Association of Australia managed to maintain strong demand for their products, despite persistent scrutiny of the industries.

Partnerships between seal producers and local restaurants, local independent grocers, and other forms of local enterprise, may help to grow awareness of seal meat products and emphasize that seal meat is consumed. If seal flipper and loins from the harvest can be stocked frozen after the harvest, they could provide year-round supply for local restaurants. Seal meat may be utilized in the fine dining industry, or in casual dining establishments that feature traditional newfoundland dishes, such as flipper pie. Moose meat dishes are served in many Newfoundland eating establishments, which suggests that there may be a market for alternative meat products. Lastly, partnering with local seafood distributors, such as Labrador Gems Seafood, may facilitate growth in the seal meat industry by utilizing already available seafood distribution systems (because seal meat is technically fish product in Newfoundland). This company currently offers home delivery of a variety of frozen seafood products. Delivering frozen seal meat directly to consumers may be particularly useful to access this niche market.

Section 16: Leveraging Allies

The social and political circumstances that led to the state of sealing today are not unique to this industry, nor Canada. Around the globe, policy makers implement policies based on public opinion, which are substantially influenced by anti–sustainable use organizations. This often results in poor conservation outcomes and hardship for IPLCs. For example, the US banned the importation of polar bear products in 2008; France, Australia and the Netherlands have

implemented bans on the importation of animal products derived from hunting certain animals; the EU has implemented import barriers whereby imports of lion, white rhino, hippopotamus, argali sheep and polar bear must be accompanied by documentation to prove that these products were derived legally and sustainably; and the US banned the importation of lion products unless exporting nations "*provide clear evidence showing a demonstrable conservation benefit to the long-term survival of the species in the wild*" (Ares, 2023). There is evidence to suggest that many of these bans have negatively impacted species conservation, and certainly negatively affected IPLCs (Clark et al., 2023; Coe et al., 2023; Dickman et al., 2019).

Further trade bans are currently being debated and lobbied for around the world. For example, Belgium has recently tabled a bill to ban the importation of products derived from endangered species; a Hunting Trophies (Import Prohibition) bill has been going through the UK parliamentary process since 2018; the Kangaroo industry has recently overcome calls for a trade ban in the EU in 2023; bills to ban the trade in kangaroo products have been introduced in the US House, Arizona, Connecticut, New Jersey and Oregon (that have not passed); and Nike and Puma have stated that they would stop using kangaroo leather in their products (Lehman, 2023; Whiteman & Ramsay, 2023; Whitworth, 2023). Importantly, it is possible for communities that are affected by the ban to have a say in its implementation; however, collaboration is needed. The aforementioned UK bill was temporarily blocked after the Community Leaders Network of Southern Africa, Resource Africa, the Namibian Association of CBNRM Support Organisations and seven other African institutions, submitted evidence on the benefits of trophy hunting to the UK parliament and travelled to the UK to do so (Community Leaders Network of Southern Africa et al., 2021).

The sealing industry is not alone in its struggle for international acceptance. Increasingly, the sustainable use of wild animals is restricted, but there is a growing constituency of people who are negatively impacted by these restrictions. Aligning seal harvesting as one activity negatively impacted by unfounded bans on sustainable use, in a larger international community supporting sustainable use, may allow for increased acceptance of seal harvesting. To do this, the sealing industry should engage with influential organizations that are supportive of sustainable use. Many of these organizations may influence the outcomes of conservation and biodiversity processes globally. Engaging with these organizations may facilitate participation in the international processes outlined in section 13, and collaboration with other nations that are supportive of sealing.

Founded in 1937, the Wildlife Society is an international network of 11,000 members (including scientists, wildlife managers, educators and more), who are dedicated to wildlife stewardship. The Wildlife Society has its own scientific journal, and publishes articles, technical reviews, and books. Importantly, The Wildlife Society monitors legislation relating to wildlife and natural resources and provides science-based input to policy makers (https://wildlife.org/what-were-doing/).

The International Council for Game and Wildlife Conservation (CIC) is a non-profit and politically independent organization in Europe, with headquarters in Hungary. Its mission is to promote

and support the conservation of wildlife and related landscapes, local communities, and traditions through sustainable use including hunting—all directly applicable to sealing in Canada. The CIC is recognized as an Observer at United Nations Environmental Conventions (AEWA, Bern Convention, CBD, CITES, CMS). The CIC is a member of the Collaborative Partnership on Wildlife Management (previously mentioned) and helped to establish it. It has projects with the Food and Agriculture Organization of the United Nations and the World Organisation for Animal Health. The CIC gives a voice to IPLCs in decision-making processes. It promotes game meat as a healthy alternative to farmed meat, and the importance of sustainable use activities to cultures around the world. The CIC may provide the sealing industry with a powerful voice in Europe. While the sealing industry fits into the ideology of the CIC even if seal meat is not consumed, full utilization of seal meat would better fit into their ideology and would likely foster stronger support, because the organization is founded primarily on hunting wild animals for their meat (https://www.cic-wildlife.org/).

The Association of Fish and Wildlife Agencies (AFWA) serves as the collective voice of North America's federal, state, provincial and territorial governmental fish and wildlife agencies. AFWA aims to advance science-based wildlife management in North America to conserve wildlife and their habitats. One of AFWA's goals is to "*Increase participation, relevancy, diversity, and inclusiveness in fish and wildlife conservation and nature-based recreation*." Therefore, AFWA is fully supportive of sustainable use activities, although it is focussed on recreation.

The Canadian Wildlife Service, and the provincial/territorial wildlife management bodies in Newfoundland and Labrador, Quebec, Nunavut, the Northwest Territories, Yukon, Nova Scotia, New Brunswick, and British Columbia are members. Therefore, AFWA receives input from every jurisdiction in which sealing occurs in Canada (https://www.fishwildlife.org/landing/strategic-plan).

The European Federation for Hunting and Conservation (FACE) represents 7 million hunters from across Europe and comprises 37 national hunting associations from 37 different countries, including all member states of the European Union. It is an international advocacy organization that represents Europe's national hunting organizations. FACE actively participates in international agreements and strives to influence national elections and policy. For example, in view of the European Parliament elections in 2024, FACE produced a manifesto for members of parliament. This manifesto asks for (among other things), "*A flexible implementation of the EU Nature Directives in accordance with the principle of sustainable use and a balanced consideration of the interests of rural areas*." Therefore, FACE is supportive of sustainable use, particularly its importance for rural communities, and may be a key ally in the European space. Like the CIC, FACE is primarily focused on hunting for wild meat. Therefore, positioning sealing as a full-utilization hunt may help get support from this organization (https://www.face.eu/election-manifesto/).

Section 17: Leveraging Motivations

What people think motivates the seal hunt will have a great influence on public acceptance of the industry. Public acceptance of killing wild animals is dependent upon the motivation for killing the animal, the species, and the way in which it was killed. In terms of motivations, few people would agree that an animal should be killed for no reason, or, worse, for fun. Likewise, many people who are strictly opposed to hunting may find that it is okay to hunt even the most charismatic (or repugnant) animals to avoid starvation (which is the official position of PETA, for example) (PETA, 2010).

People may have many motivations for hunting seal. All hunters hunt seals for their products (i.e., meat, fur, oil, and organs). They may be motivated to obtain these products for personal use, or because of the income derived from their sale. People may also be motivated to hunt seals because they are a nuisance (for example, killing a few problematic seals that are directly interfering with fishing gear), or for population control (for example, killing enough seals to limit or reduce their population size to increase offtake from other fisheries and reduce the frequency of human-wildlife conflicts). People may also be motivated to harvest seals for cultural reasons, for outdoor recreation, to connect with nature, to challenge themselves, and more (Gigliotti & Metcalf, 2016). Importantly, none of these motivations are mutually exclusive. People may have one or many reasons for hunting seals. What the public perceives as motivating the seal hunt will have a large influence on product demand and acceptance of the industry.

Public support for sustainable use activities highlights the importance of a full utilization seal harvest. A recent survey in the US shows that most Americans approve of hunting animals for meat (75% of respondents), but very few people approve of trapping animals for fur (30% of respondents) (Responsive Management, 2023). A recent Canadian poll shows that even fewer Canadians (21%) approve of killing animals for fur (Canseco, 2022). Similarly, only 33% of Americans approve of trapping as a means to make money (Responsive Management, 2023). Further, various surveys demonstrate that people are more supportive of sealing when all of the animal is utilized, especially the meat (see section 14). Therefore, a seal hunt motivated by food needs is more acceptable than one motivated by economics alone. Emphasizing that seals are only killed for fur was a marketing tactic successfully used by anti-sealing organizations (PETA, 2009).

Despite general disapproval, killing animals for population control, or as a conservation tool, is sometimes acceptable by the public, but is highly context dependent. Interestingly, 77% of Americans approve of hunting for wildlife management, and 69% approve of hunting to protect property. Likewise, 67% of Americans approve of trapping to reduce damage to crops and gardens, and 72% agree with trapping to help control wildlife populations (Responsive Management, 2023). In contrast, a survey in British Columbia revealed widespread disapproval of killing wildlife as a conservation tool: 70% of respondents disagreed with culling a few wild sheep to eradicate disease in the population and benefit the flock, and 78% of respondents disagreed that some wolves and cougars should be killed to reduce pressure on an endangered

marmot population (Dubois & Harshaw, 2013). Further, only 10% of Americans approve of hunting elephants; however, because of inadvertent human death and the damage they cause to agriculture, elephants can be considered a nuisance species and culling elephants is common in Africa (Responsive Management, 2023; J. L. Shaffer et al., 2019). Therefore, the acceptance of killing animals for management purposes is highly circumstantial.

It is unclear whether the public would approve of killing seals for management purposes. This question would need to be addressed directly in a survey. Given previous public backlash regarding seal culls in Atlantic Canada, general sympathies towards seals, and because seals may not be perceived to be a nuisance species by most people, public acceptance of seal harvesting as a marine management strategy should not be assumed (CBC, 2010b; Ely, c2010b; Pannozzo, 2010b).

Public acceptance of killing animals depends on the species that is killed. The more sympathy an animal fosters from humans, the less people will find the motivations for killing that animal acceptable. For example, only 33% of Americans approve of hunting terrestrial animals for a challenge or for sport (Responsive Management, 2023). In contrast, 90% of Americans approve of recreational fishing, which is primarily conducted for fun and sport (only 34% of the fish caught through recreational fishing are retained in Canada) (DFO, 2019b). While fishing does not always result in animal death, an additional 18% of fish that are caught and released die in the process, and fish likely experience pain and stress when caught on a hook and line (Bartholomew & Bohnsack, 2005; Hart, 2023). The difference in public acceptance of hunting and fishing may stem from fish fostering far less sympathy than terrestrial mammals (Rothgerber, 2020). In addition to sympathy, species that are predators, live in remote regions, and are perceived to be endangered are considered less acceptable to kill. For example, 69% of Americans approve of hunting deer, but only 38% approve of hunting wolf and grizzly bear and only 17% and 10% of Americans approve of hunting lions and elephants, respectively (Responsive Management, 2023). Seals foster great sympathy from humans, are predators, live in remote regions, and are perceived to be endangered by the majority of Canadians (Abacus Data, 2020b). For these reasons, gaining public acceptance of seal harvesting is an uphill battle.

Lastly, public acceptance is linked to the killing method. Surprisingly, it seems that people care more that hunting is difficult—that animals can get away or avoid being hunted—than they do about animal welfare. In America, 69% of Americans approve of hunting with a bow and arrow, while 66% of Americans approve of hunting with a firearm, and only 29% of Americans approve of hunting with high-tech gear (Responsive Management, 2023). This is surprising considering that hunting with firearms and high-tech gear result in quicker animal death and less animal suffering compared to hunting with bows and arrows. For example, 18% of deer that are shot with modern archery equipment are wounded and not recovered, which is significantly more than when hunting with a firearm (Pedersen et al., 2008). Further, only 37% of Americans approve of hunting over bait and only 46% of Americans approve of hunting with scents that attract game. Both of these methods can reduce the distance at which the animal is shot, and thus reduce the risk of injury and non-recovery (Responsive Management, 2023).

The idea that hunting should not be too easy is referred to as “fair chase” and is rooted in the history of hunting in North America. In the early days of conservation, “sport” hunters fostered the ideology of fair chase as a conservation principle, to limit animal offtake, and ensure that hunting was sustainable. In modern times, offtake is more effectively determined by science, and thus fair-chase is generally no longer needed as a conservation principle. That hunting should be difficult is itself embodied in the names “sport hunting”, and “game” species (the term “recreational hunting” is synonymous with “sport hunting” and is now more commonly used). Though rooted in history, the fair chase principle is still prevalent today. For example, it is the reason why many duck hunters will startle a sitting duck into flight prior to shooting it, even though this increases the probability that the duck will be wounded and not recovered (Taylor, 2020).

Like public perception of sport hunting, the public may (consciously or not) prefer that seals have a greater chance of escaping an interaction with a hunter, even if it results in worst animal-welfare outcomes. While clubbing seals results in a rapid death with no virtually no struck and loss, clubs and hakapiks are still not perceived to be an acceptable hunting method by most of the public. This may be because people perceive clubbing to be too easy, by not providing a good enough opportunity for the seal to escape the interaction with the hunter (i.e., lacking in “fair chase” principles). It may therefore be said that public issue with the seal hunt is not necessarily that the hunting methods are ineffective, but rather that they are *too* effective. While many anti-sealing organizations suggest that seals suffer unnecessarily during the hunt, many describe the animals as “helpless baby seals”, thereby fostering the narrative that killing seals is very easy, and generating disapproval of the hunting methods and of the hunters who could kill an animal that does not have a chance to escape (The Animal Rescue Site, 2023). In fact, most of the imagery used to target the seal hunt today does not show a seal suffering, which would be evidence of an ineffective weapon; rather, imagery often consists of a hunter mid-strike, about to kill a seal, or a seal dead in a pool of its blood that was effectively killed.

The public’s perception of what motivates the seal hunt greatly influences their opinion of the industry. The motivation behind the seal hunt is especially important, because people generally disapprove of killing seals (for any reason) and do not approve of the methods used to hunt them. It is unclear whether population control, or conservation of fish species, would be an acceptable motivation to the public for seal harvesting, but we think it likely is not. Further marketing research into this topic should be done if sealing is to be promoted as a marine management hunt.

Section 18: Benefits that Matter to Everyone

Nutritional benefits of seal oil

Seals provide an abundant source of blubber, representing roughly 29% of a harp seal’s live weight (Brunborg et al., 2006). This blubber is a rich source of healthy fatty acids. It can be consumed immediately or rendered and refined into an omega-3 dietary supplement. Seal oil

contains EPA (Eicosapentaenoic Acid), DHA (Docosahexaenoic Acid), and DPA (Docosapentaenoic Acid), three beneficial omega-3 polyunsaturated fatty acids, in addition to other mono- and poly-unsaturated fatty acids. These fatty acids are not technically essential in the human diet, because they are synthesized from α-linolenic acid (ALA) in the body. ALA is an essential fatty acid and is found in high concentrations in many plant foods, such as flax, chia, walnut, hemp, and soy. However, the body can only convert a small percentage of ALA into EPA and DHA. For this reason, it is recommended to consume foods that are high in EPA and DHA, because of the health benefits they provide (Shahidi & Ambigaipalan, 2018). Aquatic organisms are the best sources of EPA, DHA and DPA, although seal oil contains much higher concentrations of DPA, compared to other fish and algae oils.

There is a large body of literature on the impact of EPA and DHA on human health. Recent meta-analyses and reviews suggest that there is strong evidence that EPA and DHA intake positively impact cardiovascular health (Shahidi & Ambigaipalan, 2018). They do this by reducing the risk of heart attack, cardiovascular disease, coronary artery disease, and death from these diseases (Hu et al., 2019). While the link between omega-3 intake and cardiovascular health has received the most attention from researchers, omega-3 intake likely has wide-ranging health benefits. Omega-3 intake has been associated with the amelioration, improvement and prevention of a variety of other health outcomes, such as diabetes, cancer, Alzheimer's disease, dementia, cognitive performance, depression, visual and neurological development, maternal and child health, inflammatory bowel disease, arthritis, muscle pain, and sports performance (Brunborg et al., 2008; Punia et al., 2019; Reme et al., 2016; Shahidi & Ambigaipalan, 2018; Welty, 2023).

Far less research has been done to compare seal oil to other sources of omega-3 fatty acids. This is likely because of legal barriers to studying seal oil in the United States under the MMPA, and because it is generally less popular than fish oils. Seal oil may be a superior supplement compared to fish oil, because it has a much higher level of DPA. For example, the DPA content of harp and ringed seal oil is 4.66% and 14.55%, respectively; in contrast, salmon oil is 1.8% DPA (Shahidi & Ambigaipalan, 2018). In recent years DPA has been gaining attention from scientists and consumers for its unique health benefits. The governments of Australia and New Zealand now recommend a daily intake of DPA, and companies are modifying fish oils to produce DPA enriched products and DPA-based drugs. DPA specifically has been shown to be beneficial during pregnancy and early childhood development, and for cardiovascular and mental health (Byelashov et al., 2015; Li et al., 2016).

Seal oil may also be superior to fish oil, because omega 3 fatty acids are stored in triglycerols differently than they are in fish (Punia et al., 2019). Some studies that have directly compared seal oil to certain fish oils show a superior benefit of seal oil (Brox et al., 2001; Dubey et al., 2011; Mann et al., 2010), but others have not (Brunborg et al., 2008). This field of research is new and covers a variety of health outcomes, which limits the strength of conclusion that may be drawn at the current time.

Potential for increased contributions to food security, locally and globally through seal meat

Globally, there is an urgent need to provide enough nutrition, particularly protein, to a global population that is increasing in size, its per capita meat and calorie consumption, and its prevalence of obesity (IPCC, 2019). Globally, the population has doubled since 1974 and is over 8 billion people (Ritchie et al., 2023). To meet the food demands of this population, we have increased agricultural and aquacultural development and offtake from capture fisheries. As a result, there is now more agricultural land than forested land (4.8 billion vs 4.1 billion hectares), which has significantly reduced biodiversity; further, agriculture is responsible for one third of all greenhouse gas emissions which have raised the global temperature by 1.1°C (FAO, 2021b; IPBES, 2019a; IPCC, 2021; Tubiello et al., 2021). Both agriculture and aquaculture contribute to land-use change, greenhouse gas (GHG) emissions, eutrophication, acidification of waterbodies, and have other negative environmental impacts (FAO, 2021b; Hilborn et al., 2018b; Philis et al., 2019; Tilman et al., 2011). Lastly, 92.8% of fishery stocks worldwide are either fully exploited (57.3%) or over-exploited (35.4%), which leaves little room to increase production (FAO, 2022b).

While there are negative impacts of food production, more food is needed. Approximately 9.8% of the global population (828 million people) is affected by hunger, and this number is growing. Further, 22% of children under 5 have stunted growth from malnutrition, and an additional 6.7% are wasted (the most life-threatening form of malnutrition). Apart from hunger, 3.1 billion people cannot afford a healthy diet (FAO, IFAD, et al., 2022). There is now a dire need to increase food production without further damaging the planet.

Seals are an abundant and renewable resource that provides a nutritionally dense meat. Seal meat is high in protein, low in fat, and rich in vitamins and minerals, especially iron, calcium, phosphorus, and B-12, which makes it more nutritious than many other meat products, including beef, pork, chicken and cod (Shahidi & Synowiecki, 1996). Undoubtably, a lot of meat could be obtained from the Canadian seal harvest. Beaters comprise the vast majority of the seals hunted in Newfoundland, so let us assume that no adult seals are hunted to provide a lower estimate of the amount of meat that could be derived from the seal hunt (Stenson & Upward, 2020b). At the end of their nursing period, harp seal pups transition to the beater stage and weigh approximately 33.5 kg (Ronald & Dougan, 1982b). This therefore represents a lower estimate of the mass of beater seals, which may be harvested up to 1 year of age. Harp seals are comprised of 44% eviscerated carcass weight (Brunborg et al., 2006). Of the eviscerated carcass of a beater seal, 82% of its mass is meat that can be obtained through mechanical separation, but only 24% of the mass of the eviscerated carcass is meat that can be obtained through manual separation (Shahidi et al., 1990). Therefore, each beater seal yields between 3.5–12.1kg of meat depending on the separation method. Based on a harvest quota of 400,000 beater seals, between 1.4–4.8 million kg of meat could be sustainably obtained per year, depending on the processing method. Based on a 6oz serving, this could provide between 8.2–28.2 million meals per year. This is a lot of meat that could make a significant contribution to food production. For example, the 6 turkey producers in Newfoundland produce 200,000kg of

eviscerated turkey carcasses per year (Government of Newfoundland and Labrador, 2020). As an aside, other researchers and groups estimating the amount of meat derived from the commercial seal fishery have used 11.4 kg/seal (Shahidi et al., 1990), 13.5 kg/seal (Botta et al., 1983), 17.17–30.0 kg/seal (Shahidi & Synowiecki, 1996), and 5 kg/seal (Fink, 2016) for their calculations.

Relevance to marketing efforts

Emphasizing the benefits of seal oil may reach a niche market within the omega-3 supplement space. People that take fish oil supplements may switch to seal oil, if they perceive it to be better for their health or the environment. In contrast, emphasizing the benefits of seal oil will remind the consumer that they are consuming seals, which may invoke negative opinions towards the product (see sections 14, 15). This was evident in the 2022 market research survey conducted by Abacus Data on behalf of the SSN. This survey found that, of those who recalled seeing an advertisement on seal products, 30% were more likely to prioritize seal oil over fish oil products, while 14% were less likely to prioritize seal oil over fish oil products (Abacus Data, 2022). While these results highlight the polarizing impact of seal advertisements, they also clearly show a net benefit of marketing seal oil products. The omega-3 supplement space is competitive and crowded with products. It may be difficult for seal oil to compete with other established omega-3 products without emphasizing the benefits of seal oil. Emphasizing the unique properties of seal oil may be beneficial to sell omega-3 supplements to the proportion of the population that are open to purchasing seal products (Abacus Data, 2020b). In addition to the health benefits, seal oil has other benefits over many fish oils. For example, it is produced in Canada, it is sustainable, and it is produced with zero bycatch and ocean plastic pollution (e.g., plastic fishing nets make up nearly half of the mass of the Great Pacific Garbage Patch) (National Geographic, c2024).

There may be a unique space in the market for Inuit harvesters in Arctic Canada who wish to enter the seal oil industry. Ringed seal blubber is far higher (between 1.6–3.7 fold greater) in EPA, DHA and DPA than harp and grey seal blubber (Shahidi & Ambigaipalan, 2018). This may allow harvesters to create a unique product that is very high in EPA DHA and DPA, requires less pills to be taken each day, or it may reduce processing and packaging costs.

Like seal oil, seal meat has many benefits compared to other meat products. These nutritional benefits, in addition to the environmental benefits, may be used to increase demand for seal meat products. As has been mentioned previously, a cull is wasteful in nature, and would prevent the utilization of these seal products. Further, if the cull is effective and reduces the population of seals, then the quota on seals would necessarily decrease, reducing the industry's potential growth.

Direction for future research on the health benefits of seal oil should be influenced by the marketing strategy for seal oil. A marketing strategy that aims to convert consumers of fish oil to seal oil may require different scientific research than one which aims to establish a new market

for seal oil. To convert a consumer from fish oil to seal oil, it would be prudent to know why consumers purchase fish oil. If consumers mostly purchase fish oil because of its benefits to brain function, for example, then research on seal oil should be focussed on the relationship between seal oil and brain function, because this is what matters most to the consumer. If the marketing of seal oil is designed to reach a niche market that does not consume fish oil, then marketing efforts should emphasize the benefits of seal oil that are not promoted by fish oil companies, and scientific research should support these efforts. For example, scientific research may evaluate the benefits of seal oil to sports performance to target athletes that do not already use fish oil to improve performance.

While seal oil may be a superior omega-3 product than many fish oil products because it contains DPA and may be more readily absorbed by humans, seal oil products face many challenges competing against fish oil products. Many fish oil products are refined into a concentrated dose of omega-3 fatty acids and are fortified with DPA. The National Institutes of Health recommend an intake of >1g of omega-3 fatty acids for men and women over the age of 9 (National Institutes of Health, c2024). Many seal oil products on the market today require several (6 or more) capsules to be consumed per day to achieve an intake of 1 g of omega-3 fatty acids. In a bottle with 180 capsules, this would only last the consumer one month. In contrast, many fish oil products allow 1g of omega-3 fatty acids to be consumed in 1 capsule and offer bottles that last over two months. This may be more attractive to the consumer, both because it is easier to take 1 pill a day than 6 or more, and because it may be cheaper than seal oil pills, when comparing the cost of the omega-3 fatty acids themselves. Scientific research that quantifies the effectiveness of seal oil relative to fish oil may help in marketing efforts. For example, if it could be said that less omega-3 intake is needed to achieve the same health benefits when it is derived from seal oil, compared to fish oil, this may help convince consumers to purchase seal oil instead of fish oil, even if the omega 3s derived from seal oil are more expensive than those derived from fish oil. However, the strongest argument to convert the existing market for fish oil to seal oil may not lie in the health benefits of seal oil over fish oil, but in the environmental benefits of seal oil over fish oil.

Section 19: Seal Harvests and the One Health Concept

Although it may not yet be readily apparent, the health of wild animals is intimately linked to global health crises and the socioeconomic crises that accompany them. The rise of zoonotic diseases such as SARS, Avian flu and, above all, COVID-19 has raised a general alert to the fact that human health, wild and domestic animal health, and ecosystem health are all interconnected and mutually dependent on one another. In response, researchers and practitioners from multiple sectors and disciplines have developed a new public health paradigm to meet these challenges at the “animal-human-plant-ecosystems interface”. That paradigm is called One Health.

In 2022, Conservation Visions presented a report on One Health to the Association of Fish and Wildlife Agencies, an international organization representing North American wildlife departments, noting that (Conservation Visions, 2022, p. 8):

> *The term 'One Health' first came to common usage in 2003-2004, and was associated with major outbreaks of severe acute respiratory disease (SARS) and the avian influenza H5N1. The irrefutable evidence provided through study of these viral outbreaks indicated that these diseases were arising at the interface of human and animal ecosystems, leading to the founding of a One World One Health concept at a conference convened by the Wildlife Conservation Society at Rockefeller University in 2004. A series of strategic goals known as the 'Manhattan Principles' derived at this meeting clearly linked human and animal health and the threats these zoonotic diseases posed to not only human health but also to food supplies and economies. By 2008, UN agencies and the World Bank had drafted a strategy framework based on these interconnections, making it clear that these could only be effectively addressed in a coordinated manner.*

Developed and governed internationally by the UN's One Health Quadripartite—consisting of the World Health Organization, the Food and Agriculture Organization of the United Nations, the United Nations Environment Programme, and the World Organization for Animal Health—the One Health approach seeks to unify policymakers and decisionmakers in preventing, predicting, detecting, and responding to global health threats. In consultation with the One Health High Level Experts Panel (OHHLEP), an independent advisory body, the Quadripartite has defined One Health thus (OHHLEP et al., 2022, p. 2):

> *One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of humans, animals, plants and ecosystems. It recognizes the health of humans, domestic and wild animals, plants and the wider environment (including ecosystems) are closely linked and interdependent.*
> *The approach mobilizes multiple sectors, disciplines and communities at varying levels of society to work together to foster well-being and tackle threats to health and ecosystems, while addressing the collective need for clean water, energy and air, safe and nutritious food, taking action on climate change, and contributing to sustainable development. (One Health High-Level Expert Panel)*

Further, *via* OHHLEP, the Quadripartite identifies several key principles underpinning this One Health definition. They are:

1. ***equity*** *between sectors and disciplines;*
2. *sociopolitical and multicultural* ***parity*** *(the doctrine that all people are equal and deserve equal rights and opportunities) and inclusion and engagement of communities and marginalized voices;*
3. *sociological* ***equilibrium*** *that seeks a harmonious balance between human-animal-environment interaction and acknowledging the importance of biodiversity, access to*

sufficient natural space and resources, and the intrinsic value of all living things within the ecosystem;

4. ***stewardship*** *and the responsibility of humans to change behavior and adopt sustainable solutions that recognize the importance of animal welfare and the integrity of the whole ecosystem, thus securing the well-being of current and future generations; and*
5. ***transdisciplinarity*** *and multisectoral collaboration, which includes all relevant disciplines, both modern and traditional forms of knowledge and a broad representative array of perspectives. (ibid.)*

In this way, One Health is not, for the Quadripartite, just a doctrine of medical public policy; it is also a social, economic, and political doctrine that addresses many societal ills arising from inequality and inequity. In the case of the Atlantic sealing industry, One Health as a general paradigm certainly applies to the historical situation of the Inuit who, like many Indigenous Peoples on the Canadian landmass, have to this day been disadvantaged by European colonization and its consequences.

Formed in 2022, the Quadripartite supports and oversees national and regional initiatives in the One Health arena. To facilitate its role, the Quadripartite (and its OHHLEP) has developed the *One Health Joint Plan of Action 2022-2026* (FAO, UNEP, et al., 2022, p. xi). The *Joint Plan of Action*

> *[i]s built around six interdependent action tracks that collectively contribute to achieving sustainable health and food systems, reduced global health threats and improved ecosystem management:*
>
> - *Action track 1: Enhancing One Health capacities to strengthen health systems*
> - *Action track 2: Reducing the risks from emerging and re-emerging zoonotic epidemics and pandemics*
> - *Action track 3: Controlling and eliminating endemic zoonotic, neglected tropical and vector-borne diseases*
> - *Action track 4: Strengthening the assessment, management and communication of food safety risks*
> - *Action track 5: Curbing the silent pandemic of AMR [Anti-microbial resistance]*
> - *Action track 6: Integrating the environment into One Health*

Significantly, OHHLEP notes that the One Health approach "*is applicable at community, subnational, national, regional, and global levels. It relies on shared and effective governance, communication, collaboration, and coordination to understand co-benefits, risks, trade-offs, and opportunities for equitable solutions"* (FAO, UNEP, et al., 2022). In other words, the One Health approach can give rise to programmes and policies at any level of social organization and complexity. This makes it a useful paradigm for uniquely-positioned areas such as Newfoundland and Labrador, which lie far from the centers of Canadian political power.

Seal harvesting and One Health – Exploring collaborative management practices

In the 21st century,

> *the goal of fish and wildlife management cannot be solely to preserve fish and wildlife for our continued ability to utilize it, nor for its inherent beauty; rather, fish and wildlife conservation must be articulated as a requirement for humanity's health and wellbeing […] [f]or effective management and conservation moving forwards, conservation entities will need to work together with public health professionals, private landowners, and the public to protect both game and non-game alike, as well as the ecosystems in which they reside"* (Conservation Visions, 2022).

As yet, wild animal health remains a relatively underdeveloped dimension of the One Health approach; however, it could not be more crucial to One Health as a whole. Both the 2002-2003 SARS outbreak and the Avian flu outbreak of 2003-2005 were precipitated by pathogen spillover from wild animals to humans. It is also believed that the COVID-19 pandemic may have originated in either direct or indirect spillover from wild animals, which highlights the seriousness of proactive measures against similar future eventualities (Wang & Zhao, 2021).

Managing domestic animal health is relatively easy compared to wild animal health, because they exist over a much broader environment. This means that the human health–wild animal health interface is equally broad. Hence the Quadripartite's call for multisectoral, multidisciplinary collaboration on preventative action against zoonotic disease. What is needed is a dynamic global network of actors working constantly to detect and mitigate threats; this network will necessarily be heavily localized, as on-the-ground engagement is necessary for effective management.

Canadian sealers, located as they are primarily on Newfoundland and Labrador's "Front", and in the Arctic Circle, can contribute importantly to a national One Health approach. For example, the seal hunt may help reduce greenhouse gas emissions associated with conventional textile and meat production. Climate change poses numerous threats to human health, including through the emergence of novel diseases (e.g., via melting permafrost or changes in animal range limits), and through increased frequency of natural disasters (IPCC, 2021). Sealing also has links to public health as seals are a carrier of various zoonotic diseases (Horbowy et al., 2016). Further, traditional knowledge, developed over millennia (in the case or Inuit sealers), or centuries (in the case of non-indigenous sealers and fishers), and science are key assets in the One Health arena. The question thus arises: how can we integrate Atlantic seal harvest management with One Health functions, treating the seal hunt as one node in a broader network built to defend global public health?

One avenue might be to fold One Health practices into sealing certification processes in the DFO's Mandatory Humane Harvesting Training programme, which instructs sealers in the three-step method of efficiently, and with minimum suffering, harvesting seals. An additional training

component devoted to One Health practices would be in keeping with OHHLEP's recommendations for preventing future zoonotic outbreaks. In its recent position paper *Prevention of Zoonotic Spillover: From Relying on Response to Reducing the Risk at Source* (2023), OHHLEP argues persuasively for implementing proactive "upstream" strategies that anticipate and catch pathogen spillover before it becomes a problem. As yet, OHHLEP notes, prevention has not been adequately prioritized globally relative to response readiness and response implementation. The Panel writes (Markotter et al., 2023):

> *[s]trategies to reduce the probability of spillover events are under-prioritised and under-utilized, as highlighted by recent infectious disease crises such as Ebola and Monkeypox epidemics, and have been lost in overall preparedness discussions and recovery financing. This 'more of the same' focus suggests that it is politically more expedient to allocate financial resources to deal with a problem once it has arisen, rather than taking the steps necessary to reduce the risk of it occurring in the first place. It is often claimed that allocating resources to prevent something from happening is politically difficult as the value of prevention is largely "invisible" (prevention paradox), or it will take a long time to show effects. However, there are now several communications highlighting the economic benefits of prevention of spillover. If taken, actions to prevent spillover are estimated at $10-31 billion per year globally, as a cumulative investment from preventive actions achievable by specific industries. However, addressing the drivers of pathogen spillover through a One Health approach has significant subsequent economic co-benefits; for example, reducing deforestation is estimated to create $4 billion per year in social benefits from reduced greenhouse gas emissions. COVID-19 has demonstrated the immense burden of a pandemic, including significant mortality resulting in economic recession, with the global economy contracting by 4.4 percent in 2020. The expected economic losses from this pandemic are estimated at nearly $4 trillion up to 2024.*

In other words, as the old saying goes, an ounce of prevention is worth a pound of cure. Thus, we should seriously consider how to fuse sealing practices with a broader One Health paradigm that includes traditional knowledge, scientific observation (i.e., biosurveillance), and laboratory work focused on detecting, identifying, and mitigating the spread of dangerous microbes. In practice, this might involve an ongoing collaboration between sealers (Inuit and non-indigenous) and scientists from the DFO or Environment and Climate Change Canada, to anticipate and monitor the presence of emergent or re-emergent pathogens in the Arctic and sub-Arctic environment. Generalized monitoring, and rehabilitation of, ecosystem biodiversity could also be an important feature of One Health wildlife management practices brought into the sealing industry. One Health in the sealing industry would also be an excellent opportunity to give Inuit a decisive leading role in the management of Canada's northern reaches, where many public health threats are sure to emerge in the coming decades.

Section 20 Lives Uncaged

Comparing quality of life of wild animals' vs livestock in the context of animal welfare

In the sealing industry, animal welfare concerns are directed towards how the animal died, not how the animal lived. A wild animal living freely in its natural environment is perhaps the epitome of animal welfare, because humans are unable to improve upon a pristine natural environment. In comparison, animals that are owned by humans are dependent upon humans for their wellbeing, and must live in the environment that humans create for them. While we may try to create an optimal environment for the animal, the quality of the environment, and animal welfare, must be balanced against monetary considerations. Further, while law prohibits abuse against animals, animal welfare violations take place (in some frequency) for virtually all animals in captivity (Films Media Group & National Geographic Television & Film, 2013). With this said, many people do grow livestock in favourable conditions with strong animal-welfare outcomes and make important contributions to both food security and local economies; however, the intensification of agriculture has reduced the frequency with which this occurs.

Over the past century, the welfare of livestock has been severely diminished through the intensification of agriculture to supply food for a burgeoning human population. In the US, between 1987 to 2002, the typical number of animals produced within a farm/facility per year has increased by 60% for chickens, 100% for fed-cattle, 240% for dairy cattle, and 2,000% for hogs. Currently, most cattle in the US are derived from facilities that produce at least 34,494 cattle per year; most hogs from facilities that produce at least 23,400 animals per year; and most chickens from facilities that produce at least 520,000 animals per year (MacDonald & McBride, 2009). These are exceptionally large numbers of animals to be grown in one farm/facility.

Almost all livestock in the US are raised in highly concentrated facilities. In the United States, 99% of livestock (>98% of pigs, chickens, and turkeys, and 70% of cows) reside in "concentrated animal feeding operations" (CAFO) (Ritchie & Roser, 2023). For a facility to be considered a CAFO, animals must reside in the facility (a confined structure/building) for at least 45 days of the year, the property must not sustain crop or forage growth (i.e., animals are fed, they do not graze), and the facility must be identified as a point source of pollutants. Importantly, there are no minimum area requirements for CAFOs, which places no limit on the density of animals within a CAFO (MacDonald & McBride, 2009). As the name suggests, animals within these facilities are living in concentrated conditions, and often have poor animal-welfare outcomes. For example, the prolonged use of gestational crates that do not allow nursing pigs to turn around, the use of growth hormones to grow chickens beyond their anatomical ability, tail docking, mulesing sheep to prevent parasitic infection, piglet castration, and the tethering of calves to stalls are all common practices that cause pain and stress to animals but are in many cases necessary to produce meat at very high densities (Richards & Richards, 2012). In addition to animal welfare, CAFOs have many well-documented public health risks, such as polluting air and water, and facilitating the production of antibiotic-resistant bacteria. CAFOs also have

environmental impacts, such as increased greenhouse gas emissions, land-use change, and biodiversity reduction (Hilborn et al., 2018b; Hribar, 2010).

Many of the worst animal-welfare violations in animal agriculture stem from transportation from feedlots to auctions and slaughterhouses. For many livestock animals, the slaughter process begins when animals are transported to the abattoir. In this process, animals are often confined to small spaces without food or water for extended periods of time, and many (20 million or more per year in the US) die in the process, often from heat stroke (Kevany, 2022). In the US, the average transport time for livestock to abattoirs was 2.7 hours, without food water or rest. The only law that governs transportation time is the 28-hour law, which states that livestock must be shipped in under 28 hours before they must be offloaded and given food, water, and rest. In Canada, livestock can be transported for 52 hours before requiring to be offloaded and given food, water, and rest (Edwards-Callaway & Calvo-Lorenzo, 2020). Therefore, if you consider transportation to the auction and abattoir as part of the slaughter process, animal-welfare aspects of livestock slaughter decrease considerably.

Even if only animal death were considered, seal harvesting methods in the Canadian commercial seal hunt are more humane than some methods currently used to kill livestock. In Canada, the US and the EU, law requires that all livestock be stunned to render the animal unconscious prior to slaughter. Livestock stunning methods typically involve include penetrating or non-penetrating captive bolt guns (which are not 100% effective), but many young animals are slaughtered by clubbing, just as they are in sealing (Dalla Costa et al., 2021; Oliveira et al., 2018). Importantly, all three jurisdictions have religious exemptions that allow for animals to be killed by bleeding the animal while fully conscious, without stunning (i.e., to create halal, kosher, and some orthodox catholic meats). This method of death arguably has far worst animal-welfare outcomes than the clubbing method used in the Canadian seal hunt, in which animals are immediately stunned and rendered irreversibly unconscious (Daoust et al., 2002). The Canadian Veterinary Medical Association recommends that all animals be stunned prior to slaughter, as failure to do so can cause the following animal welfare issues (CVMA, 2021):

> *"The main welfare issues caused by exsanguination without prior stunning are:*
> - *increased stress due to specific handling/restraint required to immobilize the neck for exsanguination,*
> - *pain during and/or immediately following the neck incision,*
> - *risk of suffering arising from aspiration of blood into the respiratory tract,*
> - *the delay before the animal loses consciousness after exsanguination"*

Challenges to seal harvesting are necessarily focused on how the animal died, because humans are unable to improve the conditions of wild animals living freely in their natural environment. In many instances the killing process for wild animals is as quick and painless as it is for livestock; however, because animal death is not given in a controlled environment, this is not always the case. For example, 5% of harp seals harvested in the commercial Canadian seal hunt that were shot (not clubbed) on the Front in 2009 had a poor animal-welfare outcome, because they did not die right away from the first shot and were not immediately followed up with a

second shot. These animals with a poor animal welfare outcome, took (on average) less than 2 minutes from the first shot to animal death (Daoust & Caraguel, 2012). To ask, what has worst animal-welfare outcomes, concentrated livestock operations or seal harvesting, is to ask whether one would prefer to live their life in pain, in captivity, and likely die quickly after a stressful and prolonged transportation to the slaughterhouse, which may itself cause death, or live free with a 5% chance that it will take up to 2 minutes to die. The answer seems obvious.

In addition to animal welfare, ethical concerns are also targeted towards the sealing industry because most harvested animals are less than 1 year of age. However, far more young animals are killed though the livestock industry than are through sealing, given the widespread use of veal, lamb, suckling pig, and chick culling (the practice of culling male chicks after they hatch because they are not profitable). Therefore, we do not give this topic further attention.

Relevance to marketing efforts

The industrialization of agriculture has worse animal welfare outcomes than modern commercial sealing because of the dense and restrictive environments in which most livestock live, the lengthy and stressful transportation times, and sometimes, the use of slaughter methods without prior stunning. Emphasizing that seals are wild, and lived their lives in the best possible way may be effective to put peoples mind at ease regarding their welfare (for example, by using imagery of the pristine ocean environment); however, it is likely not beneficial to remind consumers that seals are slaughtered (see section 14). In policy discussions focussed on restricting seal harvesting, it may be beneficial to remind decision makers of the widely accepted animal welfare practices with worst outcomes than seal harvesting, such as the use of clubs to humanely kill young animals, the slaughter of young animals themselves, the dense conditions in which most livestock are raised, the prolonged livestock transportation times that result in animal death, and the slaughter of livestock without prior stunning.

Section 21: Leveraging Support for Wild Natural Resource Harvests

Since 1983, the Newfoundland and Labrador sealing industry has faced formidable challenges in the EU seal products ban, discussed in Section 11 and 13. International bans on seal products are based on public perception of the activity and “public morals”. Perceptions aside, however, how does sealing look when compared to other regulated, wild natural resource harvests such hunting, trapping, and fishing? Those familiar with sealing and seal products may be unsurprised to read this, but the industry looks quite attractive when placed alongside these other, more popular, wild harvesting activities.

Animal welfare

Sealing’s greatest obstacle lies in the accusation that it is irreducibly cruel and inhumane, with stories circulated about animals routinely skinned alive and left to suffer on the ice. Yet, the

industry is very well-regulated and monitored in respect of this matter (reviewed in section 7). Canada's *Marine Mammal Regulations* (*MMR)* impose three sets of restrictions on sealers. First, commercial sealers are not permitted to harvest whitecoats and bluebacks. Second, sealers are restricted in their choice of hunting implements. As per the *MMR*, the only permissible items are (Marine Mammal Regulations, 2018b, sec. 28(1a-d)):

> ***(a)*** *a round club made of hardwood that measures not less than 60 cm and not more than 1 m in length and that, for at least half of its length, beginning at one end, measures not less than 5 cm and not more than 7.6 cm in diameter;*
>
> ***(b)*** *an instrument known as a hakapik, consisting of a metal ferrule that weighs at least 340 g with a slightly bent spike not more than 14 cm in length on one side of the ferrule and a blunt projection not more than 1.3 cm in length on the opposite side of the ferrule and that is attached to a wooden handle that measures not less than 105 cm in length and not more than 153 cm in length and not less than 3 cm and not more than 5.1 cm in diameter;*
>
> ***(c)*** *a rifle and bullets that are not full metal-jacketed that produce a muzzle velocity of not less than 1,800 feet per second and a muzzle energy of not less than 1,100 pounds; or*
>
> ***(d)*** *a shotgun of not less than 20 gauge and rifle slugs.*

Finally, the *MMR* require sealers to practice a "Three Step Approach" when killing seals for harvest. According to Section 28(1.1-4), sealers must: 1) Strike each seal's cranium with one of the weapons above; 2) By palpating the cranium to check that the seal has been rendered irreversibly unconscious or killed by the blow, and issuing another blow if the seal is neither stunned nor dead; and, 3) immediately sever the seal's axillary arteries as quickly as possible and bleed the animal for at least 1 minute before it is skinned.

Like sealing, the humaneness of trapping has been subjected to rigorous scrutiny to ensure that the killing is humane. The EU, Canada and the US are signatories to the Agreement on International Humane Trapping Standards, that was signed into law on Canada and the EU in 1997. This is an international agreement that only allows approved traps to be used, and prevents signatories from imposing trade restrictions on signatories, which ensures that Canada has access to the EU market (Government of Canada, c2022).

Nonetheless, the suffering inflicted on animals caught in many approved traps is undoubtably less humane than sealing harvest methods. For example, neck snares are used on wolf, coyote, bobcat and more, which kill the animal via strangulation, and restraining traps (e.g., foot snares or cages) capture the animal alive (Government of Canada, c2022). Traps are also not 100% effective. While traps are designed to reduce incidental entrapment, entrapment of body parts not designed to be targeted by the trap, or species not intended to be caught in the trap, does occur, and results in injury, pain, and stress for extended time periods (Santos et al., 2017).

In terms of animal welfare, the EU has clearly accepted worse standards than those used in sealing. It is noted that many trapped animals are harvested only for their pelt (for sale on national and international markets), a common complaint levied against the sealing industry. This lack of utilization also extends to some hunted animals in Europe, such as wolves, which are only hunted for their fur.

From an animal welfare point of view, the methods used to kill seals are likely more humane than virtually all other hunts of wild animals. Most terrestrial wild animals do not allow humans to come into proximity, which requires hunters to take shots from further away, aimed at the body of the animal. All animals killed in this manner are more likely to experience a longer period of suffering prior to death, certainly when compared to striking seals on the head. Further, there is very little, if any, regulation describing a humane killing process that must be followed to reduce animal suffering when hunting, in any country that allows hunting.
In fact, many regions opposed to seal harvesting actively practice hunts with consistently worst animal welfare outcomes. For example, many jurisdictions in Canada, the US, and the EU permit the harvest of big game animals with bows and arrows, and with muzzle loading firearms. These methods of harvest are much less lethal than modern high-powered firearms and do not easily allow for a second shot if needed. As a result, a greater proportion of animals are wounded and not recovered when compared to hunting with modern high-powered firearms. For example, the percentage of deer struck, wounded, and not recovered when hunting with archery equipment is 18% in the US (Pedersen et al., 2008). Further, recreational spear hunting of big game animals including pig and black bear, is legal in Alabama, Hawaii, Nebraska, and Oklahoma, and wild pigs and coyotes are legally shot from helicopters in Texas with fully automatic machine guns — this experience is sold by at least 100 companies that specialize in the activity. It is further noted that none of the meat (or indeed any part) of these animals is used, which is also a common complaint levied against the sealing industry (*Helicopter Hog Hunting in Texas | FAQs*, n.d.; Lauerman, 2016).

Fishing also has well documented animal welfare and ethical concerns. Newfoundlanders and Labradorians are no doubt familiar with trawling, which began in earnest once Newfoundland's fisheries came under the DFO's control and which was largely undertaken by European fleets, even after the establishment of the 200-mile limit. Under this fishing method, fish are captured *en masse* with a large net, rapidly taken from their normal barometric conditions, and then dumped in ship holds to slowly suffocate while being crushed under each other's weight. Other fishing practices, such as a hook and line, arguably cause pain and distress to the animals. This results in worst animal-welfare outcomes than sealing, especially since it is no longer accepted as fact that fish are not sentient and do not feel pain (Hart, 2023). It is also of note that most recreational fishing is solely conducted for entertainment or sport (DFO, 2019b). This is a motivation that would be completely unacceptable in any other wild harvest activity and is undoubtably a worst motivation to harm, or indeed kill, an animal (roughly 18% of fish that are caught and released die) than is economic gain, a common complaint levied against the sealing industry (Bartholomew & Bohnsack, 2005).

Further, many fisheries utilize the destructive practice of highgrading, whereby fish are caught and discarded back if they are not of high enough quality. This was outlined as a reason for the collapse of Northern cod: trawlers would bring tonnes of cod on board, but if they were judged to be too small, the entire haul would be dumped overboard. Most of these cod would die after being dumped, because they cannot get back to depth (Standing Committee on Fisheries and Oceans, 2005). Similarly, Capelin are harvested *en masse,* yet, only the pregnant females are retained—the rest are returned, dead, back into the ocean. This practice also contributed to their collapse (DFO, 2022a; Jubinville et al., 2022b). These practices are analogous to "struck and loss" in the sealing industry, as it represents incidental death of the target species. In this sense, "struck and loss" is surely much greater in commercial fishing.

A further obvious benefit of the sealing industry, compared to other fisheries, is that it takes place with no bycatch. This is exceedingly rare. While bycatch often involves fish, it can also involve charismatic animals, including whales, turtles, and (importantly) seals. For example, the DFO estimates that 46,743 harp seals were killed from being caught as bycatch in the lumpfish fishery in 1994 alone! That is greater than the commercial harvest of harp seals in many recent years (Stenson & Upward, 2020b). For the reasons above, the Canadian sealing industry indisputably has a superior animal welfare regime than most fisheries.

We consider the intense focus on the humaneness and morality of seal harvesting, compared to other commonly practised wild harvest activities with documented worst animal welfare outcomes to be very hypocritical and constitute prejudice against people who harvest seals.

Sustainability

Sealing also looks very attractive from a sustainability perspective. There are approximately 4.7 million harp seals in Canadian waters, while the federally mandated Total Allowable Catch (TAC) for harp seals is 400,000 seals annually, roughly 5 percent of the total population, with far fewer animals actually being taken. For example, in 2019, the actual offtake of seals in Canada was approximately 32,000—a mere 8% of TAC (Canadian Science Advisory Secretariat, 2020, p. 4)

Further, the DFO has adopted a Precautionary Approach (PA) to seal management (reviewed in section 5), which *"brings scientists, resource managers and stakeholders together to identify clear management objectives and define management actions that are triggered when a population approaches or falls below agreed upon benchmarks*" (DFO, 2011b, sec. 3.2.5). Because of the PA, the Canadian sealing industry already has a framework built in to prevent unsustainable harvests in case of a resurgence. Therefore, the industry is sustainable not merely by circumstance (i.e., low participation rates due to poor commercial opportunities) but by design.

Currently, in Canada, 24% of assessed fish stocks are in the critical zone, including stocks of Atlantic Cod, Atlantic Herring, Atlantic Mackerel, and Atlantic Salmon (Environment and Climate Change Canada, 2023). A further 40% (77 fish stocks) of the 192 key fish stocks that were assessed did not have enough data to assign a healthy, cautious, or critical zone. Some of these

data-poor species have undergone notable population declines, such as capelin (reviewed in section 5). Therefore, in comparison to many other species in Canada, the harp and grey seal harvest in Canada stands out as sustainable. The sealing industry does have room for improvement, however. For example, Norway and Russia jointly administer cod and capelin in the Barents Sea using an Ecosystem-Based Management Approach (Gjøsæter et al., 2012). In this model, cod and capelin are managed not just as single stocks, but as interconnected life forms whose population dynamics shape each other. Iceland, home to another sustainable cod fishery, has addressed overfishing concerns with its system of "Tradeable Quotas" (OECD, 2017). Lastly, sealing shares with other fisheries the fact that it does not use land and freshwater resources, which are scarce and already exhibiting broad signs of serious misuse. Sealing requires no agriculture and no aquaculture; it is one of the least invasive and harmful harvests on Earth.

Other comparative advantages

Sealing compares favourably with other regulated, but more widely-accepted, natural wild harvests in other aspects as well. For example, seal meat is a front runner in terms of nutritional and health benefits when compared to other well-regarded wild harvest products (reviewed in section 18). Aside from nutritional benefits, sealing provides a food security measure comparable to other natural wild harvests, not only in remote rural areas where communities, such as those in Labrador or Nunavut, are exposed to high-markup prices at the few available stores, but also even in urban areas such as St. John's—the capital city of a province that has an estimated three days' worth of fresh food on hand at any given time (Food First NL, n.d.). Food First NL, a provincial non-profit dedicated to improving food security in Newfoundland and Labrador, states that:

"[f]ood security exists when all people at all times have physical and economic access to adequate amounts of nutritious, safe, and culturally appropriate food to maintain a healthy and active life" (*ibid*.).

In situations where people may lose access to store-bought food either due to issues with costs or supply, having a stock of food available in the environment can quite literally save lives. For example, the St. John's food pantry, Bridges To Hope, frequently receives wild harvest products for use in the cooked meals it distributes to food-insecure community members in St. John's. Although that meat does not realize a commercial value, it combats food insecurity in the city and thus helps mitigate the effects of economic deterioration. In this sense seal stands up proudly alongside other wild harvest products such as cod, moose, deer, and wild fowl. Even in the absence of commercial opportunity, these resources can and do perform an important economic function. The Government of Nunavut, for example, reports that the replacement cost for seal meat consumed annually in the Territory amounts to roughly $5 million. In other words, were that wild harvest to disappear, residents of Nunavut would be obliged to collectively spend that amount of money at the store to procure meat—and would probably come away with far less value for the expenditure than they derive from the seal harvest.

Yet sealing also supports livelihoods in local communities, especially when it is not impeded by trade barriers such as the EU seal products ban, or dominated by destructive profiteering; Newfoundlanders and Labradorians are well-acquainted with the latter as they continue to mourn the loss, under federal mismanagement, of the Northern cod stock. As noted in Section 8, sealers can, even under these conditions, derive up to 35% of their annual income from the harvest, making it a foundation of those rural economies. Were the sealing industry to be returned to its former stature, it is arguable that Canadian sealers could do at least as well as, for example, Icelandic cod fishermen, who make approximately $30,000 CAD annually (Economic Research Institute, n.d.). Although sealers can routinely meet their own needs without opportunities for commerce, the end of the EU seal ban could provide them with the capital surpluses necessary to invest in their own community infrastructure and services with a minimum of outside investment. Under those conditions, sealing could support additional jobs and lead to the overall enrichment of these segments of society, which often go underserved—if not neglected.

Section 22: Leveraging markets for Indigenous Seal Products

Increased market access opportunities

The European Union has effectively closed its markets for Canadian Indigenous products because of years of exclusion and an ineffective certification process. Currently, the financial burden and complicated process of certifying Indigenous seal products for export to the European Union is not worth the few sales that are made to the EU (see section 13). The governments of Nunavut, the Northwest Territories and Greenland have outlined what they need for the Indigenous Exemption to be effective in 2020 and again in 2023 (European Commission, 2020, 2023). Until these requests are granted and the process is made financially viable, it is not worth engaging with the EU.

It is of note that in 2024, the European Commission will evaluate the Regulation on Trade in Seal Products (i.e., the 2009 ban) and the Seal Pups Directive (i.e., the 1983 ban) to assess their functioning. The European Commission will assess the socio-economic impact of these policies, and their influence on seal populations (European Commission, 2023). Therefore, were the European market to reopen, it is essential to be prepared with documentation showing the negative impact these bans have had and, specifically, to show that they remain ineffective at opening the European market to Indigenous Peoples in Canada. This assessment should include documentation of the financial burden imparted on Recognized Bodies to comply with the EU regulations, in addition to profits earned from the sale of Inuit seal products to the EU before and after the 2009 ban. Strong evidence that documents the impacts of the ban, as well as the ineffectiveness of the Indigenous exemption, may force the European Union to make a meaningful change to their seal regime.

Instead of the EU, markets for Indigenous products can be found in Canada. Currently, nearly all Inuit seal products created in the Northwest Territories and Nunavut are sold within these territories. In Canada, 20% of the target market for seal products consists of pelt and fur enthusiasts (roughly, 1.4 million Canadians). This group is open to purchasing seal fur products. Indigenous harvesters may wish to engage with established fur vendors throughout Canada to access a wider market, without needing to overcome regulatory restrictions associated with the international market. Many such furriers and vendors exist in Toronto, Quebec, Alberta, and Newfoundland and Labrador.

Engaging with other international markets may be effective but is considerably more difficult. Many markets remain open to Indigenous products compared to non-Indigenous commercial seal products, and some of these regions may be better at facilitating an Indigenous Exemption than the EU. All regions (except for India) that have implemented a ban on seal products have some form of an exemption for Indigenous products or ringed seal products. Historically, Russia has been the largest market for seal fur products, although, given the current war, this market will likely remain closed as well (DFO, 2011b).

As mentioned previously, ringed seal blubber is far higher (between 1.6–3.7 fold greater) in EPA, DHA and DPA than harp and grey seal blubber, making it one of, if not the, greatest source of omega-3 fatty acids in the world (Shahidi & Ambigaipalan, 2018). There may be an opportunity to sell ringed seal oil as an omega-3 supplement.

Communications and outreach opportunities

Nationally and internationally, there is a growing social movement to understand the history of colonization, and the harm done to Indigenous Peoples, to promote reconciliation, and to rectify the wrongs materially done to Indigenous Peoples. This growing movement is apparent in the United Nations Declaration on the Rights of Indigenous Peoples, adopted in 2007; the development of the UN Declaration Act Action plan in Canada in 2023; the Truth and Reconciliation Commission between 2007–2015; the establishment of Truth and Reconciliation Day in 2021; and public apologies for the residential school system from the government of Canada in 2008, and from the Catholic Church in 2022. It is also evident in the host of negotiations and struggles Indigenous Peoples across Canada are conducting to regain governing authority over their land and the resources thereupon. Emphasizing in marketing efforts that seal products are Indigenous may help to increase support sales, such as has been done for Waspu oil. There is evidence that consumers are more supportive of products that come from local communities (Abacus Data, 2020b), especially Indigenous communities (Fisheries and Oceans Canada, 1985).

Section 23: Local Voices Should be the Loudest

In the globalized world we live in today, people living in distant places, who are largely unaffected by the use of wild resources in rural communities, are influencing the practices

within these communities. Those living adjacent to the renewable resources, who utilize the resources, and who depend upon those resources, should have the greatest say on how and if they should be utilized, because it is, after all, them who this affects.

IPLCs have been negatively impacted by the influence of anti-sealing groups and international bans on seal products. The scope of the negative impacts on IPLC's well-being and security is wide-ranging (see section 11). In the 2011 *Arctic Security Public Opinion Survey,* Indigenous and non-Indigenous northern respondents were asked to list the most significant issues in the Arctic (Hossain & Petrétei, 2016). The results revealed that northern Canadians associate "Arctic security" with environmental, social, and cultural challenges imposed on their communities and livelihoods (Hossain & Petrétei, 2016). Each of these three key areas is directly affected by external influences on sealing. Firstly, environmental security has been jeopardized by high seal populations following the hunting bans. On average, seals eat 53 times more fish annually than the total catch of fishing fleets (*Statistics for Canada's Sealing Industry*, 2023a). The ocean ecosystem is vital for the livelihoods of these communities, and the lack of recovery of certain fish stocks has negatively impacted IPLCs (see section 4). Secondly, social and cultural security is challenged. Sealing, like other forms of hunting and fishing, satisfies critical social needs amongst IPLCs. The seal hunt is a fundamental social and cultural component of many rural communities, and is therefore important for mental health (Sellheim, 2018b). The collapse of the market for seal products has had a tremendous impact on seal harvesting participation in both Indigenous and non-Indigenous communities. Sealing based activities are a means of passing on knowledge, traditions and cultural values (Proudly Indigenous Crafts & Designs, 2022). Limitations on the hunt have threatened the intergenerational transmission of such cultural knowledge.

The repercussions of external influences on critical community components highlight the need for change, to allow IPLCs more management and input into the seal industry. A participatory approach would make the affected communities central to decision-making processes, fostering maintenance of their values and knowledge. Indigenous peoples have argued for the right to govern their resources, with the right to participate and consult within the decision-making process, especially regarding matters that directly affect the group (Hossain, 2013). This approach to the seal industry would give power back to IPLCs by allowing them to manage and benefit from their own sustainable resources.

The idea of local management and regulation, benefiting from first-hand experience and knowledge, is central to the concept of traditional ecological knowledge (TEK). TEK refers to the use of long-standing ecological experience and is highly valued in a variety of fields, such as agriculture, botany, and pharmacology (Berkes, 1993). TEK has been utilized in various biological disciplines, such as marine management, and can be used to manage natural resources (Drew, 2005).

TEK can be obtained through seal harvesting, and this knowledge has been passed down through generational teaching of skills and techniques to keep seal populations healthy and sustainable (Proudly Indigenous Crafts & Designs, 2022). Inuit throughout Canada are

responsible for the management of their own sealing activities. The federal government does not regulate quotas, harvest seasons, or harvest methods. Within Inuit communities, sealing is done sustainably and ethically through TEK.

Self-governance of resources has also been implemented in other regions. In northern Canada, where sealing in the Bering Strait region of Alaska is a part of Indigenous culture and livelihoods, community leaders have enunciated strong concerns about government regulations limiting and stigmatizing traditional hunting (Gadamus & Raymond-Yakoubian, 2015). They have outlined a more effective management approach based on a "framework of respect," which includes relationships with skilled harvesters, knowledge and observation of animal life cycles, and self-regulated harvest levels (Gadamus & Raymond-Yakoubian, 2015). In turn, Indigenous leadership and knowledge have been practically implemented into marine conservation.

Seal harvesting done by non-Indigenous communities in Newfoundland and Labrador is different from that conducted by Indigenous communities, in that it has only taken place for approximately 300 years and was unsustainable for most of that time (see sections 3 and 4). For this reason, it requires federal oversight to establish quotas, hunting seasons and regulations. However, sealers from local communities possess important TEK that should be incorporated into seal management. This would allow non-Indigenous sealing communities to have a greater say in the management of their resources. For example, observations made by sealers on the number of seals, on the condition of harvested seals, and disease frequency in harvested seals, and on the stomach contents of harvested seals should be incorporated into population management decisions. Local knowledge has been practically implemented into marine conservation. An ecosystem-based management plan for Araçá Bay used TEK to understand the small-scale fisheries and social-ecological systems (Stori et al., 2019). Local practices and methods to conserve habitats were recorded. Ecosystem disturbances and recovery processes were also recorded by local fishers (Stori et al., 2019). With this, TEK was implemented into the management plan to showcase ecosystem services and threats. The acknowledgement and incorporation of traditional knowledge in seal management would be very valuable.

Consumers may be more likely to purchase products that are derived from IPLCs. Globally, there has been increasing interest in supporting local businesses and sustainable products (Alexiades, 2009). In a 2023 survey asking why they were more likely to purchase locally made products, 63% of Canadian respondents said that they wanted to support local businesses, 56% said the products would be better quality, and 38% said that the products would be more sustainable and environmentally friendly (Statista, 2023). These findings suggest that consumers may be more likely to support seal products if they are associated with IPLCs. Happily, they are: in a 2022 survey, 68% of respondents associated the sealing industry with Indigenous communities and 66% of respondents associated the sealing industry with rural communities over big corporations (Abacus Data, 2022). Further, a 2020 focus group found that the term "seal products" without context prompted associations with meat consumption in northern Canadian communities, and that "seal pelts" were associated with "rural," "remote,"

and “Indigenous.” Marketing efforts may wish to strengthen this association and emphasize that seal products benefit, and are derived from, IPLCs (Abacus Data, 2020a).

Section 24: Leveraging Support for Livelihoods and Rural Economies

The seal hunt is a critically important resource for IPLCs and should be recognized as a modern necessity. Today, sealing provides critical economic opportunities for Inuit communities through revenue generation, diversification, and economic stability. The revenue generated from the seal hunt can provide a considerable amount of annual income for Indigenous households. Further, the income generated from sealing can have a trickle-down effect that benefits other sectors of local economies. Whole communities can benefit from the seal hunt, especially through secondary income from vessel equipment and supplies (Sellheim, 2015b). Seal harvesting is especially important because it typically takes place in rural communities with seasonal and volatile employment opportunities. Selling seal products allows diversification within the market and can be an “economic anchor” in times of economic uncertainty, such as during the COVID-19 pandemic (see sections 3 and 8 for a review) (Proudly Indigenous Crafts & Designs, 2022).

Sealing is also important for non-Indigenous communities. Sealing reportedly generates up to 50% of a sealer’s income, especially in years of poor commercial fishing (Sellheim, 2015b). Much like Indigenous communities, rural and coastal communities are remote and rely on local resources and seasonal employment for economic stability (see section 8 for a review). Fisheries, such as the seal fishery, are commonly the only economic opportunity for coastal communities in Newfoundland & Labrador (Sellheim, 2014). Sealing continues to generate income for local communities, but depends on market conditions and global events. For example, in 2018, the landed value of Canadian seals was $1,528,725 but declined to $860,000 in 2019 and $63,100 in 2020. While the most recent landed value, in 2021, reported an increase to $740,000, this number does not touch the high of $30,090,106 in 2006 (before the EU ban) (*Statistics for Canada’s Sealing Industry*, 2023b).

Food security is a significant problem within rural communities. In many rural communities, a relatively small number of products must be flown in, which results in grocery store prices being 2–3 times higher than in the rest of Canada (Semple, 2023). In 2023, a Canadian pediatrician stated that the lack of food accessibility is a “food security crisis,” and that many Indigenous children do not have enough food (Semple, 2023). The factors contributing to food insecurity in these communities are complex but are partly attributed to the transition from traditional food to store-bought food (Rosol et al., 2016b). Seal meat is very nutritional and is an important part of the diet in many rural communities (see sections 8 and 18).

Oftentimes in sealing discussions, non-Indigenous sealers are perceived solely as “commercial” sealers, meaning that their only ties to the activity are economically based. This is an

oversimplification of the complexities of local community sealing. While food insecurity is a critical issue for Indigenous communities, it is also a pervasive issue throughout Newfoundland and Labrador. It was reported in 2021 that 17.9% of households (90,000 people) in Newfoundland and Labrador experience some form of food insecurity (Food First NL, 2022). Much like for Indigenous communities, seals provide an excellent source of nutrition for non-Indigenous communities, and their harvest can actively alleviate food insecurity.

Sealing is also culturally significant in Newfoundland (Sellheim, 2014). The socio-cultural importance of sealing to these non-indigenous communities has been jeopardized by the limitations of the seal industry, the consequence of which is a loss of knowledge and identity (Sellheim, 2014). With this, it needs to be acknowledged that while non-Indigenous sealing has economic value, it has many other values as well (Sellheim, 2015e). The value of seals and the sealing industry for IPLCs is far-reaching and complex. The 2009 EU ban and its Indigenous Exemption create a misguided divide that is not factual. The ban ignores the importance of sealing for non-Indigenous livelihoods and confines Indigenous sealers to cultural necessity, while the importance of sealing is much more extensive for both demographics.

Showcasing the importance of the seal hunt to IPLCs' economies and livelihoods may be effective to increase market demand. Emotional branding is a marketing strategy that appeals to consumer feelings and creates stronger loyalty to brands, which leads to higher product sales. Many industries have successfully use emotional branding to grow product demand (Y.-K. Kim & Sullivan, 2019).

Section 25: Leveraging Positive Differences

As noted in Section 21, the sealing industry, when viewed objectively as regards animal welfare, sustainability, livelihoods, and other considerations, looks quite attractive alongside other well-regulated, widely accepted fishing, hunting and trapping practices. Despite public perceptions about animal cruelty, the seal hunt does little harm and delivers considerable benefits to sealers and their communities. But, especially given how much it is maligned, how does the seal hunt look in comparison to genuinely unsustainable wild animal harvests—such as shark finning or the controversial American wolf hunt? As will quickly become clear, sealing stands out even more clearly as an exemplary form of wild harvest.

Shark finning

First, let us examine the harvest of shark fins. Perhaps one of the most wasteful harvests on earth, shark finning—unsurprisingly—consists in taking the fins, including the tails, of wild sharks. The industry is almost universally reviled because harvesters are known for cutting off shark fins while the animals are still alive and then throwing them back into the ocean, where they are left to die. The Marine Stewardship Council tells us (Marine Stewardship Council, n.d.):

> *"[w]hen a shark has its fins removed and is cast overboard alive, it is unable to swim and breathe and subsequently drowns. By only having the fins of a shark onboard a vessel,*

the species becomes harder to identify; hampering [sic] regulations to protect sharks and gain accurate mortality estimates. It also allows greater numbers of sharks to be killed, as more fins can be stored onboard boats than whole sharks".

To these facts, the international ocean conservation group, Oceana, points out that *"shark finning only utilizes one to five percent of the shark's body weight, removing an essential food source from many communities"* (Oceana USA, n.d.).

In addition to the animal welfare and sustainability issues noted above, shark finning also stands to have negative ecological impacts, as many shark species taken for their fins are also keystone species in their habitats. Sharks perform a variety of important ecological roles, including influencing food webs, helping cycle nutrients in ecosystems, and even helping check disease spread among prey populations by removing sick animals which are easily targeted (Hammerschlag et al., 2019). When species in this position are extirpated from their habitats, the delicate ecological balance it helped sustain is threatened, and can suffer a loss in biodiversity. Biodiversity loss in turn can induce further environmental degradation.

Accordingly, many countries have banned shark finning, and even shark fishing in its entirety. However, the practice remains a serious problem around the world, because it remains highly profitable and is difficult to monitor. TRAFFIC, in its 2008 report *Illegal, unreported, and unregulated shark catch: A review of current knowledge and action*, found *that "of the 591 shark species assessed globally, more than 20% are considered to be Critically Endangered, Endangered, or Vulnerable*" (Lack & Sant, 2008). Despite that fact, most shark species remain unmanaged, and international frameworks invented to control the problem have not been optimally implemented. TRAFFIC noted the following features of shark finning (Lack & Sant, 2008):

- *Shark fin (all forms) accounts for only about 7% of the volume of shark trade but 40% of the value. Therefore the per unit value of the shark's fin is much higher than that of shark meat.*
- *IUU [Illegal, unreported and unregulated] fishing is focused on high value products in order to justify the risks of detection and prosecution by maximizing returns to IUU fishing effort.*
- *From the available information, IUU fishing for sharks is consistent with a focus on high value products, in this case, shark fins.*
- *Shark species that are taken predominantly for their meat […] tend to be part of managed (albeit not necessarily well-managed) fisheries in which IUU fishing has not been identified as a serious concern. (For example, CITES proposals for listing of spiny dogfish and porbeagle in 2007 did not identify IUU fishing as a threat to these species).*

Additionally, TRAFFIC noted in 2008 that *"[t]here is also increasing concern that in longline tuna fisheries, shark bycatch is playing a significant role in the economies of fishing operations. In response to increased operating costs, declining catch rates, and tighter controls on fishing, the*

high value of shark fins in particular, but also their meat, makes retention of shark bycatch very attractive to fishers" (*ibid*.). Thus, even fishers participating in otherwise legal harvests are incentivized to break the law when sharks are accidentally harvested; this conduct, along with the wholesale illegal harvest of shark fins, contributes to animal cruelty and ecological degradation.

Here we have an industry rightly reviled, illegal in many—but not all—jurisdictions albeit hard to manage even where it is illegal. By comparison, sealing is virtually beyond reproach: not only is it well-regulated in Canada with a high level of compliance, it also does not involve leaving animals alive and in pain like shark finning. Finally, it delivers highly valuable products that entail the whole use of animals.

Wolf hunting

While the legality, ethics, and sustainability of shark finning (and, by extension, shark fishing) are contentious matters, grey wolf hunting in the United States and Europe is equally contentious. Grey wolves (and other large game species) have had a very difficult history since the onset of European colonization in North America; for a host of reasons, European settlers feared and hated these animals, although Peoples indigenous to the continent viewed and treated them differently. According to Miller *et al.* (Miller et al., 2013), *'[w]olves once inhabited essentially all of the USA except the south eastern states. By the 1930s, wolves were extirpated in almost all of the USA (except Alaska)"* (*ibid.,* p. 387). During the early conservation movement, in the late 1800s and early 1900s, there was strong (false) belief that predation on deer by wolves and other predators was responsible for the decline, and limitation of, important game species, such as mule deer. This resulted on bounties being placed on wolves, but also full-time government-contracted professional hunters, whose job was to enter an area and kill as many predators as possible (Carmony, 2014). Grey wolves are hunted today in the US and Europe, even though the meat from these animals is rarely used, which is a common complaint levied against the sealing industry. Further, in some jurisdictions, the grey wolf has documented worst sustainability practices than seal harvesting, even in modern times.

For example, in 2020 the Donald Trump administration, *via* the US Fish and Wildlife Service, delisted grey wolves under the US Endangered Species Act. Previously huntable only in Idaho, Montana, and Wyoming, grey wolves became "fair game" under the ruling across the entire United States. The results were immediately obvious. Most striking was the catastrophic 2021 grey wolf hunt in Wisconsin. Paul A. Smith, writing for the *Milwaukee Journal Sentinel* (February 25, 2021), reported (P. A. Smith, 2021):

> *Hunters and trappers killed 216 gray wolves in the 2021 Wisconsin wolf harvest season, 82% above the state-licensed goal, according to Department of Natural Resources data released Thursday.*
>
> *The hastily-arranged season began Monday and ended Wednesday; the kills surpassed the established goals in each of the six wolf management units.*

> *State-licensed hunters and trappers had a harvest quota of 119 spread across the state, excluding Native American reservations.*
>
> *The swift pace of the wolf kills, mostly by hunters using trailing hounds, took the DNR by surprise. And the overage was made worse by a state statute that requires 24-hour, rather than immediate, notice of the season closure, as well as a decision by the Natural Resources Board to issue twice as many the normal number of permits.*

One study of this hunt (Treves *et al*., 2021) found that, were the Wisconsin hunt to be repeated in this manner a second year, all things being equal, the wolf population would decline by up to 33%. The authors noted, however, that all things were probably *not* equal (Treves et al., 2021):

> *We estimate a population reduction of at least 27-30% in 1 year, which contradicts the expectation by state wildlife agencies that there would be no reduction in the wolf population. Moreover, our estimates are strict minima for actual reductions in the population, so our population estimate is a maximum conceivable under the most conservative assumptions. The reality is probably a greater reduction and a lower population count as of writing.*
>
> *If the second wolf-hunt in November 2021 were cancelled, we predict the state wolf population could rebound in 1-2 years. However, there are preliminary indications from the state Natural Resource Board that another wolf-hunt with a similar or higher quota will be advocated by some on the board. Proponents for such point to the 1999 population goal for wolves of 350 individuals in late winter. We have shown that number is a value judgment by a few individuals not a scientifically sound target. Therefore, the adequacy of state regulatory mechanisms seems fragile.*

Those who support the seal hunt may be amazed that the industry is so thoroughly maligned, having been effectively "sent to the corner" with few avenues for redress, while wild harvests such as these persist even where efforts to check them have been considerable. Whether we are talking about shark finning, wolf hunting, or any other unsustainable wild harvest on earth today, sealing undoubtedly looks far better by virtually every metric. The principal challenge to the industry remains, as always, distorted public perceptions driven by powerful interests who have found it useful to target our traditions.

Section 26: Recommendations

Breaking down barriers that inhibit the growth, profitability and sustainability of the Newfoundland and Labrador seal fishery

In 2024, the European Commission will be conducting an evaluation of the Regulation on Trade in Seal Products (i.e., the 2009 ban) and the Seal Pups Directive (i.e., the 1983 ban) to assess their functioning, effectiveness, and impact against their objectives. This presents an opportunity to challenge these bans and reopen the European market. In view of this, we recommend that the following be undertaken immediately:

1. A report be prepared for presentation to the European Commission that clearly documents (1) the economic, social, and cultural impacts of the 1983 and 2009 bans in Indigenous and rural communities; (2) the ineffectiveness of the Indigenous Exemptions in these bans, as evidenced through point 1 and through documentation of the financial burden imparted on Recognized Bodies to comply with the EU regulations; and (3) the impact that these bans have had on the recovery of groundfish species in Canada and the economic impact of this lack of recovery. To effectively influence policy within the EU, it may be prudent to involve the European consulting firm COWI in the production of this report. The EU hired this firm to conduct an "Impact Assessment on The Potential Impact of a Ban of Products Derived From Seal Species" which formed the basis of the European Commission's analysis on the subject (in addition to the report of the European Food Safety Authority). Utilizing the EU's trusted scientific source may allow for more effective engagement.

It is likely that European policy makers may consider that these bans were beneficial to seal populations in Canada because it dramatically increased the size of harp and grey seal populations. It is essential to be prepared to counter this narrative with evidence of the impact that seal populations have had on groundfish recovery, and of the consideration of culls in lieu of a commercial harvest. This document should highlight the acceptance within the EU of a seal harvest for marine management purposes, and therefore, the hypocrisy of the disapproval of a Canadian seal harvest. This document should clearly demonstrate how these two sealing bans have violated the United Nations Declaration on the Rights of Indigenous People, to which the EU is a signatory. This document will be made stronger if European voices that oppose this ban are incorporated. Estonia, Finland, Latvia, Sweden, and Greenland all report negative impacts of the ban and support a lift of the 2009 ban. Including the perspectives from these nations would help to strengthen the document. Therefore, we recommend that:

2. The Canadian sealing industry engage with Estonia, Finland, Latvia, Sweden, and Greenland to include their perspectives and opinions into the document outlined above. Engagement with these nations may be facilitated by international partners.

3. The Canadian sealing industry engage with international partners, particularly in the European space, to foster support for the sealing industry, and that this support be emphasized in the document outlined above.

Many stakeholders would like to see the sealing industry expand and thrive; but many stakeholders would also like to see a large decrease in the population size of seals to support other fisheries. These two goals are contradictory: growth of the sealing industry requires more seals to be harvested, but a significant reduction in the harp seal population would also significantly reduce the number of seals that can be sustainably harvested. These conflicting priorities have resulted in an unclear management plan for harp and grey seals. Scientists within the DFO provide guidance on the maximum annual offtake that would maintain seal populations at their current level of abundance; however, this guidance has historically not been reflected in quotas. Reducing the size of seal populations without appropriate planning is inherently risky in terms of its effectiveness, cost, and impact on the sealing industry and public perception of both sealing and other fisheries. For these reasons, we recommend:

4. A clear management plan for the Atlantic seal fishery be established with input from sealing and fishery stakeholders. In this plan, it needs to be decided whether seal populations are to be managed to allow a sustainable harvest, or to reduce their population sizes.

5. In support of this management plan, a study should be undertaken to assess: (1) what level of harp and grey seal populations would benefit fish stocks, (2) what level of harvest would be needed to reduce the seal population size to this level, (3) what level of harvest would be needed to maintain seal populations at this level, and, importantly, (4) at this new level of population abundance, how many seals could be sustainably harvested each year and what impact would this have on the sealing industry.

6. Due to the increasing impacts of climate change on harp seal populations and considering extreme variation in estimates of population size and sustainable harvest levels between survey years, we recommend that a great deal more caution be applied when implementing quotas for seal populations. While it is true that harvest levels have remained well below quotas, this does not mean that quotas should be ignored. Previous scientific advice has shown that if quotas were to be reached, the harp seal harvest would have been unsustainable. In the future, with the hope that the sealing industry will expand to the point where quotas are reached, it will be critically important to the future of the industry that offtake is sustainable, which must be achieved through effective quotas.

7. Echoing Recommendation 7 of the Atlantic Seal Science Task Team (ASSTT), we recommend an invitational forum be held by an independent party to bring together relevant experts and interested parties to consider the methodological approaches and outcomes associated with recommendations 4, 5 and 6 above, as well as the remaining recommendations within the 2022 ASSTT report.

We find that Inuit seal harvesting has largely been ignored in Canadian wildlife management. There is currently no up-to-date estimate of the population size of ringed seals, how many are being harvested in Canada, how many can be sustainably harvested, or what Inuit can expect for the future of the ringed seal population, given the impending impacts of climate change.

8. We recommend that a new assessment of ringed seals be conducted in Canada, including an estimate of how many are harvested, how many can be harvested per year at sustainable levels including a consideration of bycatch and the harvest in Greenland, and predictions for the future of the population considering the impact of climate change.

We find that the European process that allows certain Inuit to export seal products is overly burdensome and extremely costly to the Regulatory Bodies (which in this case are the Government of Nunavut and the Northwest Territories). We found this cost is approximate CAD 374,800 per year and far outweighs the economic benefit of the few products that may be exported from Nunavut.

9. We recommend that the Government of Nunavut cease exports to the European Union and that the federal government assist the Governments of Nunavut and the Northwest Territories to put pressure on the European Union to implement an economically viable system with which Indigenous seal hunters may access the European market, or better, to lift the ban entirely.

10. We recommend that federal and territorial governments allocate funding to convene and consult with Inuit harvesters and crafters to determine how they would like to market their seal products, what they would like the future of the industry to look like, and how to achieve these goals. This may include the consideration of expanding markets within Canada or internationally.

Many assessments on the sealing industry in Atlantic Canada, such as that done by The Royal Commission on Seals and Sealing (1987), and the Standing Committee on Fisheries and Oceans in 2007 and in 2023, have emphasized the need for seals to be fully utilized, including a full utilization of seal meat. Utilizing seal meat is important for public perception of the industry. Not using all seal meat from the harvest is perceived by the public as wasteful, even though the blubber and hide of seals are important for human health and represent most of the resources, and profit, that can be derived from young seals. Recent Canadian marketing research has shown that there is great interest in seal meat, even more than seal oil.

11. We recommend that the province of Newfoundland and Labrador examine the laws and processes that enable a successful seal meat market in Quebec and consider implementing these processes in Newfoundland and Labrador.

12. We recommend that frozen seal meat products be made available for purchase year-round. It is not possible for marketing efforts to establish demand for seal meat if the product cannot be purchased.

13. We recommend a review of the current policies that impede the seal meat market, including (1) the treatment of seal meat as a fish product on a federal level that prevents the addition of certain preservatives necessary to produce certain meat products (2) the treatment of seal meat as a fish product at the provincial level and its implications for the processing, storage, transportation and sale of seal meat.

Necessary international engagements

14. We recommend that the sealing industry engage with international partners that have influence in the European policy space to facilitate the opening of European markets for seal products. These include the International Council for Game and Wildlife Conservation (CIC) and The European Federation for Hunting and Conservation (FACE).

15. We recommend that the sealing industry engage with Canadian and American institutions that are supportive of the sustainable use of wild resources, including The Wildlife Society (TWS) and the Association of Fish and Wildlife Agencies (AFWA), to position the sealing industry in the broader context of sustainably use, and foster stronger relations with an international community.

16. We recommend the sealing industry engage with the following international processes and legally binding treaties that are unequivocally supportive of the sustainable use of nature. Engaging with these processes is essential to open markets for seal products and prevent future bans. These include the International Union for the Conservation of Nature (IUCN) and its Sustainable Use and Livelihoods Specialist Group (SULi), The Convention on Biological Diversity (CBD) and its Subsidiary Body on Scientific, Technical, and Technological Advice (SBSTTA), the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on the Conservation of Migratory Species of Wild Animals (CMS), and the Collaborative Partnership on Sustainable Wildlife Management (CPW).

17. We recommend that federal government take the necessary steps to allow Canada to gain membership in NAMMCO. Full membership in NAMMCO may prove to be an invaluable ally for the sealing industry, both to foster support from an international community supportive of seal harvesting, but also to assist the Canadian government in research efforts.

18. Stakeholders should continue to foster collaboration between Indigenous People and Local Communities. A Strategic Plan to reach the shared priorities/concerns of seal hunters from Indigenous and local communities should be created. This Strategic Plan

would recognize both Indigenous People and local communities as two different populations with distinct interests and rights and would be guided by the United Nations Declaration on the Rights of Indigenous People and the International Union for the Conservation of Nature.

19. Broad and targeted communications and public advocacy efforts should incorporate messaging and data from international efforts and organizations that advocate for sustainable use, especially as it functions as a tool for biodiversity/nature conservation.

20. Far greater engagement is needed in the European space. While efforts to access Asian markets should continue, similar, simultaneous efforts to access European markets must increase, as there now exists significant potential to open the European market. A Strategic Plan for European engagement (with both the public and policymakers) is needed and should include a liaison with expertise in the field of sustainable use and international policy. This should include an expansion of the interview processes begun for this white paper to encompass international stakeholders and experts, especially in Europe.

Recommended partnerships

21. We recommend that the sealing industry consider partnering with local frozen fish distributors in St. John's and possibly elsewhere to grow demand for seal meat. Seal meat is currently considered as a fish product in Newfoundland and Labrador and federally, therefore utilizing existing seafood distribution infrastructure may be the best way to get seal meat to market without extensive policy change. Fish distributors may be reluctant to sell seal products because of the negative public perceptions of seal products and the trade limitations associated with them. Open discussion with fish distributors to understand any barriers in place should occur and help guide policy decisions and seal product marketing strategies.

22. Leverage data and methodological approaches from Conservation Visions' Wild Harvest Initiative® to support research, marketing, communications and public, as well as political, advocacy efforts related to the environmental and health benefits of seal products.

Diversification

23. While there has been an emphasis on international marketing efforts / opening international markets, there remains untapped potential for increased domestic markets. Greater investments in marketing, communications and public outreach efforts (especially with regard to education) in Canada are needed to maximize current opportunities and to create new opportunities for industry.

Innovation Gaps

The utilization of seal oil in the pet industry has been successful. The utilization of seal meat and organ products in the pet industry is a promising avenue for future industry growth. It is further noted that the production of seal meat and organs for the pet consumption has far less legal requirements than it does for human consumption.

24. We recommend that additional funding be allocated to grow the use of seal meat and organ products in the pet food industry. An assessment of its hypoallergenic benefits, and endorsement by veterinarians may facilitate its expansion in this industry.

Policy Gaps

25. There is an issue of getting new seal hunters involved in the seal harvest. The industry is currently at risk of losing generational seal harvesting knowledge, as fewer people participate in the activity. Breaking down barriers to allow new hunters to be involved in harvesting activities would be beneficial. Allowing holders of a commercial seal harvesting license to participate in sealing activities with personal use license holders may help break down barriers to allow people with a personal use license to learn from those with a commercial use license. Current regulations do not allow a holder of a personal use license to learn from another personal license holder. Many experienced sailors hold commercial licenses, while many people new to sealing may begin with a personal use license. This causes a barrier to participation.

26. In view of the above goal, information on seal harvesting should be included in the Newfoundland and Labrador Hunting and Trapping Guide that is released each year. This will serve to stimulate interest in the activity from members of the public who are already interested in hunting and provide an easily accessible source of information that describes the how to obtain a license, and the requirements of the license. The licensing process and the seal harvesting requirements are currently difficult to access.

27. Greater investments in targeted political advocacy efforts are needed. Examples of this include a Policymakers' Document (to be gleaned from this white paper) and a formal Strategic Engagement Plan to engage relevant policymakers and federal and provincial politicians in new conversations about the NL commercial seal harvest and related domestic and international markets.

Research Gaps

28. To assist marketing efforts, research should be undertaken to investigate the environmental benefits of seal products. Seal meat and clothing may result in lower greenhouse gas emissions and land-use change than many meat and clothing products derived from conventional agriculture. Reducing land-use change is beneficial because it reduces greenhouse gas emissions and biodiversity loss. In addition to this, consumption

of seal meat and oil may reduce the amount of bycatch produced by other fisheries. Research could focus on the environmental benefits of seal meat, clothing, and oil, as compared to conventional agriculture and global fisheries. This information could be beneficial for marketing strategies, as well as defending seal products within international policy discussions.

29. The impact of climate change, including forecasted reductions in sea ice extent and thickness over the harp seal range should be incorporated to assess the impact that global warming will have on harp, ringed and hooded seal populations in the future.

30. There is currently little to no information on the demographics of sealers in Atlantic Canada. It is largely unknown where most sealers live, or what proportion of their income is derived from seal harvesting. Understanding this information is crucial to portray the economic benefits of seal harvesting in international policy decisions. Therefore, we recommend that this information be collected by the DFO upon purchase of a seal harvesting license, and/or through survey methods, to gain more insight into the importance of seal harvesting in Atlantic Canada.

31. There is little research on the animal welfare outcomes of the harvest of adult harp seals, and of grey seals, including the struck and loss rate. Concerns have been raised regarding the harvest of seals in the water. Research has shown that harvesting seals in water can increase the likelihood of a poor animal-welfare outcome and is associated with an increased frequency of struck and loss seals, depending on the body composition of the animal, which varies seasonally. Further, Norway has made it illegal to harvest seals in the water. Research should be undertaken to evaluate the frequency of poor animal-welfare outcomes, the struck and loss rate of the harvest of adult harp seals, to determine the most effective harvest methodology. This research should be guided by the results of Adult Seal Hunt Optimization Project, which is to end in April 2025.

32. To assist in public perception, and discussions with international partners, research should be conducted to evaluate what proportion of seal meat is consumed in the harvest. This can be done in the form of a survey of personal and commercial seal licence holders. Much of the meat derived from seal harvesting is consumed by the hunters or sold on local markets; therefore, the true contribution of the sealing industry to food provisioning in Newfoundland and Labrador is unknown and can be misrepresented by groups opposed to the seal harvest.

Marketing Strategies

Effective marketing is essential if the Newfoundland and Labrador commercial seal fishery is to have a future. Historically, far more funds have been allocated to marketing efforts designed to dissuade consumers from purchasing seal products, than to persuading consumers to purchase seal products. Recent marketing efforts by the Seals and Sealing Network have been effective to

increase demand for seal products and improving perceptions of the industry. Importantly, funding for marketing is supposed to end in March of 2024.

33. We recommend that the sealing industry increase its marketing efforts to increase demand for seal products and perception of the industry.

34. We recommend stakeholders consider industry collaboration to raise funds for an industry-wide marketing program, as has been done by the Seals and Sealing Network with funding from the Canadian Fish and Seafood Fund. Products may be featured marketing campaigns in proportion to the amount of funds they have donated.

35. The sealing industry currently does not impact the size of seal populations; therefore, there is currently no environmental benefit of seal harvesting to threatened fish stocks such as Atlantic cod. Further, emphasizing this environmental benefit in marketing efforts may be detrimental to the marketing of seal products, if people are not sympathetic to the commercial fishery industry, or if this results in seals being perceived as a nuisance species. For these reasons, we recommend emphasizing other environmental benefits in marketing efforts instead. Which benefits are emphasized should be guided by market research. These may include: seal products are derived without the bycatch and ocean plastic pollution associated with many fisheries; seal products are sustainably derived; seal oil is derived from Canada, unlike many fish oils; seal meat and clothing may have a relatively low carbon footprint compared to other methods of meat and clothing production; and seal meat, clothing, and oil are derived with substantially less land-use change, than meat and clothing derived from agriculture, which results in a lower biodiversity impact. More research is needed to substantiate some of these claims and future market research should address which environmental benefits of seal products are most important to potential consumers of seal products.

36. Much marketing research has been done to investigate who is willing to try seal products. To effectively market seal oil products, however, more direction is needed. The marketing plan should clearly state whether its goal is to convert existing consumers of fish oil to seal oil, or to recruit a niche market (which are unaware of the benefits of omega-3 products) to purchase seal oil. Marketing efforts should be tailored to whichever strategy is used.

37. The omega-3 market is very competitive, with many options available to consumers. If the goal of seal oil marketing efforts is to convert existing consumers of fish oil to seal oil, then market research should evaluate what, exactly, will make a consumer choose seal oil over fish oil, considering the all the pros and cons of both. Fish oil products are often more concentrated which give them a competitive advantage over seal oil products, because fish oil can be a cheaper source of omega-3 fatty acids and require less pills per day to reach the recommended daily intake of omega-3 fatty acids. Many fish oils are also now fortified with DPA, eliminating a key benefit of seal oil over fish oil. Market research must address which characteristics of seal oil will make a consumer

overlook the benefits of fish oil to purchase seal oil instead. These characteristics may include the fatty acid profile of seal oil (DHA, EPA and DPA), seal oil is natural and not chemically altered to increase omega-3 levels, seal oil may oxidize less quickly than fish oil, seal oil is produced with a lower carbon footprint, omega-3 fatty acids in seal oil may be more readily absorbed by humans, seal oil is sourced locally in Canada; seal oil is produced without the bycatch and ocean plastic pollution associated with many fisheries, etc.

38. Greater expertise regarding potential consumers / marketing targets is needed. While broad communications and public advocacy efforts are still needed, this outreach should also begin to target narrower, but easily identifiable, consumer sub-groups, i.e., the best messaging to engage pet owners is different from the best messaging to engage athletes, pregnant women, senior citizens, etc.

39. Comparing the commercial seal harvests with other, more widely accepted animal harvests (both wild and domesticated/livestock) that show seal harvesting in a positive light may be beneficial within international policy discussions that influence the sealing industry.

40. Marketing efforts should focus on the benefits of seal products instead of combating misinformation or pointing out the negative aspects of other industries.

41. Marketing efforts should utilize research on meat-related cognitive dissonance to avoid causing cognitive dissonance in consumers of seal products in the first place, and to bolster dissonance-reduction strategies in consumers of seal products.

42. Current successes in social media outreach domestically should be duplicated on the global stage.

43. All marketing efforts should continue to emphasize "education," but must expand to become more explicit in terms of what products are available. Expanded efforts should engage frontline industry experts.

44. Marketing efforts should consider how One Health principles may be leveraged to support gaining access to new and closed markets. All marketing, communications and public advocacy efforts should begin to visibly incorporate One Health principles. We recommend developing new messaging to highlight synergies between One Health and commercial seal harvests.

45. Create a 4-part series of short films that feature impressive imagery and new messaging (and other recommendations) derived from the white paper. Consider, also, how the existing film Ice, Seals and Men might be leveraged domestically and on the global stage to assist marketing, communications, and public advocacy efforts.

Section 27: Conclusion

Canada has a rich sealing history. Over the last 300 years, seal harvesting transformed the way of life in Newfoundland and had a profound role in shaping the culture. Likewise, seals have been an integral part of Inuit culture, diet, and livelihoods for approximately 5,000 years. Seal harvesting is an important means of securing healthy food, health supplements, high-quality clothing, and other products. The sale of these products continues to be an important source of income in both Indigenous and non-Indigenous communities. Despite over 70 years of an ongoing and powerful anti-sealing movement, the majority of both urban and rural Newfoundlanders still support the seal hunt and would like to see it continue.

Strong opposition to the sealing industry by animal-rights organizations resulted in the sealing industry to crash in 1983 and again in 2009 due to international bans on the sale of seal products and widespread antagonism towards sealers and seal products. Due to a collapse of the sealing industry in Atlantic Canada, and the cessation of culls and bounties on grey seals, harp and grey seal populations have grown to levels unprecedented in approximately 200 years. Grey and harp seals are likely negatively affecting the potential recovery of certain fish species, such as Atlantic cod, in certain regions; however, the relative size of this role, and the impact that reducing seal abundance would have on recovery, is not clear. Further, due to their large size, reducing their population size through culls or bounties is likely unattainable without significant public backlash, and very large financial costs. If demand for seal products increases significantly, the seal population may be decreased through a commercial harvest; however, any decrease in the size of the harp or grey seal population large enough to have a positive impact on groundfish recovery, would likely also significantly reduce the number of seals that can be sustainably harvested by the industry. In addition to this, there may be negative consequences to positioning the seal hunt as a hunt for the purpose of marine resource management, both in terms of marketing and international trade.

We also found that at multiple points throughout Atlantic seal management, seal population sizes have been grossly overestimated, and quotas were much higher than scientific advice at the time. Overly high quotas and population size estimates greatly contributed to the collapse of Atlantic cod and many other fisheries now in the critical zone in Atlantic Canada. With the goal of growing the sealing industry, it is critical that future quotas do not jeopardize the seal population, and, in turn, the sealing industry. Further, because of the long period between surveys, a reduction in seal population size may not be detected until the population has been reduced beyond what would be acceptable by industry.

We further found that the 2009 EU ban on seal products has effectively closed the market for Canadian Indigenous seal products, because of over 5 years of market exclusion, and an ineffective certification process. Only Indigenous Peoples within Nunavut and the Northwest Territories can export products to the European Union. However, the financial burden of certifying Indigenous seal products for export to the EU is approximately $374,800 annually in Nunavut and required an up-front investment of 5.7 million dollars to become a Recognized Body. This has far surpassed any economic benefit obtained from accessing this market under

the Indigenous Exemption. The governments of Nunavut, the Northwest Territories and Greenland have outlined to the European Commission what they need for the Indigenous Exemption to be effective in 2020 and again in 2023. Until these requests are granted and the process is made financially viable, it is not worth engaging with the EU. We find that the EU bans on seal products resulted in extreme and undue hardship both for Indigenous Peoples and local communities in Newfoundland and Labrador. The impact of these bans on Indigenous Peoples was in direct violation of their own objectives within the bans, and further, was in violation of the United Nations Declaration on the Rights of Indigenous Peoples to which the EU is a signatory; further, we find that the 2009 EU ban was implemented despite official scientific advice to indicate that it would result in hardship for Indigenous Peoples even with the Indigenous Exemption. We have also highlighted throughout this report numerous other sustainable use practices accepted in Europe and the United States that are comparable to, if not significantly worse than, the sealing industry in terms of ethical concerns, animal welfare, and sustainability. We must therefore conclude that international bans on seal products are hypocritical and prejudiced towards all individuals who harvest seals.

The largest barriers to growing the sealing industry are bans on seal products, and a pervasive negative public perception of various aspects of the sealing industry. This negative perception is inhibiting the growth of new internal markets and is hindering demand in existing markets. We emphasize the findings of other major reviews of the sealing industry, that a full-utilization harvest—especially the meat—is essential to ensure public support of the industry. We outlined several provincial and federal policies that may be hindering the industry and that should be re-evaluated. However, this is not enough. To ensure the future of the industry, it is critically important that marketing efforts continue, especially because marketing efforts to counter the sealing industry will continue and strengthen as the industry grows.

The sealing industry is not alone in its struggle for international acceptance. Increasingly, the sustainable use of wild animals is restricted, but there is a growing constituency of people who are negatively impacted by these restrictions. Aligning seal harvesting in a larger international community supporting sustainable use may allow for increased acceptance of seal harvesting and may help open new markets and lift seal product bans. Placing seal harvesting in the context of existing international treaties and declarations that defend the right to sustainably use natural resources may further allow the industry to prevent new bans and target existing ones.

Glossary

The Association of Fish and Wildlife Agencies (AFWA)

An organization that collectively represents North America's fish and wildlife agencies to advance management and conservation that involves science-based research on various topics, including habitat and energy development, climate change, wildlife conservation, and international relations (Association of Fish & Wildlife Agencies, n.d.).

α-linolenic acid (ALA)

A crucial fatty acid that humans must obtain from diet, which is turned into EPA and DHA in the body (K.-B. Kim et al., 2014).

Animal Rights Movement (ARM)

A social movement to end animal abuse, particularly the perception of them as property for human use.

Animal-Rights Organizations

In this paper, we define animal-rights organizations as those that do not believe that seals should be harvested, no matter how humanely done. These organizations are not concerned with how to harvest seals humanely, but rather if should be harvested at all. The definition used here is not necessarily reflected in the names of organizations. For example, the International Fund for Animal Welfare is one such animal-rights organization.

Animal-Welfare Organizations

In this paper, we define animal-welfare organizations are supportive of the sustainable use of nature, including seals, and are concerned with how seals are harvested. One example is the Independent Veterinarians Working Group.

The Atlantic Seal Management Strategy (ASMS)

First marine species management strategy in Canada to include a precautionary approach. Formerly known as the Objective Based Fisheries Management (OBFM) (Fisheries and Oceans Canada, 2021c).

Concentrated animal feeding operations (CAFO)

Type of large-scale, industrial, agricultural facility that produces meat, eggs, and milk. (Hribar & Schultz, 2010)

Center for Biological Diversity (CBD)

A non-profit membership organization founded in 1989 which focuses on protecting endangered species (CBD, n.d.).

Community-based resource management (CBNRM)

Management strategy that creates incentives for a demographic of natural resource users to use the resources sustainably, this can include economic benefits and rights over resources (USAID, n.d.).

The International Council for Game and Wildlife Conservation (CIC)

An international, non-profit, NGO that focuses on biodiversity conservation by the sustainable use of resources (CIC, n.d.).

The Convention on the International Trade in Endangered Species of Flora and Fauna (CITES)

An international agreement that works to ensure the protection of species within trade. Uses a permit system to organize international trade (Environment and Climate Change Canada, 2015).

The Conservation of Migratory Species of Wild Animals (CMS)

A United Nations' environmental treaty provides an international framework for the conservation of migratory animals and their habitats through sustainable use (CMS, 2020).

Canadian Veterinary Medical Association (CMVA)

A national and international representation of Canadian veterinarians, which promotes animal welfare and One Health through advocacy of veterinary practices (CVMA, 2024).

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC)

An independent committee that examines at-risk wildlife species in Canada (Environment and Climate Change Canada, 2021).

Committee on Seals and Sealing (COSS)

Independent advisory source for the Canadian government on seal management that made significant changes after examining the socio-economic, ecological, and human factors of the industry (Fisheries and Oceans Canada, 1985).

Collaborative Partnership on Sustainable Wildlife Management (CPW)

A voluntary collective of international organizations working towards the conservation and sustainable use of wildlife through management (CBD, 2019).

Canadian Sealers Association (CSA)

An organization that was created in response to the negative publicity of sealing to promote education and public awareness of the industry (Canadian Sealers Association, 2017).

Canadian Seal Products (CSP)

A brand that offers various seal products, such as oil, fur, leather, and meat that meet particular criteria such as product quality (Canadian Seal Product, n.d.).

The Dairy Farmers of Canada (DFC)

A farmer-funded and organized advocacy group that represents the interests and rights of Canadian dairy farmers (Dairy Farmers of Canada, 2023a).

Docosahexaenoic Acid (DHA)

A critical omega-3 fatty acid that is important for brain health in humans and is found in a variety of seafoods (Bjarnadottir, 2023).

Docosapentaenoic Acid (DPA)

Omega-3 fish oil attributed to many health benefits such as anti-inflammatory and brain health, and absorbs faster than EPA (Natural Force, 2022).

Dispute settlement body (DSB)

The WTO General Council congregates within this group to approach disputes between members (WTO, n.d.-a).

Dispute settlement understanding (DSU)

Establishes and implements policies to resolve disputes between WTO members (International Trade Administration, n.d.).

Eurasian Economic Union (EEC)

Regulatory body established in 2012 to ensure the operations and progression of the EAEU (EEC, n.d.).

The European Food Safety Authority (EFSA)

Independent advisory body of the European Union that provides science-based insights on food-related risks (European Union, n.d.).

Eicosapentaenoic Acid (EPA)

An omega-3 fatty acid found in various cold-water seafood and fish oil supplements helps mitigate risks of heart disease, blood pressure, and inflammation (Mount Sinai, n.d.).

The European Federation for Hunting and Conservation (FACE)

International advocacy organization that represents the interests and requirements of European hunters (FACE, n.d.).

The Food and Agriculture Organization (FAO)

United Nations' leading agency addressing international hunger, with the objective of reaching food security (Food and Agriculture Organization of the United Nations, n.d.-a).

Fisheries and Oceans Canada (DFO)

Federal management institution that ensures protection and sustainability of Canadian

fisheries and resources through science and economic opportunities (Fisheries and Oceans Canada, 2023c).

Fishermen's Protective Union (FPU)

Former workers' organization and political party in Newfoundland that advocated for fairer industry conditions for fishermen (Chafe, 2022).

The Fisheries Resource Conservation Council (FRCC)

Established by the Canadian Minister of Fisheries and Oceans in 1992 to implement a comprehensive management strategy for fisheries by acquiring a better understanding of marine ecosystems. Was established as a response to the declines of Atlantic groundfish and the Newfoundland cod fishery moratorium (Fisheries and Oceans Canada, 1994).

The U.S. Fish and Wildlife Service (FWS)

A federal agency within the United States Department of the Interior that works to achieve fish and wildlife conservation (U.S. Fish & Wildlife Service, n.d.).

General Administration of Customs China (GACC)

Chinese border agency responsible for various regulatory measures, such as port management coordination and customs control (GACC, n.d.).

The General Agreement on Tariff and Trade (GATT)

An international trading agreement which led to the establishment of the WTO that focused on liberalizing trade between member nations (Wilkinson, 2021).

Greenhouse gas (GHG)

Gases, consisting of carbon dioxide, methane, ozone, nitrous oxide, chlorofluorocarbons, and water vapor, in the atmosphere that increase the surface temperature of Earth (NASA, 2030).

Gulf of St. Lawrence (GOSL)

250,000 square km North American body of water connected by the northeast Strait of Belle Isle and southeast Cabot Strait. The gulf was typically used by Indigenous peoples, such as the Mi'kmaq, before Europeans arrived (P. C. Smith & Conover, 2015).

Indigenous communities (IC)

Collective term of distinct groups that share collective ancestral relations to land and natural resources where they live, there are approximately 630 Indigenous communities throughout Canada, representing over 50 distinct Nations and languages (Crown-Indigenous Relations and Northern Affairs Canada, 2023).

Inuit Circumpolar Council (ICC)

International, non-governmental organization that represents the Inuit of Alaska,

Canada, Greenland, and Chukotka (Russia) to strengthen collaboration. Holds Consultative Status II at the United Nations and holds a General Assembly every four years (ICC, 2018).

International Fund for Animal Welfare (IFAW)

An international non-profit organization that collaborates with partners to rescue and release animals, as well as protect and rehabilitate them and their habitats (IFAW, 2023).

International Trade Organization (ITO)

Precursor to the WTO as an international institution for trade regulation. Was to be established at the UN Conference on Trade and Employment in Cuba in 1947, but ratification failed (WTO, n.d.-d).

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)

Independent body established in 2012 to assess biodiversity and essential services and strategize methods and resources of the sustainable use of natural resources (Environment and Climate Change Canada, 2016).

International Panel on Climate Change (IPCC)

United Nations body that evaluates climate change science through mandatory assessments (IPCC, n.d.).

Indigenous Peoples and local communities (IPLC)

A general term for demographics who have lived in a particular region for generations with deep connections to resource use and management through unique knowledge and conservation that is significantly tied to their cultural, social, political, and economic identities and livelihoods (Gikandi, 2021).

Ice Seal Committee (ISC)

A co-management organization authorized by Section 119 of the MMPA, NOAA Fisheries, and the Alaskan Native Organization that manages ice seals in Alaska (Ice Seal Committee, n.d.).

The International Union for Conservation of Nature (IUCN)

Membership union for governments and non-governmental organizations that provides groups with resources to help economic, human, and nature's progress and sustainability (IUCN, n.d.).

Illegal, unreported and unregulated (IUU)

Fishing activities that threaten oceans and sustainability worldwide. Can have a wide range of consequences, such as economic and global food security. (NOAA Fisheries, n.d.-c)

Kalaallit Nunaanni Aalisartut Piniartullu Kattuffia (KNAPK)
Organization of fishermen and hunters in Greenland (KNAPK, 2020).

Members of the House of Assembly (MHA)
Elected Member to the House of Assembly in Newfoundland and Labrador that represent one electoral district. There are a total of 40 seats.

The Marine Mammal Commission (MMC)
Independent government agency established by the MMPA to ensure the restoration and sustainability of marine mammal populations and their ecosystems (Marine Mammal Commission, n.d.-a).

The Marine Mammal Protection Act (MMPA)
U.S. national policy enacted in 1972 that aims to prevent the decline of marine mammal species and ensure that they remain sustainable within their ecosystems (NOAA Fisheries, n.d.-b).

Marine Mammal Regulations (MMR)
Set of regulations established under the Fisheries Act of Canada that governs and protects marine mammals in fisheries, as well as oversees their harvests, sales, and transports (Fisheries and Oceans Canada, 2016a).

Meat-related cognitive dissonance (MRCD)
Describes an individual who eats meat, but their behaviour contradicts their care towards animals and wishes them no harm (Rothgerber, 2020).

Marine resource management (MRM)
Exception of the European Union Seal Regime that allows the seal hunt to be conducted for marine resource management purposes.

North Atlantic Marine Mammal Commission (NAMMCO)
An international body focused on improving the conservation and management of marine mammals in the North Atlantic. Among other things, it provides scientific and policy advice to governments on marine mammal hunting. It currently has 4 member nations, Faroe Islands, Greenland, Iceland and Norway

Northwest Atlantic Fisheries Organization (NAFO)
Intergovernmental management organization that provides science-based strategies for fisheries management (NAFO, n.d.).

The North American Model of Wildlife Conservation (NAMWC)
Approach that collectively establishes wildlife management guiding principles in the U.S.

and Canada (Mahoney, 2019).

National Marine Fisheries Service (NMFS)

Also known as NOAA Fisheries, is an office of the National Oceanic and Atmospheric Administration in the U.S. Department of Commerce to manage fisheries (NOAA Fisheries, n.d.-a).

The Objective Based Fisheries Management (OBFM)

Inclusive approach to fisheries management to develop sustainable objectives and framework with the DFO. Now known as the Atlantic Seal Management Strategy (see ASMS) (Fisheries and Oceans Canada, 2010).

One Health High-Level Experts Panel (OHHLEP)

Interdisciplinary initiative organized by the FAO, UNEP, WHO, and WOAH with the objective of enhancing our knowledge on the creation and spread of diseases with a One Health Approach, which correlates health of humans, animals and wildlife (Food and Agriculture Organization of the United Nations, n.d.-b).

Pacific Aquaculture Regulations (PAR)

Federal regulations for aquaculture management in British Columbia to conserve fish populations and habitats (Fisheries and Oceans Canada, 2021d).

People for the Ethical Treatment of Animals (PETA)

Animal rights organization that opposes the mistreatment of animals, particularly in testing laboratories, food industries, clothing industries, and entertainment (PETA, n.d.).

Royal Commission on Seals and Sealing (RCSS)

Established by the Canadian federal government in 1984 to investigate the sealing industry in Canada, specifically the economic, social, and ecological factors (Ronald & Lavigne, 2015).

Severe acute respiratory disease (SARS)

Viral respiratory disease of zoonotic origin caused by SARS-CoV-1 virus that is airborne and commonly spreads similarly to the cold and Influenza (WHO, 2024).

Seals and Sealing Network (SSN)

Membership of a variety of seal industry workers as well as Indigenous Peoples that support Canadian Seal Products (Canadian Seal Product, n.d.).

Society for the Prevention of Cruelty to Animals (SPCA)

Collective name for groups of international non-profit animal welfare organizations that can work independently.

Seal Protection Regulations (SPR)

Established in 1966 under the Canadian Fisheries Act that set a governing framework for the seal hunt, specifically permits, quotas, and seasons (Ronald & Lavigne, 2015).

Total allowable catch (TAC)

Measurement tool to establish the fishing limits within management plans through scientific recommendations (Oceana Europe, 2023).

Technical Barriers to Trade (TBT)

Ensures non-discrimination and unnecessary trade barriers through regulations and assessments of trade activities (WTO, n.d.-c).

Traditional ecological knowledge (TEK)

Specific knowledge from IPLCs derived from ecological interactions and understanding with their regional environments. This includes cumulative relationships between natural resources and their use (FWS, 2011).

The Wildlife Trade Monitoring Network (TRAFFIC)

Provides solutions to a range of partners on wild species trade that is based on science, analysis, and research (TRAFFIC, n.d.).

The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)

Legally non-binding resolution passed in 2007 by the United Nations that specifies Indigenous rights within international law and policy through a universal framework (United Nations, 2007).

The United Nations' Agreement on Straddling and Highly Migratory Fish Stocks (UNFA)

Conservation management framework for migratory and straddling fish stocks that inhabit international waters that are managed by regional organizations (Fisheries and Oceans Canada, 2009).

The World Trade Organization (WTO)

Sole organization that is responsible for the regulations of global trade with the objective

of helping producers, exporters, and importers to increase trade benefits (WTO, n.d.-e).

References

Abacus Data. (2020a). *Research Memorandum*. https://canadiansealproducts.com/app/uploads/2021/01/abacus-data-ssn-creative-pathways-online-focus-group-results-9-16-2020.pdf

Abacus Data. (2020b). *The Canadian seal product market*. Abacus Data. https://canadiansealproducts.com/app/uploads/2021/01/seals-narrative-report-apr-2020-3.pdf

Abacus Data. (2022). *Campaign effectiveness overview conducted for the Seals and Sealing Network*. https://canadiansealproducts.com/app/uploads/2022/07/abacus-customer-survey-2022-short-version.pdf

Abensperg-Traun, M. (2009). CITES, sustainable use of wild species and incentive-driven conservation in developing countries, with an emphasis on southern Africa. *Biological Conservation*, *142*(5), 948–963. https://doi.org/10.1016/j.biocon.2008.12.034

Ackman, R. G. (1997). Safety of seal oil as a nutritional supplement. *Proceedings of the Nova Scotian Institute of Science*, *41*, 103–114. https://canadiansealproducts.com/app/uploads/2020/11/r-g--ackman-et-al--1997-safety-of-seal-oil-as-a-nutritional-supplement-.pdf

Aguiar, G. J. A., Almeida, L. R., Fernandes, B. S., Gavazza, S., Silva, G. L., & Machado Santos, S. (2023). Use of life cycle assessment as a tool to evaluate the environmental impacts of textile effluents: A systematic review. *Environmental Science and Pollution Research International*, *30*(31), 76455–76470. https://doi.org/10.1007/s11356-023-27785-6

Alaska Department of Fish and Game. (n.d.). *Subsistence Hunting in Alaska*. The Great State of Alaska. Retrieved January 3, 2024, from https://www.adfg.alaska.gov/index.cfm?adfg=subsistence.hunting

Alexiades, M. N. (2009). The Cultural and Economic Globalisation of Traditional Environmental Knowledge Systems. In *Landscape, Process and Power: Re-evaluating traditional environmental knowledge.* Oxford and New York: Berghahn.

Anderson, R. (2018). Expanding Pinniped Populations and Impacts on At-Risk Salmonid Fishery Stocks. *NOAA Fisheries*, *82*(3), 583–595. https://doi.org/10.1002/jwmg.21405

Animal Alliance of Canada. (c2023). Sable Island Grey Seals. *Animal Alliance of Canada*. https://www.animalalliance.ca/campaigns/other-campaigns/sable-island-grey-seals/

Araya-Schmidt, T., Olsen, L., Rindahl, L., Larsen, R. B., & Winger, P. D. (2019). Alternative bait trials in the Barents Sea snow crab fishery. PeerJ (San Francisco, CA), 7, e6874–e6874. https://doi.org/10.7717/peerj.6874

Arctic Culture Lab. (n.d.). *Handmade Selkie*. Retrieved November 9, 2023, from https://www.arcticculturelab.no/seal-revitalization-project/handmade-selkie/

Ares, E. (2023). *Trophy Hunting* [Briefing Paper]. United Kingdom House of Commons. https://commonslibrary.parliament.uk/research-briefings/cbp-7908/

Arnaquq-Baril, A. (Director). (2016). *Angry Inuk*. National Film Board of Canada.

Arnett, E. B., & Southwick, R. (2015). Economic and social benefits of hunting in North America. *International Journal of Environmental Studies*, *72*(5), 734–745. https://doi.org/10.1080/00207233.2015.1033944

Ashley, B. (2002). Edible Weights of Wildlife Species used for Country Food in the Northwest Territories and Nunavut. Department of Resources, Wildlife and Economic Development. https://www.gov.nt.ca/sites/ecc/files/weights_of_wildlife.pdf

Association of Fish & Wildlife Agencies. (n.d.). *AFWA Is*. Retrieved January 11, 2024, from https://www.fishwildlife.org/landing

ASSTT. (2022). *Report of the Atlantic Seal Science Task Team*. Government of Canada. https://www.dfo-mpo.gc.ca/science/documents/mammals-mammiferes/atlantic-seal-phoque-atlantique/appendix5-annex5/ASSTT-Final-report-English.pdf

Bailey, T. A. (1935). The North Pacific Sealing Convention of 1911. *Pacific Historical Review*, *4*(1), 1–14. https://doi.org/10.2307/3633240

Baker, M. (2013). *The Struggle for Influence and Power: William Coaker, Abram Kean, and the Newfoundland Sealing Industry, 1908–1915*. *28*.

Baker, M. (2014). Challenging the "Merchants' Domain": William Coaker and the Price of Fish, 1908–1919. *Newfoundland & Labrador Studies*, *29*(2), Article 2. https://journals.lib.unb.ca/index.php/NFLDS/article/view/23069

Baker, R. C., Wilke, F., Baltzo, C. H., & Fisheries, U. S. B. of C. (1970). *The Northern Fur Seal*. U.S. Bureau of Commercial Fisheries.

Barrett, S. (2005). *The North Pacific Fur Seal Treaty and the Theory of International Cooperation*.

Barry, D. (2005). *Icy Battleground: Canada, the International Fund for Animal Welfare, and the Seal Hunt*. Breakwater Books. https://canadacommons-ca.qe2a-proxy.mun.ca/artifacts/1868537/icy-battleground/2617604/view/

Bartholomew, A., & Bohnsack, J. A. (2005). Review of catch-and-release angling mortality with implications for no-take reserves. *Reviews in Fish Biology and Fisheries*, *15*(1–2), 129–154. https://doi.org/10.1007/s11160-005-2175-1

Barzdo, J. (1980). *International trade in harp and hooded seals*. Fauna and Flora Preservation Society and International Fund for Animal Welfare. https://ia800300.us.archive.org/19/items/internationaltra80barz/internationaltra80barz.pdf

Battistini, E. (2018). "Sealfie", "Phoque you" and "Animism": The Canadian Inuit Answer to the United-States Anti-sealing Activism. *International Journal for the Semiotics of Law - Revue Internationale de Sémiotique Juridique*, *31*(3), 561–594. https://doi.org/10.1007/s11196-018-9562-0

Ben-Ami, D., Croft, D., Ramp, D., & Boom, K. (2010). *Advocating kangaroo meat: Towards ecological benefit or plunder?* Thinkk. https://opus.lib.uts.edu.au/bitstream/10453/35118/1/benamietal2010kangaroomeat.pdf

Bennike, O., Rasmussen, P., & Aaris-Sorensen, K. (2008). The harp seal (Phoca groenlandica Erxleben) in Denmark, southern Scandinavia, during the Holocene. *Boreas*, *37*, 263–272. https://onlinelibrary.wiley.com/doi/epdf/10.1111/j.1502-3885.2007.00015.x

Berkes, F. (1993). Traditional Ecological Knowledge in Perspective. In *Traditional Ecological Knowledge: Concepts and Cases* (pp. 1–9). International Development Research Centre. https://books.google.ca/books?hl=en&lr=&id=J2CNS64AFvsC&oi=fnd&pg=PA1&dq=traditional+ecological+knowledge&ots=KDegEltlGs&sig=qUNsMBnp0i7iJmSH2OkKmt7q52k&redir_esc=y#v=onepage&q=traditional%20ecological%20knowledge&f=false

Bjarnadottir, A. (2023, July 21). *DHA (Docosahexaenoic Acid): A Detailed Review*. https://www.healthline.com/nutrition/dha-docosahexaenoic-acid

Boghossian, J., & Marques, J. C. (2019). Saving the Canadian Fur Industry's Hide: Government's strategic use of private authority to constrain radical activism. *Organization Studies*, *40*, 1241–1267. https://doi.org/10.1177/0170840618815928

Bollard, L. (2019). What Can We Learn From the Fur-Free Fight? *WBI Studies Repository*.

bookyourhunt. (c2024). *Seal Hunting / Finland*. https://www.bookyourhunt.com/en/Tour/14370

Botta, J. R., Arsenault, E., & Ryan, H. A. (1983). Total mercury content of meat and liver from inshore Newfoundland-caught harp seal (Phoca groenlandica). *Bulletin of Environmental Contamination and Toxicology*, *30*(1), 28–32. https://doi.org/10.1007/BF01610094

Boudreau, C. (2023). *Personal Communication with Cyril Boudreau* [Personal communication].

Bowen, W. D., & Lidgard, D. (2011). *Vertebrate predator control: Effects on prey populations in terrestrial and aquatic ecosystems* (Research Document 2011/028). DFO Can. Sci. Advis. Sec. https://publications.gc.ca/collections/collection_2013/mpo-dfo/Fs70-5-2011-028-eng.pdf

Bowen, W. D., & Lidgard, D. (2013a). Marine mammal culling programs: Review of effects on predator and prey populations: Marine mammal predator control. *Mammal Review*, *43*(3), 207–220. https://doi.org/10.1111/j.1365-2907.2012.00217.x

Bowen, W. D., & Lidgard, D. (2013b). Marine mammal culling programs: Review of effects on predator and prey populations: Marine mammal predator control. *Mammal Review*, *43*(3), 207–220. https://doi.org/10.1111/j.1365-2907.2012.00217.x

Bromberg, L. (2021). Numbing the pain or diffusing the pressure? The co-optation of PETA's "naming and shaming" campaign against mulesing. *Law & Policy*, *43*(3), 285–313. https://doi.org/10.1111/lapo.12172

Brooks, J. (2023, February 16). *Alaska files lawsuit seeking to limit environmental protections for some Arctic seals* [Alaska Beacon]. https://alaskabeacon.com/briefs/alaska-files-lawsuit-seeking-to-limit-environmental-protections-for-some-arctic-seals/

Brox, J., Olaussen, K., Østerud, B., Elvevoll, E. O., Bjørnstad, E., Brenn, T., Brattebø, G., & Iversen, H. (2001). A long-term seal- and cod-liver-oil supplementation in hypercholesterolemic subjects. *Lipids*, *36*(1), 7–13. https://doi.org/10.1007/s11745-001-0661-4

Brunborg, L. A., Julshamn, K., Nortvedt, R., & Frøyland, L. (2006). Nutritional composition of blubber and meat of hooded seal (Cystophora cristata) and harp seal (Phagophilus groenlandicus) from Greenland. *Food Chemistry*, *96*(4), 524–531. https://doi.org/10.1016/j.foodchem.2005.03.005

Brunborg, L. A., Madland, T. M., Lind, R. A., Arslan, G., Berstad, A., & Frøyland, L. (2008). Effects of short-term oral administration of dietary marine oils in patients with inflammatory bowel disease and joint pain: A pilot study comparing seal oil and cod liver oil. *Clinical Nutrition (Edinburgh, Scotland)*, *27*(4), 614–622. https://doi.org/10.1016/j.clnu.2008.01.017

Brym, R. J., & Neis, B. (1978). Regional Factors in the Formation of the Fishermen's Protective Union of Newfoundland. *Canadian Journal of Sociology / Cahiers Canadiens de Sociologie*, *3*(4), 391. https://doi.org/10.2307/3339773

Bugéia, L. (2021, November 15). *Seals in Iceland*. Reykjavík Tourist Information. https://blog.reykjaviktouristinfo.is/2021/11/seals-in-iceland/

Bundy, A., Heymans, J. J., Morissette, L., & Savenkoff, C. (2009). Seals, cod and forage fish: A comparative exploration of variations in the theme of stock collapse and ecosystem

change in four Northwest Atlantic ecosystems. *Progress in Oceanography*, *81*(1–4), 188–206. https://doi.org/10.1016/j.pocean.2009.04.010

Buren, A. D., Koen-Alonso, M., & Stenson, G. B. (2014). The role of harp seals, fisheries and food availability in driving the dynamics of northern cod. *Marine Ecology. Progress Series (Halstenbek)*, *511*, 265–284. https://doi.org/10.3354/meps10897

Burke, D. C. (2021). The Case for a Greenpeace Apology to Newfoundland and Labrador. *The Northern Review*, *51*. https://doi.org/10.22584/nr51.2021.002

Burke, D. C. (2023). *Cultural Violence, Stigma and the Legacy of the Anti-Sealing Movement* (1st ed.). Routledge India. https://doi.org/10.4324/9781003356158

Butler, P. (2023). Sealing industry bemoans lack of talks on EU ban at summit in N.L. *CBC*. https://www.cbc.ca/news/canada/newfoundland-labrador/seal-industry-upset-eu-summit-newfoundland-1.7037321

Buttlar, B., Rothe, A., Kleinert, S., Hahn, L., & Walther, E. (2021). Food for Thought: Investigating Communication Strategies to Counteract Moral Disengagement Regarding Meat Consumption. *Environmental Communication*, *15*(1), 55–68. https://doi.org/10.1080/17524032.2020.1791207

Byelashov, O. A., Sinclair, A. J., & Kaur, G. (2015). Dietary sources, current intakes, and nutritional role of omega-3 docosapentaenoic acid. *Lipid Technology*, *27*(4), 79–82. https://doi.org/10.1002/lite.201500013

Cahill, R. (2023). *Personal Communication with Robert Cahill* [Personal communication].

Campbell, R., Knowles, T., & O'Conner, S. (2011). *The economics of seal hunting and seal watching in Namibia*. Economists at Large.

Canada, E. and C. C. (c2021). *Lumpfish (Cyclopterus lumpus): COSEWIC assessment and status reports 2017* [Research]. https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/cosewic-assessments-status-reports/lumpfish-2017.html

Canada Gazette. (2015, 29). *Regulations Amending the Marine Mammal Regulations*. Government of Canada; Government of Canada, Public Works and Government Services Canada, Integrated Services Branch, Canada Gazette. https://canadagazette.gc.ca/rp-pr/p2/2015/2015-07-29/html/sor-dors188-eng.html#footnoteRef.48004

Canadian Food Inspection Agency. (2011, May 1). Norway—Export requirements for fish and seafood [Reference material]. https://inspection.canada.ca/exporting-food-plants-or-animals/food-exports/requirements/norway-fish-and-seafood/eng/1304244075953/1304244191812?gf

Canadian Science Advisory Secretariat. (2020). *2019 Status of Northwest Atlantic Harp Seals, Pagophilus groenlandicus* (2020/020). https://publications.gc.ca/site/eng/9.886325/publication.html

Canadian Seal Product. (n.d.). *About the Canadian Seal Products*. Canadian Seal Product. Retrieved November 9, 2023, from https://canadiansealproducts.com/about-us

Canadian Seal Products. (c2023). *Where to buy Seal Meat*. Canadian Seal Product. https://canadiansealproducts.com/products/seal-meat/where-to-buy-seal-meat

Canadian Sealers Association. (2017). *The CSA*. https://www.sealharvest.ca/the-csa/

Canseco, M. (2022). Most Canadians Oppose Trophy Hunting, Fur Farming and Rodeos. *Research Co.* https://researchco.ca/2022/04/08/animals-canada-2/

Carmony, N. (2014). The Grand Canyon deer drive of 1924: The accounts of Will C. Barnes and Mark E. Musgrave. *The Journal of Arizona History*, *43*(1), 41–64.

Castañeda, R. A., Burliuk, C. M. M., Casselman, J. M., Cooke, S. J., Dunmall, K. M., Forbes, L. S., Hasler, C. T., Howland, K. L., Hutchings, J. A., Klein, G. M., Nguyen, V. M., Price, M. H. H., Reid, A. J., Reist, J. D., Reynolds, J. D., Van Nynatten, A., & Mandrak, N. E. (2020). A brief history of fisheries in Canada. *Fisheries*, *45*(6), 303–318. https://doi.org/10.1002/fsh.10449

CBC. (2005). Sea Shepherd crew arrested at seal hunt. CBC. https://www.cbc.ca/news/canada/newfoundland-labrador/sea-shepherd-crew-arrested-at-seal-hunt-1.532278

CBC. (2006, July 5). *New pelt rules could create monopoly, sealers association says*. CBC. https://www.cbc.ca/news/canada/newfoundland-labrador/new-pelt-rules-could-create-monopoly-sealers-association-says-1.605759

CBC. (2010a, May 27). *Sable Island seal cull studied by DFO | CBC News*. CBC. https://www.cbc.ca/news/canada/nova-scotia/sable-island-seal-cull-studied-by-dfo-1.916443

CBC. (2010b, May 27). *Sable Island seal cull studied by DFO | CBC News*. CBC. https://www.cbc.ca/news/canada/nova-scotia/sable-island-seal-cull-studied-by-dfo-1.916443

CBC News (Director). (1977, March 15). *Seal hunt protest is "the new paganism."* https://www.cbc.ca/player/play/1606934429

CBC News. (2006a, March 22). *Bardot protests seal hunt, disappointed by PM*. CBC News. https://www.cbc.ca/news/canada/bardot-protests-seal-hunt-disappointed-by-pm-1.571404

CBC News. (2006b, April 3). *McCartney used by groups, Williams says*. https://www.cbc.ca/news/canada/newfoundland-labrador/mccartney-used-by-groups-williams-says-1.610924

CBC News. (2009, October 24). *Pamela Anderson embarrassed by seal hunt | CBC News*. CBC News. https://www.cbc.ca/news/canada/toronto/pamela-anderson-embarrassed-by-seal-hunt-1.827297

CBC News. (2010, January 26). *Pie hit should earn PETA "terrorist" label: MP*. https://www.cbc.ca/news/canada/newfoundland-labrador/pie-hit-should-earn-peta-terrorist-label-mp-1.949659

CBC News. (2013a, October 29). *Anthony Bourdain goes to bat for Canadian seal hunt*. CBC. https://www.cbc.ca/news/canada/newfoundland-labrador/anthony-bourdain-goes-to-bat-for-canadian-seal-hunt-1.2286476

CBC News. (2013b, December 18). *Pam Anderson's $1M offer to end hunt a farce, sealing head says*. CBC News. https://www.cbc.ca/news/canada/newfoundland-labrador/pam-anderson-s-1m-offer-to-end-hunt-a-farce-sealing-head-says-1.2468502

CBC News. (2017, April 21). *PETA's anti-commercial sealing videos "devastating" to Inuit, critic says | CBC News*. CBC. https://www.cbc.ca/news/canada/north/peta-anti-commercial-sealing-inuk-critic-1.4078713

CBC News. (2019, March 15). *6 celebs who sought bad publicity for Canada's seal hunt*. CBC. https://www.cbc.ca/archives/6-celebrities-who-condemned-canada-s-seal-hunt-1.5034241

CBC News. (2021, October 3). *Does N.L. need a seal cull? It depends on which political party you ask | CBC News*. https://www.cbc.ca/news/canada/newfoundland-labrador/seal-cull-crab-bellies-political-parties-1.5943788

CBD. (n.d.). *Our Story*. Retrieved January 11, 2024, from https://www.biologicaldiversity.org/about/story/index.html

CBD. (2019, August 2). *Collaborative Partnership on Sustainable Wildlife Management*. Secretariat of the Convention on Biological Diversity. https://www.cbd.int/wildlife/cpw/

CBD. (2023, April 10). *Lawsuit Launched to Protect Ringed, Bearded Seals in the Arctic*. Center for Biological Diversity. https://biologicaldiversity.org/w/news/press-releases/lawsuit-launched-to-protect-ringed-bearded-seals-in-the-arctic-2023-10-03/

Chafe, A. (2022, October 6). *The Fishermen's Protective Union, waves of history dating back to 1908*. Atlantic Business Magazine. https://atlanticbusinessmagazine.ca/web-exclusives/the-fishermens-protective-union-waves-of-history-dating-back-to-1908/

Chang, D. (2020a). Tensions in contemporary Indigenous and animal advocacy struggles: The commercial seal hunt as a case study. In *Colonialism and Animality*. Routledge.

Chang, D. (2020b). Tensions in contemporary Indigenous and animal advocacy struggles: The commercial seal hunt as a case study. In *Colonialism and Animality*. Routledge.

Chassot, E., Duplisea, D., Hammill, M., Caskenette, A., Bousquet, N., Lambert, Y., & Stenson, G. (2009). Role of predation by harp seals Pagophilus groenlandicus in the collapse and non-recovery of northern Gulf of St. Lawrence cod Gadus morhua. *Marine Ecology. Progress Series (Halstenbek)*, *379*, 279–297. https://doi.org/10.3354/meps07897

CIC. (n.d.). *About the CIC*. Game and Wildlife Conservation. Retrieved January 11, 2024, from https://www.cic-wildlife.org/the-cic/about-the-cic/

Clark, D. A., Brehony, P., Dickman, A., Foote, L., Hart, A. G., Jonga, C., Mbiza, M. M., Roe, D., & Sandbrook, C. (2023). Hunting trophy import bans proposed by the UK may be

ineffective and inequitable as conservation policies in multiple social-ecological contexts. *Conservation Letters*, *16*(2), n/a. https://doi.org/10.1111/conl.12935

Claxton, N. X. (2019, March 25). *Reviewing the Fisheries Act: An Indigenous Perspective*. Yellowhead Institute. https://yellowheadinstitute.org/2019/03/25/reviewing-the-fisheries-act/

Clements, H. S., Balfour, D., & Di Minin, E. (2023a). Importance of private and communal lands to sustainable conservation of Africa's rhinoceroses. *Frontiers in Ecology and the Environment*, *21*(3), 140–147. https://doi.org/10.1002/fee.2593

Clements, H. S., Balfour, D., & Di Minin, E. (2023b). Importance of private and communal lands to sustainable conservation of Africa's rhinoceroses. *Frontiers in Ecology and the Environment*, *21*(3), 140–147. https://doi.org/10.1002/fee.2593

CMS. (2020). *CMS*. https://www.cms.int/en/legalinstrument/cms

CMVA. (2021). *Humane Slaughter of Farm Animals*. Canadian Veterinary Medical Association. https://www.canadianveterinarians.net/policy-and-outreach/position-statements/statements/humane-slaughter-of-farm-animals/

Coe, K., Thomsen, J. M., & Mbaiwa, J. (2023). Botswana communities' adaptive capacity to the lifting of a trophy hunting ban. *African Journal of Wildlife Research*, *53*(1). https://doi.org/10.3957/056.053.0056

Colman, J. S. (1937). The present state of the Newfoundland seal fishery. *The Journal of Animal Ecology*, *6*(1), 145–159. https://doi.org/10.2307/1066

Commission of the European Communities. (2008). *Impact assessment on the potential impact of a ban of products derived from seal species* (Commission Staff Working Document SEC(2008)2290). Commission of the European Communities.

Commisso, C. (2013, October 29). *Anthony Bourdain takes to Twitter in defence of Canadian seal hunt | CTV News*. https://www.ctvnews.ca/canada/celebrity-chef-anthony-bourdain-defends-canadian-seal-hunt-1.1518150

Community Leaders Network of Southern Africa, Namibian Association of CBNRM Support Organisation, & Resource Africa United Kingdom. (2021). *Written evidence submitted by Community Leaders Network of Southern Africa,Namibian Association of CBNRM Support Organisation, Resource Africa United Kingdom*. https://committees.parliament.uk/writtenevidence/38445/pdf/

Conservation Visions. (2022). *The Association of Fish and Wildlife Agencies and the One Health Approach: Providing the Foundation for a Leadership Role*. Conservation Visions.

Convention on Biological Diversity. (2012, January 16). *Introduction*. Secretariat of the Convention on Biological Diversity. https://www.cbd.int/intro/

Cooke, R. (2023). Seal hunt advocate takes issue with EU president's claim that Indigenous exemptions are working. *CBC News*. https://www.cbc.ca/news/canada/newfoundland-labrador/seal-hunt-exemption-1.7039447

COSEWIC. (2019). *Ringed Seal (Pusa hispida): COSEWIC assessment and status report 2019* (p. xii + 82) [Assessments]. Committee on the Status of Endangered Wildlife in Canada. https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/cosewic-assessments-status-reports/ringed-seal-2019.html

Crown-Indigenous Relations and Northern Affairs Canada. (2023, December 15). *Indigenous peoples and communities* [Administrative page; fact sheet; resource list]. Government of Canada. https://www.rcaanc-cirnac.gc.ca/eng/1100100013785/1529102490303

Cumming, D. H. M. (2015). *Seal Range State Policy and Management Review*. IUCN Sustainable Use and Livelihoods Specialist Group. https://portals.iucn.org/library/sites/library/files/documents/SSC-OP-055.pdf

CVMA. (2024). *Vision, Mission, Priorities*. https://www.canadianveterinarians.net/about-cvma/vision-mission-priorities/

Dairy Farmers of Canada. (2023a). *About us*. https://dairyfarmersofcanada.ca/en/who-we-are

Dairy Farmers of Canada. (2023b). *Dairy Farmers of Canada's Award-Winning Sustainability Campaign Recognized Again by Global Community*. https://www.newswire.ca/news-releases/dairy-farmers-of-canada-s-award-winning-sustainability-campaign-recognized-again-by-global-community-885885560.html

Dakins, D. (2024). *Personal Communication with Dion Dakins, CEO Carino Processing Ltd.* [Personal communication].

Dalla Costa, F., Gibson, T., Octávio Oliveira, S., Gregory, N., Faucitano, L., & Dalla Costa, O. (2021). On-farm culling methods used for pigs. *Animal Welfare (South Mimms, England)*, *30*, 507–522. https://doi.org/10.7120/09627286.30.3.008

Danielsen, J. (2018a). Seals: Harp seals, bearded seals, hooded seals and ringed seals: How they are hunted with an explanation of how their meat and skins are utilised and information on climate change. *Statement, Management Committee for Seals and Walruses, NAMMCO Council 26, March 2018*. https://nammco.no/topics/hunting-seals-greenland-not-fun-using/

Danielsen, J. (2018b, April 10). Hunting seals in Greenland, how and for what. *NAMMCO*. https://nammco.no/topics/hunting-seals-greenland-not-fun-using/

Daoust, P. Y., Crook, A., Bollinger, T. K., Campbell, K. G., & Wong, J. (2002). Animal welfare and the harp seal hunt in Atlantic Canada. *Canadian Veterinary Journal*, *43*(9), 687–694.

Daoust, P.-Y. (2023). *Personal Communication with Pierre-Yves Daoust* [Personal communication].

Daoust, P.-Y., & Caraguel, C. (2012). The Canadian harp seal hunt: Observations on the effectiveness of procedures to avoid poor animal welfare outcomes. *Animal Welfare*, *21*, 445–445. https://doi.org/10.7120/09627286.21.4.445

Daoust, P.-Y., Crook, A., Bollinger, T. K., Campbell, K. G., & Wong, J. (2002). Animal welfare and the harp seal hunt in Atlantic Canada. *Canadian Veterinary Journal*, *43*(9), 687–694.

Daoust, P.-Y., Hammill, M., Stenson, G., & Caraguel, C. (2014a). A review of animal welfare implications of the Canadian commercial seal hunt: A critique. *Marine Policy*, *43*, 367–371. https://doi.org/10.1016/j.marpol.2013.07.012

Daoust, P.-Y., Hammill, M., Stenson, G., & Caraguel, C. (2014b). A review of animal welfare implications of the Canadian commercial seal hunt: A critique. *Marine Policy*, *43*, 367–371. https://doi.org/10.1016/j.marpol.2013.07.012

Dauvergne, P., & Neville, K. J. (2011a). Mindbombs of right and wrong: Cycles of contention in the activist campaign to stop Canada's seal hunt. *Environmental Politics*, *20*(2), 192–209. https://doi.org/10.1080/09644016.2011.551024

Dauvergne, P., & Neville, K. J. (2011b). Mindbombs of right and wrong: Cycles of contention in the activist campaign to stop Canada's seal hunt. *Environmental Politics*, *20*(2), 192–209. https://doi.org/10.1080/09644016.2011.551024

Deckha, M. (2008). Disturbing Images: Peta and the Feminist Ethics of Animal Advocacy. *Ethics & the Environment*, *13*(2), 35–76. https://doi.org/10.2979/ETE.2008.13.2.35

DFO. (1985). *Brief submitted to The Royal Commission on Seals and Sealing Inustry in Canada Volume II*. Department of Fisheries and Oceans. https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/40591815_v2.pdf

DFO. (1995). Utilization of Seal as Bait for Lobster and Crab Fisheries: A Test Fishery [Canada/Newfoundland cooperation agreement for fishing industry development]. Department of Fisheries and Oceans. https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/241541.pdf

DFO. (1996). *Report on the status of hooded seals in the Northwest Atlantic* (Stock Status Report 96/108). DFO Science Branch.

DFO. (2006). *A harvest strategy compliant with the precautionary apprach* (Science Advisory Report 2006/023). DFO Can. Sci. Advis. Sec. https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/322464.pdf

DFO. (2010a). *Impacts of grey seals on fish populations in Eastern Canada* (Science Advisory Report 2010/071). DFO Can. Sci. Advis. Sec.

DFO. (2010b). *Impacts of grey seals on fish populations in Eastern Canada* (Science Advisory Report 2010/071). DFO Can. Sci. Advis. Sec.

DFO. (2011a). *2011–2015 Integrated Fisheries Management Plan for Atlantic Seals*. Department of Fisheries and Oceans. https://www.dfo-mpo.gc.ca/fisheries-peches/seals-phoques/reports-rapports/mgtplan-planges20112015/mgtplan-planges20112015-eng.html

DFO. (2011b). *2011–2015 Integrated Fisheries Management Plan for Atlantic Seals*. Department of Fisheries and Oceans. https://www.dfo-mpo.gc.ca/fisheries-peches/seals-phoques/reports-rapports/mgtplan-planges20112015/mgtplan-planges20112015-eng.html

DFO. (2016). *Population reduction scenarios for Northwest Atlantic harp seals (Pagophilus groenlandicus)* (Science Advisory Report 2016/018). DFO Can. Sci. Advis. Sec. https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/365539.pdf

DFO. (2017). *Stock assessment of Canadian Northwest Atlantic grey seals (Halichoerus grypus)* (Science Advisory Report 2017/045). Can. Sci. Advis. Sec.

DFO. (2018). Recovery strategy for the Harbour Seal, Lacs des Loups Marins subspecies (Phoca vitulina mellonae) [Research]. Fisheries and Oceans Canada. https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/recovery-strategies/harbour-seal-lacs-loups-marins.html

DFO. (2019a). *Evaluation of the certification and market access program for seals* [Evaluation Final Report]. Fisheries and Oceans Canada. https://www.dfo-mpo.gc.ca/ae-ve/evaluations/19-20/CMAPS-eng.html

DFO. (2019b). *Survey of recreational fishing in Canada, 2015* (pp. 1–21). Fisheries and Oceans Canada.

DFO. (2020). *2019 Status of Northwest Atlantic harp seals, Pagophilus groenlandicus* (Science Advisory Report 2020/020). Can. Sci. Advis. Sec.

DFO. (2021a). *2020 Stock status update for northern cod* (Science Response 2021/004). DFO Can. Sci. Advis. Sec.

DFO. (2021b). *2020 Stock status update for northern cod* (Science Response 2021/004). DFO Can. Sci. Advis. Sec.

DFO. (2022a). *Assessment of 2J3KL capelin in 2020* (Science Advisory Report 2022/013). DFO Can. Sci. Advis. Sec.

DFO. (2022b). *Stock assessment of Northwest Atlantic grey seals (Halichoerus grypus) in Canada in 2021* (Science Advisory Report 2022/018). Can. Sci. Advis. Sec.

DFO. (2022c). *Stock assessment of Northwest Atlantic grey seals (Halichoerus grypus) in Canada in 2021* (Science Advisory Report 2022/018). Can. Sci. Advis. Sec.

DFO. (2023). *Atlantic Seals Advisory Committee Meeting*.

DFO. (c2009a). *A fishery decision-making framework incorporating the precautionary approach*. Fisheries and Oceans Canada. https://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/precaution-eng.htm

DFO. (c2009b). *A fishery decision-making framework incorporating the precautionary approach*. Fisheries and Oceans Canada. https://www.dfo-mpo.gc.ca/reports-rapports/regs/sff-cpd/precaution-eng.htm

DFO. (c2022a). *Harp seal*. Fisheries and Oceans Canada. https://www.dfo-mpo.gc.ca/species-especes/profiles-profils/harpseal-phoquegroenland-eng.html

DFO. (c2022b). *North Atlantic seal science*. Fisheries and Oceans Canada. https://www.dfo-mpo.gc.ca/science/mammals-mammiferes/seal-science-phoques/index-eng.html#greySeals

Dickman, A., Cooney, R., Johnson, P. J., Louis, M. P., & Roe, D. (2019). Trophy hunting bans imperil biodiversity. *Science (American Association for the Advancement of Science)*, *365*(6456), 874–874. https://doi.org/10.1126/science.aaz0735

Dig It! (2022, February 10). *Seals, Selkies and Stories: What Does Folklore Have to Do with Archaeology?* Dig It! https://www.digitscotland.com/seals-selkies-and-stories-what-does-folklore-have-to-do-with-archaeology/

Directorate of Fisheries. (2023, August 29). *Applications for seal hunting licence for own consumption | Directorate of Fisheries*. Directorate of Fisheries. https://island.is/en/o/directorate-of-fisheries/news/applications-for-seal-hunting-licence-for-own-consumption-2024

Drew, J. A. (2005). Use of Traditional Ecological Knowledge in Marine Conservation. *Conservation Biology*, *19*(4), 1286–1293. https://www.jstor.org/stable/3591313

Dubey, P., Jayasooriya, A. P., & Cheema, S. K. (2011). Diets enriched in fish-oil or seal-oil have distinct effects on lipid levels and peroxidation in BioF1B hamsters. *Nutrition and Metabolic Insights*, *4*, 7–17. https://doi.org/10.4137/NMI.S6728

Dubois, S., & Harshaw, H. W. (2013). Exploring "Humane" Dimensions of Wildlife. *Human Dimensions of Wildlife*, *18*(1), 1–19. https://doi.org/10.1080/10871209.2012.694014

Economic Research Institute. (n.d.). *Commercial Fisherman Salary in Iceland*. Retrieved December 21, 2023, from https://www.erieri.com/salary/job/commercial-fisherman/iceland

Edwards-Callaway, L. N., & Calvo-Lorenzo, M. S. (2020). Animal welfare in the U.S. slaughter industry—A focus on fed cattle. *Journal of Animal Science*, *98*(4), 1–21. https://doi.org/10.1093/jas/skaa040

EEC. (n.d.). *Structure of the Commission*. Retrieved January 11, 2024, from https://eec.eaeunion.org/en/comission/about/

EEC. (c2023). *Single list of goods subject to prohibitions or restrictions on import or export by the Customs Union member states within the EurAsEC when trading with third countries and Provisions on application of restrictions*. https://eec.eaeunion.org/en/comission/department/catr/nontariff/ediny_perechen.php

EFSA. (2007a). *Scientific Opinion of the Panel on Animal Health and Welfare on a request from the Commission on the Animal Welfare aspects of the killing and skinning of seals. 610*, 1–122. https://www.efsa.europa.eu/en/efsajournal/pub/610

EFSA. (2007b). *Scientific Opinion of the Panel on Animal Health and Welfare on a request from the Commission on the Animal Welfare aspects of the killing and skinning of seals. 610*, 1–122. https://www.efsa.europa.eu/en/efsajournal/pub/610

Ely, E. (c2010a). *Proposal to Kill and Incinerate 80% of Sable Island Seals – Elizabeth Ely*. http://elizabethely.com/2010/07/13/proposal-to-kill-and-incinerate-80-of-sable-island-seals/

Ely, E. (c2010b). *Proposal to Kill and Incinerate 80% of Sable Island Seals – Elizabeth Ely*. http://elizabethely.com/2010/07/13/proposal-to-kill-and-incinerate-80-of-sable-island-seals/

Emerton, L. (2001). *Community-based incentives for nature conservation*. International Union for Conservation of Nature and Natural Resources. https://www.cbd.int/doc/pa/tools/Community-based%20incentives%20for%20nature%20conservation.pdf

Engel, M. T., Vaske, J. J., & Bath, A. J. (2021a). Seal hunting in Newfoundland from the perspective of local people. *Marine Policy*, *128*. https://doi.org/10.1016/j.marpol.2021.104491

Engel, M. T., Vaske, J. J., & Bath, A. J. (2021b). Seal hunting in Newfoundland from the perspective of local people. *Marine Policy*, *128*. https://doi.org/10.1016/j.marpol.2021.104491

Environment and Climate Canada Change. (2012, August 15). *Steller sea lion (Eumetopias jubatus) COSEWIC assessment and status report: Chapter 12* [Assessments]. Government of Canada. https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/cosewic-assessments-status-reports/steller-sea-lion/chapter-12.html

Environment and Climate Change Canada. (2015, February 16). *Convention on International Trade in Endangered Species* [Program descriptions]. Government of Canada. https://www.canada.ca/en/environment-climate-change/corporate/international-affairs/partnerships-organizations/convention-trade-endangered-species-summary.html

Environment and Climate Change Canada. (2016, May 20). *Biodiversity and ecosystem services: Intergovernmental platform*. Government of Canada. https://www.canada.ca/en/environment-climate-change/corporate/international-affairs/partnerships-organizations/biodiversity-ecosystem-services-intergovernmental-platform.html

Environment and Climate Change Canada. (2017, November 20). *COSEWIC assessment and update status report on the Northern Fur Seal (Callorhinus ursinus) in Canada 2006*. Government of Canada. https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/cosewic-assessments-status-reports/northern-fur-seal-2006.html

Environment and Climate Change Canada. (2021, December 3). *Canadian Wildlife Species at Risk 2021*. https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry/publications/canadian-wildlife-species-risk-2021.html#toc0

Environment and Climate Change Canada. (2023). *Canadian Environmental Sustainability Indicators: Status of key fish stocks* [Research]. Environment and Climate Change Canada. https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/status-key-fish-stocks.html

Eräluvat. (n.d.). *Seals*. Eräluvat.Fi. Retrieved November 9, 2023, from https://www.eraluvat.fi/en/hunting/seals.html

European Commission. (n.d.). *DS400—European Communities—Measures Prohibiting the Importation and Marketing of Seal Products*. European Commission. Retrieved November 9, 2023, from https://policy.trade.ec.europa.eu/enforcement-and-protection/dispute-settlement/wto-dispute-settlement/wto-disputes-cases-involving-eu/wtds400-european-communities-measures-prohibiting-importation-and-marketing-seal-products_en

European Commission. (2020). *Report from the Commission to the European parliment and the council on the implementation of relation (EC) No1007/2009, as amended by Regulation (EU) 2015/1775* (COM(2020) 633). https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0004

European Commission. (2023). *Report from the Commission to the European parliment and the council on the implementation of relation (EC) No1007/2009, as amended by Regulation (EU) 2015/1775* (COM(2023) 633). https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=COM:2023:633:FIN

European Parliament. (2023). *Notice to Members—Petition No 0426/2023 by X. H.-R. (French) on alleged breach of Regulation (EC) No 1007/2009 on trade in seal products in Estonia*.

European Union. (n.d.). *European Food Safety Authority – EFSA*. Retrieved January 11, 2024, from https://european-union.europa.eu/institutions-law-budget/institutions-and-bodies/search-all-eu-institutions-and-bodies/european-food-safety-authority-efsa_en

Eye on the Arctic. (2010, February 12). *European Sealskin Ban Affects Sámi Handicraft Workers – Eye on the Arctic*. https://www.rcinet.ca/eye-on-the-arctic/2010/12/02/european-sealskin-ban-affects-sami-handicraft-workers/

FACE. (n.d.). *FACE is the Voice of European Hunters*. Retrieved January 11, 2024, from https://www.face.eu/

Faiers, J. (2020). *Fur: A Sensitive History*. Yale University Press.

Fakhri, M. (2022). Markets, Sovereignty, and Racialization. *Journal of International Economic Law*, *25*(2), 242–258. https://doi.org/10.1093/jiel/jgac021

FAO. (2019). *Our priorities—The strategic objectives of FAO*. https://www.fao.org/3/i8580en/i8580en.pdf

FAO. (2021a). Land use statistics and indicators. Global, regional and country trends 1990–2019. In: FAOSTAT Analytical Brief Series No.28. In *FAOSTAT Analytical Brief Series No.28* (pp. 1–14).

FAO. (2021b). Land use statistics and indicators. Global, regional and country trends 1990–2019. In: FAOSTAT Analytical Brief Series No.28. In *FAOSTAT Analytical Brief Series No.28* (pp. 1–14).

FAO. (2022a). The state of world fisheries and aquaculture 2022: Towards blue transformation. In *Sustainability in action* (pp. 41–47). Food and Agriculture Organization of the United Nations. https://doi.org/10.4060/ca9229en

FAO. (2022b). The state of world fisheries and aquaculture 2022: Towards blue transformation. In *Sustainability in action* (pp. 41–47). Food and Agriculture Organization of the United Nations. https://doi.org/10.4060/ca9229en

FAO. (c2024). *FAO Strategic Framework 2022–2031*. https://www.fao.org/strategic-framework/en

FAO, IFAD, UNICEF, WFP, & WHO. (2022). *The state of food security and nutrition in the world 2022: Repurposing food and agricultural policies to make healthy diets more affordable.* Food and Agriculture Organization of the United Nations. https://doi.org/10.4060/cc0639en

FAO, UNEP, WHO, & WOAH. (2022). *Global Plan of Action on One Health. Towards a more comprehensive One Health, approach to global health threats at the human-animal-environment interface*. https://wedocs.unep.org/bitstream/handle/20.500.11822/40843/one_health.pdf?sequence=1&isAllowed=y

Farquhar, S. D. (2020). Inuit seal hunting in Canada: Emerging narratives in an old controversy. *Arctic*, *73*(1), 13–19. https://doi.org/10.14430/arctic69833

Fergus Murray. (2019). *The Tromsø and Norwegian Sealing and Whaling Industries*. Fergus Murray. https://www.fergusmurraysculpture.com/arctic-norway/the-seal-and-whale-industry/

Fiala, M., Marveggio, D., Viganò, R., Demartini, E., Nonini, L., & Gaviglio, A. (2020). LCA and wild animals: Results from wild deer culled in a northern Italy hunting district. *Journal of Cleaner Production*, *244*, 118667-. https://doi.org/10.1016/j.jclepro.2019.118667

Fielder, J. (2001). *Veterinary report Canadian commericial seal hunt Prince Edward Island*. International Fund for Animals.

Films Media Group & National Geographic Television & Film (Directors). (2013). *Animal Undercover Inside Secret America*. National Geographic Television & Film.

Fink, S. (2016). *Canada's East Coast harp seal hunt: How much meat is actually used?* International Fund for Animal Welfare. https://s3.amazonaws.com/ifaw-pantheon/sites/default/files/legacy/default/meat-waste-memo.pdf

Fink, S. (2023, June 4). *Why hasn't Canada ended its commercial seal hunt?* IFAW. https://www.ifaw.org/ca-en/journal/no-end-canada-seal-hunt

Fish Inspection Administrative Regulations under the Fish Inspection Act, REGULATION 74/07 (2007). https://www.assembly.nl.ca/legislation/sr/regulations/rc070074.htm

Fish Inspection Operations Regulations under the Fish Inspection Act, REGULATION 76/07 (2007). https://www.assembly.nl.ca/legislation/sr/regulations/rc070076.htm

Fisheries and Aquaculture. (2006). *All primary processing of seal pelts to be done in province*. https://www.releases.gov.nl.ca/releases/2006/fishaq/0629n04.htm

Fisheries and Oceans Canada. (1981). *The sealer's guide*.

Fisheries and Oceans Canada. (1985). *Brief submitted to The Royal Commission on Seals and Sealing Industry in Canada Volume II*. Department of Fisheries and Oceans. https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/40591815_v2.pdf

Fisheries and Oceans Canada. (1994). *Fisheries Resource Conservation Council: Building Partnerships in Resource Conservation*. Government of Canada.

Fisheries and Oceans Canada. (1999). *Atlantic seal hunt 2000 management plan*. Government of Canada.

Fisheries and Oceans Canada. (2003). Atlantic Seal Hunt 2003-2005 Management Plan. *Fisheries Resource Management – Atlantic*.

Fisheries and Oceans Canada. (2009, February 3). *United Nations Fish Stocks Agreement—International Fisheries*. Government of Canada. https://www.dfo-mpo.gc.ca/international/rsc-unfa-eng.htm

Fisheries and Oceans Canada. (2010). *Area 19 Snow Crab Integrated Fisheries Managment Plan 2001-2010*. Government of Canada.

Fisheries and Oceans Canada. (2011). *Canadian Science Advisory Secretariat Science Advisory Report 2010/089: Canadian atlantic seal management strategy*. Fisheries and Oceans Canada. https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/343830.pdf#

Fisheries and Oceans Canada. (2016a). *Fisheries and Oceans Canada's Response to the Information Request from the Review Panel of for the Roberts Bank Terminal 2 Project*.

Fisheries and Oceans Canada. (2016b, March 1). *Monitoring the seal harvest*. https://www.dfo-mpo.gc.ca/fisheries-peches/seals-phoques/monitoring-surveillance-eng.html

Fisheries and Oceans Canada. (2018, July 11). *Canada strengthens protections for marine mammals with updated regulations for whale watching and approaching marine mammals* [News releases]. Government of Canada. https://www.canada.ca/en/fisheries-oceans/news/2018/07/canada-strengthens-protections-for-marine-mammals-with-updated-regulations-for-whale-watching-and-approaching-marine-mammals.html

Fisheries and Oceans Canada. (2019, January 22). *Forward Regulatory Plan 2023-2025*. Government of Canada. https://www.dfo-mpo.gc.ca/acts-lois/initiatives/rule-reglement-eng.htm

Fisheries and Oceans Canada. (2020, March 26). *Science Advisory Report 2020/020: 2019 Status of Northwest Atlantic Harp Seals, Pagophilus groenlandicus*. Government of Canada. https://www.dfo-mpo.gc.ca/csas-sccs/Publications/SAR-AS/2020/2020_020-eng.html

Fisheries and Oceans Canada. (2021a, January 19). *Share your views and ideas: Amending the Marine Mammal Regulations and the Pacific Aquaculture Regulations*. Government of Canada. https://www.dfo-mpo.gc.ca/fisheries-peches/consultation/mmr-par-rmm-rap-eng.html

Fisheries and Oceans Canada. (2021b, January 19). *What we heard report: Amending the Marine Mammal Regulations and the Pacific Aquaculture Regulations*. Government of Canada. https://www.dfo-mpo.gc.ca/fisheries-peches/consultation/mmr-par-rmm-rap/report-rapport-eng.html

Fisheries and Oceans Canada. (2021c, October 21). *Canadian Science Advisory Secretariat Science Advisory Report 2010/089: Science Advisory Report 2010/089: Canadian Atlantic Seal Management Strategy*. Government of Canada. https://www.dfo-mpo.gc.ca/csas-sccs/Publications/SAR-AS/2010/2010_089-eng.html

Fisheries and Oceans Canada. (2021d, November 4). *Frequently asked questions*. Government of Canada. https://www.dfo-mpo.gc.ca/acts-lois/faq-eng.htm#toc10

Fisheries and Oceans Canada. (2022, May 12). *Seal management on Canada's East Coast* [Backgrounders]. Government of Canada. https://www.canada.ca/en/fisheries-oceans/news/2022/05/seal-management-on-canadas-east-coast.html

Fisheries and Oceans Canada. (2023a). *DFO Notices to Mariners—A2 Marine Mammal Guidelines and Marine Protected Areas*. https://notmar.gc.ca/publications/annual-annuel/section-a/a5-en.pdf

Fisheries and Oceans Canada. (2023b, March 6). *Ensuring the seal harvest is humane*. Government of Canada. https://www.dfo-mpo.gc.ca/fisheries-peches/seals-phoques/humane-sans-cruaute-eng.html

Fisheries and Oceans Canada. (2023c, September 7). *Fisheries and Oceans Canada*. Government of Canada. https://www.dfo-mpo.gc.ca/index-eng.html

Fisheries and Sealing Division. (n.d.). *Sealing in Nunavut*. Department of Environment, Government of Nunavut.

Fisheries Resource Conservation Council. (1999). *1999 Conservation requirements for the Gulf of St. Lawrence groundfish stocks and cod stocks in divisions 2GH and 3PS: Report to the Minister of Fisheries and Oceans*. https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/233731.pdf

Fleming, A. (1999). Human ecology and the early history of St Kilda, Scotland. *Journal of Historical Geography*, *25*(2), 183–200. https://doi.org/10.1006/jhge.1999.0113

Flood, K. (2023). *Personal Communication with Kendall Flood; CEO of Árn-oileán Resources* [Personal communication].

Food and Agriculture Organization of the United Nations. (n.d.-a). *About FAO*. AboutFAO. Retrieved January 11, 2024, from https://www.fao.org/about/about-fao/en/

Food and Agriculture Organization of the United Nations. (n.d.-b). *One Health High-Level Expert Panel (OHHLEP)*. Retrieved January 11, 2024, from https://www.fao.org/one-health/background/ohhlep/en

Food First NL. (n.d.). *What is Food Security?* Retrieved December 21, 2023, from https://www.foodfirstnl.ca/what-is-food-security

Food First NL. (2022, August 30). *Latest PROOF Report On Canadian Food Insecurity For 2021*. Food First NL. https://www.foodfirstnl.ca/blog/proof-report-nl-2021

Four Paws International. (2023, October 26). *Fur Bans*. Four Paws International. https://www.four-paws.org/campaigns-topics/topics/animals-abused-for-fashion/fur-bans

FWS. (2011, February 1). *Traditional Ecological Knowledge Fact Sheet*. https://www.fws.gov/media/traditional-ecological-knowledge-fact-sheet

GACC. (n.d.). *Overview of GACC*. Retrieved January 11, 2024, from http://english.customs.gov.cn/about/mission

Gadamus, L., & Raymond-Yakoubian, J. (2015). A Bering Strait Indigenous Framework for Resource Management: Respectful Seal and Walrus Hunting. *Arctic Anthropology*, *52*(2), 87–101. https://doi.org/10.3368/aa.52.2.87

Geist, V., & Mahoney, S. P. (2019). North American ecological history as the foundation of the model. In V. Geist & S. P. Mahoney (Eds.), *The North American Model of Wildlife Conservation*. Johns Hopkins University Press.

Gertcyk, O. (2015, September 10). *"Kill 7,000 seals to save the unique Lake Baikal population."* The Siberian Times. https://siberiantimes.com/ecology/opinion/news/n0443-kill-7000-seals-to-save-the-unique-lake-baikal-population/

Gigliotti, L. M., & Metcalf, E. C. (2016). Motivations of female Black Hills deer hunters. *Human Dimensions of Wildlife*, *21*(4), 371–378. https://doi.org/10.1080/10871209.2016.1157714

Gikandi, L. (2021, August 6). *The custodians of nature crucial to any and every effort to protect our planet*. WWF. https://updates.panda.org/the-custodians-of-nature-crucial-to-any-and-every-effort-to-protect-our-planet

Gjøsæter, H., Tjelmeland, S., & Bogstad, B. (2012). Ecosystem-Based Management of Fish Species in the Barents Sea. In G. H. Kruse, H. I. Browman, K. L. Cochrane, D. Evans, G. S. Jamieson, P. A. Livingston, & D. Woodby, *Global Progress in Ecosystem-Based Fisheries Management* (pp. 333–352). Alaska Sea Grant, University of Alaska Fairbanks. https://doi.org/10.4027/gpebfm.2012.017

Gladkowski, D. (2022). *Hunting is Conservation—The National Wild Turkey Federation*. https://www.nwtf.org

Global Affairs Canada. (2009, November 2). *Canada Requests WTO Consultations on EU Seal Products Ban*. GAC. https://www.international.gc.ca/media_commerce/comm/news-communiques/2009/327.aspx?lang=eng

Godart, F., Hsu, G., & Negro, G. (2023). Gatekeeping and the Use of Contested Practices in Creative Industries: The Case of Fur in Fashion. *Organization Science*, *34*(2), 637–656. https://doi.org/10.1287/orsc.2022.1591

Government of Canada. (c2022). *Agreement on international humane trapping standards* [Transparency - other]. https://www.canada.ca/en/environment-climate-change/corporate/international-affairs/partnerships-organizations/humane-trapping-standards.html

Government of Canada. (c2023). *China (People's Republic of)—Export requirements for fish and seafood* [Reference material]. https://inspection.canada.ca/exporting-food-plants-or-animals/food-exports/requirements/people-s-republic-of-china-fish-and-seafood/eng/1373555071317/1373555185449

Government of Canada. (c2021). *Sector Trend Analysis – Pet food trends in Canada*. https://agriculture.canada.ca/en/international-trade/market-intelligence/reports/sector-trend-analysis-pet-food-trends-canada

Government of Canada, C. F. I. A. (2013, July 12). *Code of Practice for the Harvest, Transport, Processing, and Export of Seal Products Intended for Human Consumption*. https://inspection.canada.ca/exporting-food-plants-or-animals/food-exports/food-specific-export-requirements/code-of-practice/eng/1373640653113/1373640765807?chap=0#s5c3

Government of Canada, C. F. I. A. (c2019). *Seal worms in fish* [Reference material]. https://inspection.canada.ca/food-safety-for-consumers/fact-sheets/specific-products-and-risks/fish-and-seafood/seal-worms/eng/1332272536555/1332272603915

Government of Canada, D. of J. (2021, April 12). *The UN Declaration explained*. https://www.justice.gc.ca/eng/declaration/what-quoi.html

Government of Canada, Employment and Social Development. (2023). *Wages in Nunavut*. https://www.jobbank.gc.ca/wagereport/location/#{location:exploreCareerBean.locationOnlyParam}

Government of Canada, F. and O. C. (2016, November 25). *Harbour seal*. Fisheries and Oceans Canada. https://www.dfo-mpo.gc.ca/species-especes/profiles-profils/harbour-seal-phoque-commun-eng.html

Government of Canada, S. C. (2022a, February 9). *Population growth in Canada's rural areas, 2016 to 2021*. https://www12.statcan.gc.ca/census-recensement/2021/as-sa/98-200-x/2021002/98-200-x2021002-eng.cfm

Government of Canada, S. C. (2022b, July 13). *Focus on Geography Series, 2021 Census—Division No. 8 (Census division)*. https://www12.statcan.gc.ca/census-recensement/2021/as-sa/fogs-spg/page.cfm?lang=E&topic=5&dguid=2021A00031008

Government of Greenland. (2015). *Addendum to White Paper on Management and Utilization of Seals in Greenland (April 2012)*. Ministry of Fishing, Hunting, and Agriculture. https://nammco.no/wp-content/uploads/2020/05/addendum-to-whitepaper-on-sealing-in-greenland-march2015-eng.pdf

Government of Newfoundland and Labrador. (n.d.). *Environmental Significance*. https://www.gov.nl.ca/ffa/files/sealing-pdf-humaness-environmental-significance.pdf

Government of Newfoundland and Labrador. (2020, February 11). *Turkey—Fisheries, Forestry and Agriculture*. https://www.gov.nl.ca/ffa/programs-and-funding/programs/animals/livestock/turkey/

Government of Northwest Territories. (n.d.). Access the Hide and Fur Program [Service]. Government of the Northwest Territories. Retrieved February 22, 2024, from https://www.iti.gov.nt.ca/en/services/access-hide-and-fur-program

Government of Nunavut. (2021). Department of Economic Development and Transportation Seal and Fur Programs Policy. https://www.gov.nu.ca/sites/default/files/policies-legislations/2024-01/Seal%20and%20Fur%20Programs%20Policy%2009%2C%2021.pdf

Government of Nunavut. (2021b). Economy info package. https://www.gov.nu.ca/sites/default/files/documents/2021-11/gn_info_package_-_economy.pdf

Granquist, S. M. (2022). The Icelandic harbour seal (Phoca vitulina) population: Trends over 40 years (1980–2020) and current threats to the population. *NAMMCO Scientific Publications*, *12*. https://doi.org/10.7557/3.6328

Graugaard, N. D. (2018). "Without seals, there is no Greenlanders" Colonial and postcolonial narratives of sustainability and Inuit seal Hunting. In *The Politics of Sustainability in the Arctic: Reconfiguring Identity, Space, and Time*. Routledge.

Graugaard, N. D. (2021). "A Sense of Seal" in Greenland: Kalaallit Seal Pluralities and Anti-Sealing Contentions. *Études Inuit Studies*, *44*(1–2), 373–397. https://doi.org/10.7202/1081810ar

Greenland Ministry of Fisheries and Agriculture. (2012). *Management and utilization of seals in Greenland*.

Greenland Ministry of Fisheries and Agriculture. (2015). *Updated data to: Management and utilization of seals in Greenland*.

Greenpeace. (2008). Paul Watson, Sea Shepherd and Greenpeace: Some facts. https://web.archive.org/web/20120501013513/http://www.greenpeace.org/usa/en/news-and-blogs/news/paul-watson-sea-shepherd-and/

Grenfell, W. (1898). The seal hunters of Newfoundland. *The Leisure Hour*, 284–292.

Halliday, C., & McCulloch, S. P. (2022). Beliefs and Attitudes of British Residents about the Welfare of Fur-Farmed Species and the Import and Sale of Fur Products in the UK. *Animals*, *12*(5), 538. https://doi.org/10.3390/ani12050538

Hammerschlag, N., Schmitz, O. J., Flecker, A. S., Lafferty, K. D., Sih, A., Atwood, T. B., Gallagher, A. J., Irschick, D. J., Skubel, R., & Cooke, S. J. (2019). Ecosystem Function

and Services of Aquatic Predators in the Anthropocene. *Trends in Ecology & Evolution*, *34*(4), 369–383. https://doi.org/10.1016/j.tree.2019.01.005

Hammill, M. O. (2014). *Grey Seal Population Trends in Canadian Waters, 1960-2014*.

Hammill, M. O., den Heyer, C. E., & Bowen, W. D. (2014). *Grey Seal Population Trends in Canadian Waters, 1960-2014* (Research Document 2014/037). DFO Can. Sci. Advis. Sec.

Hammill, M. O., & Stenson, G. (2006). *Abundance of Northwest Atlantic hooded seals (1960 – 2005)* (Research Document 2006/068). https://www.dfo-mpo.gc.ca/csas-sccs/publications/resdocs-docrech/2006/2006_068-eng.htm

Hammill, M. O., Stenson, G. B., & Kingsley, M. C. S. (2011a). *Historical Abundance of Northwest Atlantic harp seals (Pagophilus groenlandicus): Influence of harvesting and climate* (Research Document 2011/100). DFO Can. Sci. Advis. Sec. https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/344890.pdf

Hammill, M. O., Stenson, G. B., & Kingsley, M. C. S. (2011b). *Historical Abundance of Northwest Atlantic harp seals (Pagophilus groenlandicus): Influence of harvesting and climate* (Research Document 2011/100). DFO Can. Sci. Advis. Sec. https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/344890.pdf

Hammill, M. O., Stenson, G. B., Mosnier, A., & Doniol-Valcroze, T. (2014). *Abundance estimates of Northwest Atlantic harp seals and management advice for 2014* (Research Document 2014/022). DFO Can. Sci. Advis. Sec. https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/360518.pdf

Hammill, M. O., & Swain, D. (2011a). *A controlled experiment (Strawman draft) to test the impact of removals of grey seals on the mortality of Southern Gulf cod* (Research Document 2011/013). DFO Can. Sci. Advis. Sec.

Hammill, M. O., & Swain, D. (2011b). *A controlled experiment (Strawman draft) to test the impact of removals of grey seals on the mortality of Southern Gulf cod* (Research Document 2011/013). DFO Can. Sci. Advis. Sec.

Hans Högman. (2022, February 4). *Swedish History*. https://www.hhogman.se/old-hunting-methods-2.htm

Hart, P. J. B. (2023). Exploring the limits to our understanding of whether fish feel pain. *Journal of Fish Biology*, *102*(6), 1272–1280. https://doi.org/10.1111/jfb.15386

Harter, J.-H. (2004). Environmental Justice for Whom? Class, New Social Movements, and the Environment: A Case Study of Greenpeace Canada, 1971-2000. *Labour / Le Travail*, *54*, 83. https://doi.org/10.2307/25149506

Hauksson, E., & Einarsson, S. T. (2010). Review on utilization and research on harbour seal (Phoca vitulina) in Iceland. *NAMMCO Scientific Publications*, *8*, 341–353. https://doi.org/10.7557/3.2698

Health Canada. (2006, November 27). *List of Permitted Preservatives (Lists of Permitted Food Additives)* [Transparency - other;notices]. https://www.canada.ca/en/health-canada/services/food-nutrition/food-safety/food-additives/lists-permitted/11-preservatives.html

Helgason, A., Pálsson, G., Pedersen, H. S., Angulalik, E., Gunnarsdóttir, E. D., Yngvadóttir, B., & Stefánsson, K. (2006). mtDNA variation in Inuit populations of Greenland and Canada: Migration history and population structure. *American Journal of Physical Anthropology*, *130*(1), 123–134. https://doi.org/10.1002/ajpa.20313

Helicopter Hog Hunting in Texas | FAQs. (n.d.). HeliBacon. Retrieved October 26, 2023, from https://www.helibacon.com/faqs-hog-hunting/

Hennig, M. (2018). The untouchable nature of the ’EU Seal Regime’-Is the European Union liable for the damages suffered by the Canadian Inuit due to the violation of WTO Law in EC-Seal Products? *The International Journal of Marine and Coastal Law*, *33*(2), 403–414. https://doi.org/10.1163/15718085-13320003

Herwig, A. (2016). Too much Zeal on Seals? Animal Welfare, Public Morals, and Consumer Ethics at the Bar of the WTO. *World Trade Review*, *15*(1), 109–137. https://doi.org/10.1017/S1474745615000282

Hewitt, D. G. (2015). Hunters and the conservation and management of white-tailed deer (Odocoileus virginianus). *International Journal of Environmental Studies*, *72*(5), 839–849. https://doi.org/10.1080/00207233.2015.1073473

Higgins, J. (c2008). *Origins of Migratory Fishery*. Newfoundland and Labrador Heritage Web Site. https://www.heritage.nf.ca/articles/exploration/origins-migratory-fishery.php

Hilborn, R., Banobi, J., Hall, S. J., Pucylowski, T., & Walsworth, T. E. (2018a). The environmental cost of animal source foods. *Frontiers in Ecology and the Environment*, *16*(6), 329–335. https://doi.org/10.1002/fee.1822

Hilborn, R., Banobi, J., Hall, S. J., Pucylowski, T., & Walsworth, T. E. (2018b). The environmental cost of animal source foods. *Frontiers in Ecology and the Environment*, *16*(6), 329–335. https://doi.org/10.1002/fee.1822

Hiller, J. K. (c1997). *Sponsored Settlement: The Colonization of Newfoundland.* Newfoundland and Labrador Heritage Web Site. https://www.heritage.nf.ca/articles/exploration/sponsored-settlement.php

Hiller, J. K. (c2001). *The 20th Century Seal Fishery*. https://www.heritage.nf.ca/articles/economy/20th-century-seal.php

Holland, J. (2023). Drop in fish oil production causing aquaculture bottleneck. *Seafood Source*. https://www.seafoodsource.com/news/premium/aquaculture/drop-in-fish-oil-production-causing-aquaculture-bottleneck

Hoover, C., Ostertag, S., Hornby, C., Parker, C., Hansen-Craik, K., Loseto, L., & Pearce, T. (2017). *The continued importance of hunting for future Inuit food security*. *7*(4), 40–50.

Horbowy, J., Podolska, M., & Nadolna-Ałtyn, K. (2016). Increasing occurrence of anisakid nematodes in the liver of cod (Gadus morhua) from the Baltic Sea: Does infection affect the condition and mortality of fish? *Fisheries Research*, *179*, 98–103. https://doi.org/10.1016/j.fishres.2016.02.011

Hossain, K. (2013). The EU ban on the import of seal products and the WTO regulations: Neglected human rights of the Arctic indigenous peoples? *Polar Record*, *49*(2), 154–166. https://doi.org/10.1017/S0032247412000174

Hossain, K., & Petrétei, A. (2016). *Understanding the Many Faces of Human Security: Perspectives of Northern Indigenous Peoples*. BRILL.

House of Commons Canada. (n.d.). *Government Response to the First Report of the Standing Committee on Fisheries and Oceans—Northern Cod: A Failure of Canadian Fisheries Management*. FOPO Committee Report. Retrieved November 9, 2023, from https://www.ourcommons.ca/DocumentViewer/en/39-1/FOPO/report-1/response-8512-391-11

Hovelsrud-Broda, G. K. (1999). The Integrative Role of Seals in an East Greenlandic Hunting Village. *Arctic Anthropology*, *36*(1/2), 37–50.

Hribar, C. (2010). *Understanding Concentrated Animal Feeding Operations and Their Impact on Communities*. National Association of Local Boards of Health. https://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf

Hribar, C., & Schultz, M. (2010). Understanding Concentrated Animal Feeding Operations and Their Impact on Communities. *NALBOH*.

Hu, Y., Hu, F. B., & Manson, J. E. (2019). Marine Omega-3 Supplementation and Cardiovascular Disease: An Updated Meta-Analysis of 13 Randomized Controlled Trials Involving 127 477 Participants. *Journal of the American Heart Association*, *8*(19), e013543-. https://doi.org/10.1161/JAHA.119.013543

Hudson, E. (2012). 'Qausittq' or 'Place of Darkness': 1953 High Arctic Relocation. *The Mirror - Undergraduate History Journal*, *32*(1), 71–88. https://ojs.lib.uwo.ca/index.php/westernumirror/article/view/15851

Hughes, T. W., & Lee, K. (2015). The role of recreational hunting in the recovery and conservation of the wild turkey (Meleagris gallopavo spp.) in North America. *International Journal of Environmental Studies*, *72*(5), 797–809. https://doi.org/10.1080/00207233.2015.1022998

Hurley, K., Brewer, C., & Thornton, G. N. (2015). The role of hunters in conservation, restoration, and management of North American wild sheep. *International Journal of Environmental Studies*, *72*(5), 784–796. https://doi.org/10.1080/00207233.2015.1031567

Hutton, D. (2014). *The State of Sealing: A report on the role of sealing in ecosystem fisheries management & a proposal for an international code of conduct for responsible sealing*.

ICC. (2018, December 17). *About ICC*. https://www.inuitcircumpolar.com/about-icc/

Ice Seal Committee. (n.d.). *Background*. Iceseals. Retrieved January 11, 2024, from https://www.iceseals.org/read-more-about

Iceland Magazine. (2018, October 16). *Harbor seals now listed as endangered in Icelandic waters: Population drops 75% since 1980*. https://icelandmag.is/article/harbor-seals-now-listed-endangered-icelandic-waters-population-drops-75-1980

ICES. (2019). *ICES/NAFO/NAMMCO Working Group on Harp and Hooded Seals (WGHARP)*. *1*(72), 193. https://doi.org/10.17895/ices.pub.5617

IFAW. (2023). *About IFAW*. https://www.ifaw.org/ca-en/about

Intergovernmental Panel on Climate Change (IPCC) (Ed.). (2019). Polar Regions. In *The Ocean and Cryosphere in a Changing Climate: Special Report of the Intergovernmental Panel on Climate Change* (pp. 203–320). Cambridge University Press. https://doi.org/10.1017/9781009157964.005

International Trade Administration. (n.d.). *Trade Guide: WTO Dispute Settlement Understanding*. Retrieved January 11, 2024, from https://www.trade.gov/trade-guide-wto-dsu

International Union for Conservation of Nature. (n.d.). *About IUCN | IUCN*. Retrieved January 8, 2024, from https://www.iucn.org/about-iucn

Inuit Circumpolar Council. (2016). *Inuit Arctic Policy*. https://iccalaska.org/wp-icc/wp-content/uploads/2016/01/Inuit-Arctic-Policy-June02_FINAL.pdf

Inuit Tapiriit Kanatami. (2004a). *5000 years of Inuit history and heritage*. Inuit Tapiriit Kanatami. https://www.itk.ca/5000-years-inuit-history-heritage/

Inuit Tapiriit Kanatami. (2004b). *5000 years of Inuit history and heritage*. Inuit Tapiriit Kanatami. https://www.itk.ca/5000-years-inuit-history-heritage/

IPBES. (2019a). Summary for policymakers of the global assessment report on biodiversity and ecosystem services. In *Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services* (Vol. 45). https://zenodo.org/record/3553579#.YfmYTerMI2w

IPBES. (2019b). Summary for policymakers of the global assessment report on biodiversity and ecosystem services. In *Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services* (Vol. 45). https://zenodo.org/record/3553579#.YfmYTerMI2w

IPCC. (n.d.). *About the IPCC*. Retrieved January 11, 2024, from https://www.ipcc.ch/about/

IPCC. (2019). Climate change and land. In *Technical Summary. In: Climate Change and Land: An IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems*. https://doi.org/10.4337/9781784710644.00020

IPCC. (2021). Summary for policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. In *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 4–41). Intergovernmental Panel on Climate Change. https://doi.org/10.1260/095830507781076194

Irwin, R. (2015). Canada, Aboriginal Sealing, and the North Pacific Fur Seal Convention. *Environmental History*, *20*(1), 57–82. https://www.jstor.org/stable/24690694

IUCN. (n.d.). *About IUCN*. Retrieved January 11, 2024, from https://www.iucn.org/about-iucn/about-iucn

IUCN. (2015). *Pagophilus groenlandicus, Harp Seal* (T41671A45231087; The IUCN Red List of Threatened Species 2015). International Union for Conservation of Nature and Natural Resources.

IUCN. (2016a). *Informing decisions on trophy hunting* [Briefing Paper]. International Union for Conservation of Nature and Natural Resources. https://cites.org/sites/default/files/eng/cop/17/InfDocs/E-CoP17-Inf-60.pdf

IUCN. (2016b). *Informing decisions on trophy hunting* [Briefing Paper]. International Union for Conservation of Nature and Natural Resources. https://cites.org/sites/default/files/eng/cop/17/InfDocs/E-CoP17-Inf-60.pdf

IUCN SUli. (n.d.). *IUCN SULi | Sustainable Use & Livelihoods*. Retrieved January 9, 2024, from https://iucnsuli.org/

Jackman, J. L., Vaske, J. J., Dowling-Guyer, S., Bratton, R., Bogomolni, A., & Wood, S. A. (2023). Seals and the Marine Ecosystem: Attitudes, Ecological Benefits/Risks and Lethal Management Views. *Human Dimensions of Wildlife*, 1–17. https://doi.org/10.1080/10871209.2023.2212686

Jakobsson, K. (2013). The Dilemma of the Moral Exception in the WTO. *Faculty of Law Stockholm University*.

Jansson, T., & Waldo, S. (2022). Managing Marine Mammals and Fisheries: A Calibrated Programming Model for the Seal-Fishery Interaction in Sweden. *Environmental and Resource Economics*, *81*(3), 501–530. https://doi.org/10.1007/s10640-021-00637-y

Jefferies, C. S. G. (2016). *Marine Mammal Conservation and the Law of the Sea*. Oxford University Press. https://doi.org/10.1093/acprof:oso/9780190493141.001.0001

Jin, B. E., & Shin, D. C. (2020, December 28). Do Animal Fur Coats Symbolize Status or Stigma?: Examining the Effect of Perceived Stigma and the Label of "Faux Fur." *Pivoting for the Pandemic*. Pivoting for the Pandemic. https://doi.org/10.31274/itaa.11747

Joensen, K. (2019, March 18). *Now the Faroese want to hunt seals*. Sermitsiaq AG. https://sermitsiaq.ag/faeringerne-jagte-saeler

Johnson, A. (2011). *Canadians think igloos, penguins abound*. https://www.ctvnews.ca/canadians-think-igloos-penguins-abound-in-north-poll-1.634192

Johnston, D. W., Bowers, M. T., Friedlaender, A. S., & Lavigne, D. M. (2012). The effects of climate change on harp seals (Pagophilus groenlandicus). *PloS One*, *7*(1), e29158-. https://doi.org/10.1371/journal.pone.0029158

Jones, N. A., Ross, H., Lynam, T., Perez, P., & Leitch, A. (2011). Mental Models: An Interdisciplinary Synthesis of Theory and Methods. *Ecology and Society*, *16*(1), 46-. https://doi.org/10.5751/ES-03802-160146

Jubinville, I., Schijns, R., & Rangeley, R. (2022a). *Capelin in crisis: Urgent action needed to rebuild abundance*. Oceana. https://oceana.ca/wp-content/uploads/sites/24/Capelin-in-Crisis-2022_final.pdf

Jubinville, I., Schijns, R., & Rangeley, R. (2022b). *Capelin in crisis: Urgent action needed to rebuild abundance*. Oceana. https://oceana.ca/wp-content/uploads/sites/24/Capelin-in-Crisis-2022_final.pdf

Justice Laws Canada. (2023, October 27). *Consolidated federal laws of Canada, Marine Mammal Regulations*. Justice Laws Website Canada. https://laws-lois.justice.gc.ca/eng/regulations/SOR-93-56/page-2.html#h-957924

Kalvapalle, R. (2018). India becomes latest country to ban imports of Canadian seal products—National | Globalnews.ca. *Global News*. https://globalnews.ca/news/4129047/india-seal-fur-skin-ban-canada-seal-hunt/

Kelly, B. P., Bengston, J. L., Boveng, P. L., Cameron, M. F., Dahle, S. P., Jansen, J. K., Logerwell, E. A., Overland, J. E., Sabine, C. L., Waring, G. T., & Wilder, J. M. (2010). Status review of the ringed seal (Phoca hispida). U.S. Dept. of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Alaska Fisheries Science Center.

Keough, W. (2021). Newfoundland Landsmen Sealing: Interrogating the Limits of Ecomasculinity in the Late 20th and Early 21st Centuries. *Acadiensis (Fredericton)*, *50*(2), 155–183. https://doi.org/10.1353/aca.2021.0023

Kevany, S. (2022). *More than 20 million farm animals die on way to abattoir in US every year*. https://www.theguardian.com/environment/2022/jun/15/more-than-20-million-farm-animals-die-on-way-to-abattoir-in-us-every-year

Kim, K.-B., Nam, Y. A., Kim, H. S., Hayes, A. W., & Lee, B.-M. (2014). α-Linolenic acid: Nutraceutical, pharmacological and toxicological evaluation. *Food and Chemical Toxicology*, *70*, 163–178. https://doi.org/10.1016/j.fct.2014.05.009

Kim, Y.-K., & Sullivan, P. (2019). Emotional branding speaks to consumers' heart: The case of fashion brands. *Fashion and Textiles*, *6*(1), 2. https://doi.org/10.1186/s40691-018-0164-y

KNAPK. (2020). Organisation. *KNAPK*. https://knapk.gl/organisation/

Knezevic, I., Pasho, J., & Dobson, K. (2018). Seal Hunts in Canada and on Twitter: Exploring the Tensions between Indigenous Rights and Animal Rights with #Sealfie. *Canadian Journal of Communication*, *43*(3). https://doi.org/10.22230/cjc.2019v44n3a3376

Kogiak, N. (2023). *Personal Communication with Nathan Kogiak; Department of Industry, Tourism and Investment; Government of the Northwest Territories* [Personal communication].

Kovacs, K. M. (2016). Cystophora cristata. *IUCN Red List of Threatened Species*. https://dx.doi.org/10.2305/IUCN.UK.2016-1.RLTS.T6204A45225150.en

Kuokkanen, R. (2011). Indigenous Economies, Theories of Subsistence, and Women: Exploring the Social Economy Model for Indigenous Governance. *American Indian Quarterly*, *35*(2), 215–240. https://doi.org/10.5250/amerindiquar.35.2.0215

Labchuk, C. (2017, April 28). My Trip to the Ice: Visiting Baby Harp Seals with Sea Shepherd. Animal Justice. https://animaljustice.ca/blog/my-trip-to-the-ice-visiting-baby-harp-seals-with-sea-shepherd

Lack, M., & Sant, G. (2008). Illegal, unreported and unregulated shark catch: A review of current knowledge and action. Department of the Environment, Water, Heritage and the Arts and TRAFFIC. https://www.traffic.org/publications/reports/illegal-unreported-and-unregulated-shark-catch/

Lauerman, K. (2016). Ohio man who speared Canadian bear won't be charged. https://www.washingtonpost.com/news/animalia/wp/2016/08/23/not-just-in-canada-spear-hunting-is-legal-in-four-states/

Lavigne, D. M. (2003). Marine Mammals and Fisheries: The Role of Science in the Culling Debate. In Marine Mammals: Fisheries, Tourism and Management Issues (pp. 31–47). https://harpseals.org/about_the_hunt/lavigne_science_of_cull.pdf

Lee, J. A. (1989). Waging the Seal War in the Media: Toward a Content Analysis of Moral Communication. Canadian Journal of Communication.

Lehman, C. (2023). Oregon kangaroo bill dies, but Nike says it will not use the animal's leather. Opb. https://www.opb.org/article/2023/03/17/oregon-legislature-kangaroo-leather-bill-dies-but-nike-wont-use-it/

Lelli, B., & Harris, D. E. (2006). Seal Bounty and Seal Protection Laws in Maine, 1872 to 1972: Historic Perspectives on a Current Controversy. NATURAL RESOURCES JOURNAL, 46.

Lelli, B., Harris, D. E., & Aboueissa, A.-M. (2009). Seal Bounties in Maine and Massachusetts, 1888 to 1962. Northeastern Naturalist, 16(2), 239–254. https://doi.org/10.1656/045.016.0206

Lennon, K. G.-Y. (2010). Hunting for the right words: Inuit seal hunting in Cumberland Sound is a world away from Pamela Anderson's tube top. Alternatives Journal (AJ) - Canada's Environmental Voice, 36(4), 26–29. https://search.ebscohost.com/login.aspx?direct=true&AuthType=ip,url,uid&db=eue&AN=52104456&site=ehost-live&scope=site

Levy, P. I., & Regan, D. H. (2015). EC–Seal Products: Seals and Sensibilities (TBT Aspects of the Panel and Appellate Body Reports). World Trade Review, 14(2), 337–379. https://doi.org/10.1017/S1474745615000051

Li, J., Yin, H., Bibus, D. M., & Byelashov, O. A. (2016). The role of Omega-3 docosapentaenoic acid in pregnancy and early development. European Journal of Lipid Science and Technology, 118(11), 1692–1701. https://doi.org/10.1002/ejlt.201600076

Livernois, J. (2010). The economics of ending Canada's commercial harp seal hunt. Marine Policy, 34(1), 42–53. https://doi.org/10.1016/j.marpol.2009.04.015

Logan, N. (2013, October 29). Celebrity chef Anthony Bourdain voices support for Canada's seal hunt | Globalnews.ca. Global News. https://globalnews.ca/news/932037/celebrity-chef-anthony-bourdain-voices-support-for-canadas-seal-hunt/

Lones, L. L. (1989). The Marine Mammal Protection Act and International Protection of Cetaceans: A Unilateral Attempt to Effectuate Transnational Conservation.

Lowe, B. (2017). War for the Seals: The Canadian Seal Controversy and Sociological Warfare. Taboo: The Journal of Culture and Education, 12(1). https://doi.org/10.31390/taboo.12.1.09

Lukkutangi. (n.d.). Seal harvest in Iceland. Lukkutangi. Retrieved January 3, 2024, from https://lukkutangi.is/poster/seal-harvest-in-iceland/08a44535f67e4422

Macdonald, J. (2015, May 15). The Secret Killing Of Scotland's Seals. Scuba Diver Life. https://scubadiverlife.com/the-secret-killing-of-scotlands-seals/

MacDonald, J. M., & McBride, W. D. (2009). The Transformation of U.S. Livestock Agriculture: Scale, Efficiency, and Risks. USDA Economic Research Service. http://199.135.94.241/publications/pub-details/?pubid=44294

Madslien, J. (2017, February 16). Norway's seal hunters hang up their clubs. BBC News. https://www.bbc.com/news/business-38894821

Mahoney, S. P. (2019, June 19). The North American Model of Wildlife Conservation. PERC. https://www.perc.org/2019/06/19/the-north-american-model-of-wildlife-conservation/

Mahoney, S. P., & Jackson, J. J. (2013a). Enshrining hunting as a foundation for conservation—The North American Model. Internation Journal of Environmental Studies, 70(3), 448–459.

Mahoney, S. P., & Jackson, J. J. (2013b). Enshrining hunting as a foundation for conservation—The North American Model. Internation Journal of Environmental Studies, 70(3), 448–459.

Malouf, A. H. (1986a). Seals and Sealing in Canada: Report of the Royal Commission, Volume 2. Privy Council Office of Canada.

Malouf, A. H. (1986b). Seals and Sealing in Canada: Report of the Royal Commission, Volume 2. Privy Council Office of Canada.

Malouf, A. H. (1986c). Seals and Sealing in Canada: Report of the Royal Commission, Volume 3. Privy Council Office of Canada.

Mann, N. J., O'Connell, S. L., Baldwin, K. M., Singh, I., & Meyer, B. J. (2010). Effects of Seal Oil and Tuna-Fish Oil on Platelet Parameters and Plasma Lipid Levels in Healthy Subjects. Lipids, 45(8), 669–681. https://doi.org/10.1007/s11745-010-3450-z

Manning, L. L. (1989). Marine mammals and fisheries conflicts: A philosophical dispute. Ocean and Shoreline Management, 12(3), 217–232. https://doi.org/10.1016/0951-8312(89)90004-0

Marcogliese, D. J., Boily, F., & Hammill, M. O. (1996). Distribution and abundance of stomach nematodes (Anisakidae) among grey seals (Halichoerus grypus) and harp seals (Phoca groenlandica) in the Gulf of St. Lawrence. Canadian Journal of Fisheries and Aquatic Sciences, 53(12), 2829–2836. https://doi.org/10.1139/f96-243

Marine Mammal Commission. (n.d.-a). About the Commission. Marine Mammal Commission. Retrieved January 11, 2024, from https://www.mmc.gov/about-the-commission/

Marine Mammal Commission. (n.d.-b). Marine Mammal Protection Act. Marine Mammal Commission. Retrieved November 9, 2023, from https://www.mmc.gov/about-the-commission/our-mission/marine-mammal-protection-act/

Marine Mammal Commission. (n.d.-c). MMPA Provisions for Managing Fisheries Interactions with Marine Mammals. Marine Mammal Commission. Retrieved November 20, 2023, from https://www.mmc.gov/priority-topics/fisheries-interactions-with-marine-mammals/mmpa-provisions-for-managing-fisheries-interactions-with-marine-mammals/

Marine Mammal Commission. (2019). The MMPA of 1972 as amended through 2018. Marine Mammal Commission. https://www.mmc.gov/wp-content/uploads/MMPA_March2019.pdf

Marine Mammal Regulations, SOR/93-56 (2018). https://laws-lois.justice.gc.ca/eng/regulations/sor-93-56/index.html

Marine Mammal Regulations, SOR/93-56 (2018). https://laws-lois.justice.gc.ca/eng/regulations/sor-93-56/index.html

Markotter, W., Mettenleiter, T. C., Adisasmito, W. B., Almuhairi, S., Barton Behravesh, C., Bilivogui, P., Bukachi, S. A., Casas, N., Cediel Becerra, N., Charron, D. F., Chaudhary, A., Ciacci Zanella, J. R., Cunningham, A. A., Dar, O., Debnath, N., Dungu, B., Farag, E., Gao, G. F., Hayman, D. T. S., … Zhou, L. (2023). Prevention of zoonotic spillover: From relying on response to reducing the risk at source. PLOS Pathogens, 19(10), e1011504. https://doi.org/10.1371/journal.ppat.1011504

Marland, A. (2014). If Seals Were Ugly, Nobody Would Give a Damn: Propaganda, Nationalism, and Political Marketing in the Canadian Seal Hunt. Journal of Political Marketing, 13(1–2), 66–84. https://doi.org/10.1080/15377857.2014.866026

Martin, Z. (2023). Personal communication with Zoya Martin, Director of Fisheries and Sealing, Government of Nunavut [Personal communication].

Matusitz, J., & Forrester, M. (2013). PETA making social noise: A perspective on shock advertising. Portuguese Journal of Social Science, 12(1), 85–100. https://doi.org/10.1386/pjss.12.1.85_1

Mavroidis, P. C. (2015). Sealed with a Doubt: EU, Seals, and the WTO. European Journal of Risk Regulation, 6(3), 388–395. https://doi.org/10.1017/S1867299X00004839

McDonald, K. (2023). Ecosystem Impacts and Management of Pinniped Populations: Report of the Standing Committee on Fisheries and Oceans. House of Commons Canada.

McHugh, J. L. (1984). Fishery Management (1st ed.). Springer-Verlag. https://doi.org/10.1029/LN010

McKenzie, S. (2023, March 20). Why are large numbers of red deer being killed? BBC News. https://www.bbc.com/news/uk-scotland-highlands-islands-64979967

McLaren, I., Brault, S., Harwood, J., & Vardy, D. (2001). Report of the eminent panel on seal management. Fisheries and Oceans Canada. https://publications.gc.ca/site/archivee-archived.html?url=https://publications.gc.ca/collections/Collection/Fs23-405-2001E.pdf

Mikkelsen, B. (2010). A note on the harbour seal (Phoca vitulina) in the Faroe Islands. NAMMCO Scientific Publications, 8, 143–146. https://doi.org/10.7557/3.2681

Millais, J. G. (1907). Newfoundland and its untrodden ways ... Longmans, Green and co.

Miller, S. D., McLellan, B. N., & Derocher, A. E. (2013). Conservation and management of large carnivores in North America. International Journal of Environmental Studies, 70(3), 383–398. https://doi.org/10.1080/00207233.2013.801628

Moazzem, S., Crossin, E., Daver, F., & Wang, L. (2022a). Environmental impact of apparel supply chain and textile products. Environment, Development and Sustainability, 24(8), 9757–9775. https://doi.org/10.1007/s10668-021-01873-4

Moazzem, S., Crossin, E., Daver, F., & Wang, L. (2022b). Environmental impact of apparel supply chain and textile products. Environment, Development and Sustainability, 24(8), 9757–9775. https://doi.org/10.1007/s10668-021-01873-4

Moon, K., Guerrero, A. M., Adams, V. M., Biggs, D., Blackman, D. A., Craven, L., Dickinson, H., & Ross, H. (2019). Mental models for conservation research and practice. Conservation Letters, 12(3). https://doi.org/10.1111/conl.12642

Moores, C. (2023). Personal Communication with Catherine Moores [Personal communication].

Montford, K. S., & Taylor, C. (Eds.). (2020). Colonialism and Animality: Anti-Colonial Perspectives in Critical Animal Studies (1st ed.). Routledge. https://doi.org/10.4324/9781003013891

Mount Sinai. (n.d.). Eicosapentaenoic acid (EPA) Information. Retrieved January 11, 2024, from https://www.mountsinai.org/health-library/supplement/eicosapentaenoic-acid-epa

Moussette, M. (1979). Fishing methods used in the St. Lawrence River and Gulf. Parks Canada; Indian and Northern Affairs Canada.

Mukonza, C., & Swarts, I. (2020). The influence of green marketing strategies on business performance and corporate image in the retail sector. Business Strategy and the Environment, 29(3), 838–845. https://doi.org/10.1002/bse.2401

Murray, D. (2019, May 22). Every Luxury Designer And Fashion House That Has Gone Fur-Free. Elle Magazine. https://www.elle.com/uk/fashion/g25045050/fur-free-luxury-designers-fashion-houses/

Myers, H., & Summerville, T. (2004). Anti-use campaigns and resource communities: The consequences of political correctness.

NAFO. (n.d.). Overview of NAFO. Retrieved January 11, 2024, from https://www.nafo.int/About-us/Overview-of-NAFO

NAMMCO. (n.d.). Marine Mammal Catch Database. NAMMCO. Retrieved January 13, 2024, from https://nammco.no/marine-mammal-catch-database/

NAMMCO. (2004). Report of the NAMMCO workshop on hunting methods for seals and walrus. North Atlantic Marine Mammal Commission. https://nammco.wpengine.com/wp-content/uploads/2016/10/nammco-report-expert-group-on-best-practises-in-hunting-and-killing-of-seals.pdf

NAMMCO. (2009a). Report of the NAMMCO expert group meeting on best practices in the hunting and killing of seals. North Atlantic Marine Mammal Commission. https://nammco.wpengine.com/wp-content/uploads/2016/10/nammco-report-expert-group-on-best-practises-in-hunting-and-killing-of-seals.pdf

NAMMCO. (2009b). Report of the NAMMCO expert group meeting on best practices in the hunting and killing of seals. North Atlantic Marine Mammal Commission. https://nammco.wpengine.com/wp-content/uploads/2016/10/nammco-report-expert-group-on-best-practises-in-hunting-and-killing-of-seals.pdf

NAMMCO. (2016). Harbour Seal. NAMMCO. https://nammco.no/harbour-seal/

NAMMCO. (2018). Overview of marine mammal hunting methods inc. National regulations, monitoring/observation in NAMMCO member countries.

NAMMCO. (c2016). Bearded Seal. NAMMCO. https://nammco.no/bearded-seal/

NASA. (2030, November 30). What is the greenhouse effect? https://climate.nasa.gov/faq/19/what-is-the-greenhouse-effect/

Natcher, D. C. (2009). Subsistence and the Social Economy of Canada's Aboriginal North. Northern Review, 30, Article 30. https://thenorthernreview.ca/index.php/nr/article/view/6

National Institutes of Health. (c2024). Omega-3 Fatty Acids: Fact sheet for health professionals. https://ods.od.nih.gov/factsheets/Omega3FattyAcids-HealthProfessional/

National Geographic. (c2024). Great Pacific Garbage Patch. Retrieved April 2, 2024, from https://education.nationalgeographic.org/resource/great-pacific-garbage-patch/

National Oceanic and Atmospheric Administration Fisheries. (n.d.). Marine Mammal Protection. NOAA Fisheries. Retrieved November 9, 2023, from https://www.fisheries.noaa.gov/topic/marine-mammal-protection

Natural Force. (2022, January 20). What is DPA Fish Oil? The New Omega-3 You Should Know About. Natural Force. https://naturalforce.com/blogs/nutrition/dpa-fish-oil

Naturvårdsverket. (n.d.). Hunting seals. Retrieved November 9, 2023, from https://www.naturvardsverket.se/en/topics/hunting/hunting-seals/

NBC News. (2006, March 3). McCartneys step into seal hunt controversy. NBC News. https://www.nbcnews.com/id/wbna11652309

Nelson, M., Quakenbush, L., Taras, B., & Ice Seal, C. (2019). Subsistence harvest of ringed, bearded, spotted, and ribbon seals in Alaska is sustainable. Endangered Species Research, 40, 1–16. https://doi.org/10.3354/esr00973

Newfoundland and Labrador. (n.d.). Fish processing licensing manual [Policy Overview]. Government of Newfoundland and Labrador. https://www.gov.nl.ca/ffa/files/licensing-pdf-fplp-manual-04-16.pdf

Nielsen, M. (2023). Personal Communication with Michael Nielsen, Chairman of Árn-oileán Resources [Personal communication].

NOAA. (c2019). Compliance Guide-Marine Mammal Protection Act Import Provisions. NOAA. https://media.fisheries.noaa.gov/dam-migration/mmpa_import_rule_compliance_guide_april_2019_eng_508.pdf

NOAA. (c2022). Gray Seal | NOAA Fisheries. https://www.fisheries.noaa.gov/species/gray-seal

NOAA. (c2023). International marine mammal bycatch criteria for U.S. imports (International). NOAA. https://www.fisheries.noaa.gov/foreign/marine-mammal-protection/international-marine-mammal-bycatch-criteria-us-imports

NOAA Fisheries. (n.d.-a). About Us. Retrieved January 11, 2024, from https://www.fisheries.noaa.gov/about-us

NOAA Fisheries. (n.d.-b). Marine Mammal Protection Act Policies, Guidance, and Regulations. Retrieved January 11, 2024, from https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-protection-act-policies-guidance-and-regulations

NOAA Fisheries. (n.d.-c). Understanding Illegal, Unreported, and Unregulated Fishing. Retrieved January 11, 2024, from https://www.fisheries.noaa.gov/insight/understanding-illegal-unreported-and-unregulated-fishing

NOAA Fisheries. (2008). Fur Seal Act of 1966. NOAA Fisheries. https://media.fisheries.noaa.gov/dam-migration/fur-seal-act-1966.pdf

NOAA Fisheries. (2022a, April 18). Northern Fur Seal (Alaska,West Coast). NOAA. https://www.fisheries.noaa.gov/species/northern-fur-seal

NOAA Fisheries. (2022b, September 15). Ringed Seal (Alaska). NOAA. https://www.fisheries.noaa.gov/species/ringed-seal

NOAA Fisheries, N. (2023, January 30). Bearded Seal (Alaska). NOAA. https://www.fisheries.noaa.gov/species/bearded-seal

Nomokonova, T., Losey, R. J., Goriunova, O. I., Novikov, A. G., & Weber, A. W. (2015). A 9,000 Year History of Seal Hunting on Lake Baikal, Siberia: The Zooarchaeology of Sagan-Zaba II. PLOS ONE, 10(5), e0128314. https://doi.org/10.1371/journal.pone.0128314

North Atlantic Marine Mammal Commission. (n.d.). About NAMMCO. NAMMCO. Retrieved January 9, 2024, from https://nammco.no/about-nammco/

Northern Wilderness Skills and Traditions. (2018, January 29). Northern Wilderness Skills and Traditions: “Själen” – Seal Hunting in the Northern Baltic Sea. Northern Wilderness Skills and Traditions. http://northernwildernesskills.blogspot.com/2018/01/sjalen-seal-hunting-in-northern-baltic.html

Norwegian - Russian Fisheries Commission. (2021). The 51st Session of the Joint Norwegian—Russian Fisheries Commission, 11-14 October 2021: Report of the working group on seals.

Norwegian - Russian Fisheries Commission. (2022). The 52nd Session of the Joint Norwegian—Russian Fisheries Commission,17-21 October 2022: Report of the working group on seals.

Norwegian - Russian Fisheries Commission. (2023). The 53rd Session of the Joint Norwegian—Russian Fisheries Commission,16-20 October 2023: Report of the working group on seals.

Nunny, L., Simmonds, M., P., & Butterworth, A. (2018). A review of seal killing practice in Europe: Implications for animal welfare. Marine Policy, 98, 121–132. https://www.sciencedirect.com/science/article/abs/pii/S0308597X17307303

Ocean Conservation Namibia. (2023). Namibian Seal Harvest. Ocean Conservation Namibia. https://www.ocnamibia.org/sealharvest

Oceana Europe. (2023). Total Allowable Catches (TACs). https://europe.oceana.org/total-allowable-catches-tacs/

Oceana USA. (n.d.). Shark Finning. Oceana USA. Retrieved December 21, 2023, from https://usa.oceana.org/shark-finning/

OECD. (2017). Sustaining Iceland's fisheries through tradeable quotas: Country Study. OECD. https://doi.org/10.1787/46f8d776-en

Ogloff, W. R., Ferguson, S. H., Fisk, A. T., Marcoux, M., Hussey, N. E., Jaworenko, A., & Yurkowski, D. J. (2021). Long-distance movements and associated diving behaviour of ringed seals (Pusa hispida) in the eastern Canadian Arctic. Arctic Science, 7(2), 494–511. https://doi.org/10.1139/as-2019-0042

Øien, C. N., & Haug, T. (2020). Norway—Progress Report on Marine Mammals 2020. NAMMCO.

Oliveira, S. E. O., Gregory, N. G., Dalla Costa, F. A., Gibson, T. J., Dalla Costa, O. A., & Paranhos da Costa, M. J. R. (2018). Effectiveness of pneumatically powered penetrating and non-penetrating captive bolts in stunning cattle. Meat Science, 140, 9–13. https://doi.org/10.1016/j.meatsci.2018.02.010

Olsen, M., Galatius, A., & Härkönen, T. (2018). The history and effects of seal–fishery conflicts in Denmark. Marine Ecology Progress Series, 595. https://doi.org/10.3354/meps12510

Olson, K., M., & Goodnight, G. T. (1994). Entanglements of consumption, cruelty, privacy, and fashion: The social controversy over fur. 80. https://doi.org/10.1080/00335639409384072

Omohundro, J. T. (1985). Efficiency, sufficiency, and recent change in Newfoundland subsistence horticulture. Human Ecology : An Interdisciplinary Journal, 13(3), 291–308. https://doi.org/10.1007/BF01558253

Pailthorp, B. (2022, November 3). Seals and sea lions vex Washington tribes as Marine Mammal Protection Act turns 50. KNKX Public Radio. https://www.knkx.org/environment/2022-11-03/seals-and-sea-lions-vex-washington-tribes-as-marine-mammal-protection-act-turns-50

Pannozzo, L. (2010a). How to kill 220,000 seals on Sable Island: The DFO plan. The Coast Halifax. https://www.thecoast.ca/news-opinion/how-to-kill-220000-seals-on-sable-island-the-dfo-plan-1663224

Pannozzo, L. (2010b). How to kill 220,000 seals on Sable Island: The DFO plan. The Coast Halifax. https://www.thecoast.ca/news-opinion/how-to-kill-220000-seals-on-sable-island-the-dfo-plan-1663224

Pedersen, A. M., Berry, S. M., & Bossart, J. C. (2008). Wounding rates of white-tailed deer with modern archery equipment. 62, 31–34. https://seafwa.org/sites/default/files/journal-articles/Pedersen-31-34.pdf

Penney, B. (2023). Personal Communication with Bill Penney [Personal communication].

Perišin, T. (2013). Is the EU Seal Products Regulation a Sealed Deal? EU and WTO Challenges. International and Comparative Law Quarterly, 62(2), 373–405. https://doi.org/10.1017/S0020589313000079

PETA. (n.d.). About PETA. Retrieved January 11, 2024, from https://www.peta.org/about-peta/

PETA. (2009, July 28). Seal Slaughter. PETA. https://www.peta.org/issues/wildlife/wildlife-factsheets/seal-slaughter/

PETA. (2010, July 7). What about people who have to hunt to survive? PETA. https://www.peta.org/about-peta/faq/what-about-people-who-have-to-hunt-to-survive/

Peter, A., Ishulutak, M., Shaimaiyuk, J., Shaimaiyuk, J., Kisa, N., Kootoo, B., & Enuaraq, S. (2002). The seal: An integral part of our culture. Etudes Inuit, 26(1), 167-. https://doi.org/10.7202/009276ar

Philis, G., Ziegler, F., Gansel, L. C., Jansen, M. D., Gracey, E. O., & Stene, A. (2019). Comparing life cycle assessment (LCA) of salmonid aquaculture production systems: Status and perspectives. Sustainability (Switzerland), 11(9). https://doi.org/10.3390/su11092517

Plikshs, M., & Pilāts, V. (2017). Seal influence on costal fishery in Latvia: A case study.

Priest, H., & Usher, P. (2004a). The Nunavut wildlife harvest study. In Final report (February; p. 816). Nunavut Wildlife Management Board.

Priest, H., & Usher, P. (2004b). The Nunavut wildlife harvest study. In Final report (February; p. 816). Nunavut Wildlife Management Board.

Proudly Indigenous Crafts & Designs. (2022, March 16). Why is the seal vital for Indigenous communities? Proudly Indigenous Crafts & Designs. https://proudlyindigenouscrafts.com/2022/03/16/why-is-the-seal-vital-for-indigenous-communities/

Punia, S., Sandhu, K. S., Siroha, A. K., & Dhull, S. B. (2019). Omega 3-metabolism, absorption, bioavailability and health benefits–A review. PharmaNutrition, 10, 100162-. https://doi.org/10.1016/j.phanu.2019.100162

Purina. (2017). What Are Animal By-Products in Dog Food? https://www.purina.com/articles/dog/nutrition/what-are-animal-by-product

Qikiqtani Truth Commission. (2013). The Qikiqtani Truth Commission: Community Histories 1950–1975 and Qikiqtani Truth Commission: Thematic Reports and Special Studies. https://www.qtcommission.ca/en

Reme, S. E., Tveito, T. H., Harris, A., Lie, S. A., Grasdal, A., Indahl, A., Brox, J. I., Tangen, T., Hagen, E. M., Gismervik, S., Ødegård, A., Fryland, L., Fors, E. A., Chalder, T., & Eriksen, H. R. (2016). Cognitive Interventions and Nutritional Supplements (The CINS Trial): A Randomized Controlled, Multicenter Trial Comparing a Brief Intervention With Additional Cognitive Behavioral Therapy, Seal Oil, and Soy Oil for Sick-Listed Low Back Pain Patients. Spine (Philadelphia, Pa. 1976), 41(20), 1557–1564. https://doi.org/10.1097/BRS.0000000000001596

Renner, J. (2023). Animal protection as animal welfare and anti-cruelty: A genealogical re-examination of the EU seal products ban. International Relations, 37(3), 538–563. https://doi.org/10.1177/00471178231191290

Responsive Management. (2023). Americans' attitudes towards legal, regulated fishing, target/sport shooting, hunting and trapping. Outdoor Stewards of Conservation Foundation. https://www.outdoorstewards.org/wp-content/uploads/2023/06/Americans-Attitudes-Survey-Report-Final-June-2023-FULL-REPORT.pdf

Reynolds, J., Marsh, H., & Ragen, T. (2009). Marine mammal conservation. Endangered Species Research, 7, 23–28. https://doi.org/10.3354/esr00179

Richards, R. J., & Richards, E. L. (2012). Cheap meat: How factory farming is harming our health, the environment, and the economy. Kentucky Journal of Equine, Agriculture, and Natural Resources Law, 4(1), 31-.

Ritchie, H., Rodés-Guirao, L., Mathieu, E., Gerber, M., Ortiz-Ospina, E., Hasell, J., & Roser, M. (2023). Population Growth. Our World in Data. https://ourworldindata.org/population-growth

Ritchie, H., & Roser, M. (2023). How many animals are factory-farmed? Our World in Data. https://ourworldindata.org/how-many-animals-are-factory-farmed

Rodgers, K., & Ingram, D. (2019). Decolonizing environmentalism in the Arctic? Greenpeace, complicity and negotiating the contradictions of solidarity in the Inuit Nunangat. 11.

Rodgers, K., & Scobie, W. (2015). Sealfies, seals and celebs: Expressions of Inuit resilience in the Twitter era. 7.

Rodrigue-Allouche, S. (2015). Conservation and Indigenous Peoples.

Ronald, K., & Dougan, J. L. (1982a). The Ice Lover: Biology of the Harp Seal (Phoca groenlandica). Science (American Association for the Advancement of Science), 215(4535), 928–933. https://doi.org/10.1126/science.215.4535.928

Ronald, K., & Dougan, J. L. (1982b). The Ice Lover: Biology of the Harp Seal (Phoca groenlandica). Science (American Association for the Advancement of Science), 215(4535), 928–933. https://doi.org/10.1126/science.215.4535.928

Ronald, K., & Lavigne, D., M. (2015, April 3). Sealing. The Canadian Encyclopedia. https://www.thecanadianencyclopedia.ca/en/article/sealing

Rosen, Y. (2023, May 10). Environmental group plans lawsuit over 2 species of Arctic Alaska ice seals. Alaska Public Media. https://alaskapublic.org/2023/10/05/environmental-group-plans-lawsuit-over-2-species-of-arctic-alaska-ice-seals/

Rosol, R., Powell-Hellyer, S., & Chan, L. H. M. (2016a). Impacts of decline harvest of country food on nutrient intake among Inuit in Arctic Canada: Impact of climate change and

possible adaptation plan. International Journal of Circumpolar Health, 75, 1–8. https://doi.org/10.3402/ijch.v75.31127

Rosol, R., Powell-Hellyer, S., & Chan, L. H. M. (2016b). Impacts of decline harvest of country food on nutrient intake among Inuit in Arctic Canada: Impact of climate change and possible adaptation plan. International Journal of Circumpolar Health, 75, 1–8. https://doi.org/10.3402/ijch.v75.31127

Rothgerber, H. (2014). Efforts to overcome vegetarian-induced dissonance among meat eaters. Appetite, 79, 32–41. https://doi.org/10.1016/j.appet.2014.04.003

Rothgerber, H. (2020). Meat-related cognitive dissonance: A conceptual framework for understanding how meat eaters reduce negative arousal from eating animals. Appetite, 146, 104511–104511. https://doi.org/10.1016/j.appet.2019.104511

Rumboldt, M. (2008). The United States' Marine Mammal Protection Act' (MMPA): Policy implications, challenges, opportunities and a strategy for the east coast sealing industry. Memorial University of Newfoundland and Labrador. https://research.library.mun.ca/9369/1/Rumboldt_Mark.pdf

Russell, N. (2023, May 29). P.E.I. bait company puts seal meat plans on ice, fearing U.S. fallout. CBC. https://www.cbc.ca/news/canada/prince-edward-island/pei-seal-bait-production-stops-us-concerns-1.6854639

Ryan, S. (1994a). The Ice Hunters: A History of Newfoundland Sealing to 1914. Breakwater Books.

Ryan, S. (1994b). The Ice Hunters: A History of Newfoundland Sealing to 1914. Breakwater Books.

Ryberg, M. P., Huwer, B., Nielsen, A., Dierking, J., Buchmann, K., Sokolova, M., Krumme, U., & Behrens, J. W. (2022). Parasite load of Atlantic cod Gadus morhua in the Baltic Sea assessed by the liver category method, and associations with infection density and critical condition. Fisheries Management and Ecology, 29(1), 88–99. https://doi.org/10.1111/fme.12516

Safarov, R. (2019). Framing Environmental Dilemmas: The ethical positioning of the seal hunt in two Canadian newspapers. https://ruor.uottawa.ca/bitstream/10393/39728/1/Safarov_Ronnie_2019_thesis.pdf

Safe Food for Canadians Regulations, SOR/2018-108 (2018). https://laws-lois.justice.gc.ca/eng/regulations/SOR-2018-108/index.html

Sanger, C. W. (2008). Sail versus Steam: - Post 1863 Technological and Spatial Adaptation in the Newfoundland Seal Fishery. https://journals.lib.unb.ca/index.php/NFLDS/article/download/12359/13207?inline=1

Sanger, C. W. (c1998). Seal Fishery: Equipment, Techniques and Products. Newfoundland and Labrador Heritage Web Site. https://www.heritage.nf.ca/articles/environment/sealing-fishery-equipment.php

Sanger, C. W., Dickinson, A. B., & Handcock, W. G. (c1998). Commercial Whaling in Newfoundland and Labrador to 1900. https://www.heritage.nf.ca/articles/environment/whaling-in-the-19th-century.php

Santos, N., Rio-Maior, H., Nakamura, M., Roque, S., Brandão, R., & Álvares, F. (2017). Characterization and minimization of the stress response to trapping in free-ranging wolves (Canis lupus): Insights from physiology and behavior. Stress (Amsterdam, Netherlands), 20(5), 513–522. https://doi.org/10.1080/10253890.2017.1368487

Scarborough, P., Clark, M., Cobiac, L., Papier, K., Knuppel, A., Lynch, J., Harrington, R., Key, T., & Springmann, M. (2023). Vegans, vegetarians, fish-eaters and meat-eaters in the UK show discrepant environmental impacts. Nature Food, 4(7), 565–574. https://doi.org/10.1038/s43016-023-00795-w

Scientific Advisory Committee of the Marine Mammals Action Plan. (1999). Protocol for the scientific evaluation of proposals to cull marine mammals. United Nations Environment Programme. https://s3.amazonaws.com/ifaw-pantheon/sites/default/files/legacy/1999_Protocol%20for%20the%20scientific%20evaluation%20of%20proposals%20to%20cull%20marine%20mammals.pdf

Scientific American. (2010, May 10). E.U. orders Finland to protect critically endangered seals—Scientific American Blog Network. Scientific American. https://blogs.scientificamerican.com/extinction-countdown/e-u-orders-finland-to-protect-critically-endangered-seals/

Scottish Government. (2019, April 12). Seal licensing records: 2011-present. http://www.gov.scot/publications/marine-licensing-seal-licensing-records-2011-present/pages/2011/

Seals and Sealing Network. (2014, May 23). Seals & Sealing Network Responds to Widespread Misinterpretation of Final WTO Seal Ruling. Cision Canada. https://www.newswire.ca/news-releases/seals--sealing-network-responds-to-widespread-misinterpretation-of-final-wto-seal-ruling-514349161.html

Seals and Sealing Network. (2021). Canadian seal products marketing plan 2019–2022.

Sea Shepherd. (2012, May 7). The Canadian Seal Hunt. https://seashepherd.org/2012/05/07/the-canadian-seal-hunt/

Sellheim, N. (2013). The Neglected Tradition? - The Genesis of the EU seal products trade ban and commercial sealing. The Yearbook of Polar Law, 5(1), 417–450. https://ocul-qu.primo.exlibrisgroup.com/discovery/fulldisplay?docid=cdi_crossref_primary_10_1163_22116427_91000132&context=PC&vid=01OCUL_QU:QU_DEFAULT&lang=en&search_scope=OCULDiscoveryNetwork&adaptor=Primo%20Central&tab=OCULDiscoveryNetwork&query=any,contains,sellheim%20the%20neglected%20tradition&offset=0

Sellheim, N. (2014). The Right Not to be Indigenous: Seal Utilization in Newfoundland. Arctic Yearbook.

Sellheim, N. (2015a). Morality, Practice, and Economy in a Commercial Sealing Community. Arctic Anthropology, 52(1), 71–90. https://doi.org/10.3368/aa.52.1.71

Sellheim, N. (2015b). Morality, Practice, and Economy in a Commercial Sealing Community. Arctic Anthropology, 52(1), 71–90. https://doi.org/10.3368/aa.52.1.71

Sellheim, N. (2015c). Policies and Influence: Tracing and Locating the eu Seal Products Trade Regulation. International Community Law Review, 17(1), 3–36. https://doi.org/10.1163/18719732-12341293

Sellheim, N. (2015d). Policies and Influence: Tracing and Locating the eu Seal Products Trade Regulation. International Community Law Review, 17(1), 3–36. https://doi.org/10.1163/18719732-12341293

Sellheim, N. (2015e). Seal Hunting in the Arctic States. An Analysis of Legislative Frameworks, Incentives and Histories. Yearbook of Polar Law Online, 7(1), 188–224. https://doi.org/10.1163/2211-6427_009

Sellheim, N. (2018a). Public Morality, International Trade Law and the Seal Hunt. In The Seal Hunt (pp. 261–295). Brill Nijhoff. https://doi.org/10.1163/9789004378612_006

Sellheim, N. (2018b). The Seal Hunt: Cultures, Economies and Legal Regimes. BRILL.

Sellheim, N., & Fink, S. (2022). The Role and Impact of NGOs in Marine Mammal Governance. In Non-state Actors in the Arctic Region (pp. 15–41). Springer Polar Sciences. https://doi.org/10.1007/978-3-031-12459-4_2

Semple, J. (2023, July 12). Indigenous children facing food security 'crisis' in Canada's North. Global News. https://globalnews.ca/news/10153625/indigenous-children-food-security-crisis-canada-north/

Senate of Canada. (2012). The sustainable management of grey seal populations: A path toward the recovery of cod and other groundfish stocks—Report of the Standing Senate Committee on Fisheries and Oceans. https://publications.gc.ca/collections/collection_2012/sen/yc25-0/YC25-0-411-7-eng.pdf

Serpin, P. (2016). The Public Morals Exception after the WTO Seal Products Dispute: Has the Exception Swallowed the Rules. Columbia Business Law Review, 2016, 217. https://heinonline.org/HOL/Page?handle=hein.journals/colb2016&id=223&div=&collection=

Shaffer, G., & Pabian, D. (2015). European Communities—Measures Prohibiting the Importation and Marketing of Seal Products. The American Journal of International Law, 109(1), 154–161. https://doi.org/10.5305/amerjintelaw.109.1.0154

Shaffer, J. L., Khadka, K. K., Van Den Hoek, J., & Naithani, K. J. (2019). Human-elephant conflict: A review of current management strategies and future directions. Frontiers in Ecology and Evolution, 6. https://www.frontiersin.org/articles/10.3389/fevo.2018.00235/full

Shafiee, M., Keshavarz, P., Lane, G., Pahwa, P., Szafron, M., Jennings, D., & Vatanparast, H. (2022). Food Security Status of Indigenous Peoples in Canada According to the 4 Pillars of Food Security: A Scoping Review. Advances in Nutrition (Bethesda, Md.), 13(6), 2537–2558. https://doi.org/10.1093/advances/nmac081

Shahidi, F., & Ambigaipalan, P. (2018). Omega-3 Polyunsaturated Fatty Acids and Their Health Benefits. Annual Review of Food Science and Technology, 9(1), 345–381. https://doi.org/10.1146/annurev-food-111317-095850

Shahidi, F., & Synowiecki, J. (1996). Seal meat: A unique source of muscle food for health and nutrition. Food Reviews International, 12(3), 283–302. https://doi.org/10.1080/87559129609541082

Shahidi, F., Synowiecki, J., & Naczk, M. (1990). Seal Meat – A Potential Source of Muscle Food: Chemical Composition, Essential Amino Acids and Colour Characteristics. Canadian Institute of Food Science and Technology Journal, 23(2–3), 137–139. https://doi.org/10.1016/S0315-5463(90)70217-9

Sharma, S., Cao, X., Roache, C., Buchan, A., Reid, R., & Gittelsohn, J. (2010). Assessing dietary intake in a population undergoing a rapid transition in diet and lifestyle: The Arctic Inuit in Nunavut, Canada. British Journal of Nutrition, 103(5), 749–759. https://doi.org/10.1017/S0007114509992224

Sharma, S., De Roose, E., Cao, X., Pokiak, A., Gittelsohn, J., & Corriveau, A. (2009). Dietary intake in a population undergoing a rapid transition in diet and lifestyle: The Inuvialuit in the Northwest Territories of Arctic Canada. Canadian Journal of Public Health, 100(6), 442–448. https://doi.org/10.1007/BF03404341

Sheehy, T., Roache, C., & Sharma, S. (2013). Eating habits of a population undergoing a rapid dietary transition: Portion sizes of traditional and non-traditional foods and beverages consumed by Inuit adults in Nunavut, Canada. Nutrition Journal, 12(1), 70–70. https://doi.org/10.1186/1475-2891-12-70

Simnitt, S., House, L., Larkin, S. L., Tookes, J. S., & Yandle, T. (2020). Using markets to control invasive species: Lionfish in the US Virgin Islands. Marine Resource Economics, 35(4), 319–341. https://doi.org/10.1086/710254

Sjare, B., Stenson, G. B., & Hammill, M. O. (2000). Estimating struck and loss rates for harp seals in the northwest Atlantic (Research Document 2000/076). DFO Canadian Stock Assessment Secretariat. https://publications.gc.ca/site/eng/9.805924/publication.html

Smith, B. (2005a). Improving humane practice in the Canadian harp seal hunt: A report of the Independent Veterinarians Working Group on the Canadian harp seal hunt. BLSmith Groupwork. http://www.cwhc-rcsf.ca/docs/technical_reports/IVWG_Report_EN.pdf

Smith, B. (2005b). Improving humane practice in the Canadian harp seal hunt: A report of the Independent Veterinarians Working Group on the Canadian harp seal hunt. BLSmith Groupwork. http://www.cwhc-rcsf.ca/docs/technical_reports/IVWG_Report_EN.pdf

Smith, P. A. (2021, February 25). “Was that something we wanted to have happen? Absolutely not”: Gray wolf kill rises to 216, 82% above state-licensed goal. Journal Sentinel. https://www.jsonline.com/story/sports/outdoors/2021/02/25/wisconsin-wolf-hunt-harvest-surpasses-200-much-higher-than-quota/6813334002/

Smith, P. C., & Conover, R. J. (2015). Gulf of St Lawrence. The Canadian Encyclopedia. https://www.thecanadianencyclopedia.ca/en/article/gulf-of-st-lawrence

Specialist Writer. (2019, December 24). Seal Harvesting: Namibia is one of the last countries where seals are hunted for commercial purposes. ProAgri. https://proagri.co.za/seal-harvesting-namibia-is-one-of-the-last-countries-where-seals-are-hunted-for-commercial-purposes/

Standing Committee on Fisheries and Oceans. (1999). The Seal Report: Report of the Standing Committee on Fisheries and Oceans. https://www.ourcommons.ca/documentviewer/en/36-1/fish/report-13/page-2

Standing Committee on Fisheries and Oceans. (2005). Northern cod: A failure of Canadian fisheries management: Report of the Standing Committee on Fisheries and Oceans. https://www.ourcommons.ca/Content/Committee/381/FOPO/Reports/RP2144982/foporp04/foporp04_printed-e.pdf

Standing Committee on Fisheries and Oceans. (2007). Ensuring a sustainable and humane harvest method: Report of the Standing Committee on Fisheries and Oceans (39th Parliment, 1st Session). https://www.ourcommons.ca/Content/Committee/391/FOPO/Reports/RP2872843/foporp04/foporp04-e.pdf

Standing Committee on Fisheries and Oceans. (2014). Evidence—FOPO (41-2)—No. 28—House of Commons of Canada. https://www.ourcommons.ca/documentviewer/en/41-2/FOPO/meeting-28/evidence

Standing Committee on Fisheries and Oceans. (2023). Ecosystem impacts and management of pinniped populations: Report of the Standing Committee on Fisheries and Oceans (44th Parliment 1st Session).

https://www.ourcommons.ca/Committees/en/FOPO/StudyActivity?studyActivityId=11678908

Stanley, L. (2019, November 1). Tanya Tagaq. The Canadian Encyclopedia. https://www.thecanadianencyclopedia.ca/en/article/tanya-tagaq

Starr, S. (2018, February 24). Norway's Arctic communities lament the end of the seal hunt. The Irish Times. https://www.irishtimes.com/news/environment/norway-s-arctic-communities-lament-the-end-of-the-seal-hunt-1.3401745

Statista. (2023). Reasons to shop local products in Canada as of February 2023. Food & Nutrition. https://www.statista.com/statistics/1302515/reasons-canadian-consumers-buy-local-products/

Statistics Canada. (c2023). Canadian International Merchandise Trade Web Application. https://www150.statcan.gc.ca/n1/pub/71-607-x/71-607-x2021004-eng.htm

Statistics for Canada's Sealing Industry. (2023a, April 12).

Statistics for Canada's Sealing Industry. (2023b, December 4).

Statistics Norway. (c2023). External trade in goods, by commodity number (HS) and country. SSB. https://www.ssb.no/en/system/

Steagall, P. V., Bustamante, H., Johnson, C. B., & Turner, P. V. (2021). Pain management in farm animals: Focus on cattle, sheep and pigs. Animals, 11(6), 1–17. https://doi.org/10.3390/ani11061483

Stenson, G. B. (2010). Total Removals of Northwest Atlantic Harp Seals (Pagophilus groenlandicus) 1952-2009 (Research Document 2009/112). DFO Can. Sci. Advis. Sec. https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/340457.pdf

Stenson, G. B. (2013). Estimating consumption of prey by Harp Seals (Pagophilus groenlandicus) in NAFO Divisions 2J3KL (Research Document 2012/156). DFO Can. Sci. Advis. Sec.

Stenson, G. B., & Hammill, M. O. (2014). Can ice breeding seals adapt to habitat loss in a time of climate change? ICES Journal of Marine Science, 71(7), 1977–1986. https://doi.org/10.1093/icesjms/fsu074

Stenson, G. B., Haug, T., & Hammill, M. O. (2020). Harp Seals: Monitors of Change in Differing Ecosystems. Frontiers in Marine Science, 7. https://doi.org/10.3389/fmars.2020.569258

Stenson, G. B., & Upward, P. (2020a). Updated estimates of harp seal bycatch and total removals in the Northwest Atlantic (Research Document 2020/014). DFO Can. Sci. Advis. Sec.

Stenson, G. B., & Upward, P. (2020b). Updated estimates of harp seal bycatch and total removals in the Northwest Atlantic (Research Document 2020/014). DFO Can. Sci. Advis. Sec.

Stephenson, S. A. (2004). Harvest studies in the Inuvialuit Settlement Region, Northwest Territories, Canada: 1999 and 2001-2003 (Canadian Manuscript Report of Fisheries and Aquatic Sciences 2700). Resource Management and Aboriginal Affairs; Fisheries and Oceans Canada.

Stori, F. T., Peres, C. M., Turra, A., & Pressey, R. L. (2019). Traditional Ecological Knowledge Supports Ecosystem-Based Management in Disturbed Coastal Marine Social-Ecological Systems. Frontiers in Marine Science, 6. https://www.frontiersin.org/articles/10.3389/fmars.2019.00571

Street, C. (2019, February 12). Luxury fashion brands that don’t use fur | London Evening Standard | Evening Standard. The Standard.

https://www.standard.co.uk/lifestyle/fashion/luxury-fashion-brands-that-don-t-use-fur-a4148991.html

Suuronen, P., Lunneryd, S.-G., Königson, S., Coelho, N. F., Waldo, Å., Eriksson, V., Svels, K., Lehtonen, E., Psuty, I., & Vetemaa, M. (2023). Reassessing the management criteria of growing seal populations: The case of Baltic grey seal and coastal fishery. Marine Policy, 155, 105684. https://doi.org/10.1016/j.marpol.2023.105684

Tejsner, P. (2014). Quota disputes and subsistence whaling in Qeqertarsuaq, Greenland. Polar Record, 50(4), 430–439. https://doi.org/10.1017/S0032247414000242

Tester, F. J. (1994). Tammarniit (mistakes): Inuit relocation in the Eastern Arctic, 1939-63. UBC Press.

The Animal Rescue Site. (2023). Canada: Stop Slaughtering Helpless Seals! | Take Action @ The Animal Rescue Site. https://theanimalrescuesite.greatergood.com/clicktogive/ars/petition/SealSlaughter

The European Commission. (2009). Commission Regulation (EU) No 1007/2009 of 16 September 2009 on trade in seal products. Official Journal of the European Union. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009R1007#:~:text=Therefore%2C%20the%20placing%20on%20the,their%20subsistence%20should%20be%20allowed.&text=This%20Regulation%20establishes%20harmonised%20rules,the%20market%20of%20seal%20products.

The European Commission. (2010). Commission Regulation (EU) No 737/2010 of 10 August 2010 laying down detailed rules for the implementation of Regulation (EC) No

1007/2009 of the European Parliament and of the Council on trade in seal products. Official Journal of the European Union.

The European Commission. (2015). Regulation (EU) 2015/1775 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 6 October 2015 amending Regulation (EC) No 1007/2009 on trade in seal products and repealing Commission Regulation (EU) No 737/2010. Official Journal of the European Union.

The Federal Council. (c2023). Switzerland bans the import of seal products. https://www.admin.ch/gov/en/start/documentation/media-releases.msg-id-65877.html

The Government of the Faroe Islands. (2019, April 4). Sustainable whaling and sealing is fully in line with the Sustainable Development Goals. https://www.government.fo/en/news/news/sustainable-whaling-and-sealing-is-fully-in-line-with-the-sustainable-development-goals

The Guardian. (2009, March 19). Russia bans hunting of baby harp seals. The Guardian. https://www.theguardian.com/environment/2009/mar/19/seals-hunting-russia-ban

The New York Times. (1983, December 6). Newfoundland Sealers Call Hunt Vital to Isle. The New York Times. https://www.nytimes.com/1983/06/12/world/newfoundland-sealers-call-hunt-vital-to-isle.html

Tilman, D., Balzer, C., Hill, J., & Befort, B. L. (2011). Global food demand and the sustainable intensification of agriculture. Proceedings of the National Academy of Sciences of the United States of America, 108(50), 20260–20264. https://doi.org/10.1073/pnas.1116437108

Tinker, T., Stenson, G. B., Mosnier, A., & Hammill, M. O. (2023). Estimating abundance of Northwest Atlantic harp seal using a Bayesian modelling approach (Research Document

2023/068). DFO Can. Sci. Advis. Sec. https://publications.gc.ca/site/archivee-archived.html?url=https://publications.gc.ca/collections/collection_2023/mpo-dfo/fs70-5/Fs70-5-2023-068-eng.pdf

TRAFFIC. (n.d.). Our Organisation. Retrieved January 11, 2024, from https://www.traffic.org/about-us/our-organisation/

Travel Alaska. (n.d.). Yup'ik and Cup'ik Culture in Alaska. Retrieved November 9, 2023, from https://www.travelalaska.com/Things-To-Do/Alaska-Native-Culture/Cultures/Yupik

Treves, A., Santiago-Ávila, F. J., & Putrevu, K. (2021). Quantifying the effects of delisting wolves after the first state began lethal management. PeerJ, 9, e11666. https://doi.org/10.7717/peerj.11666

Troake, A., Martin, K., Markham, N., Darlington, C., Haynes, J., Martin, J., Murray, R., Troake, G., & National Film Board of Canada (Directors). (2005). My ancestors were rogues and murderers. National Film Board of Canada.

Trukhanova, I. S., Grachev, A. I., Somov, A. G., Burkanov, V. N., Laidre, K. L., & Boveng, P. L. (2017). The commercial harvest of ice-associated seals in the Sea of Okhotsk, 1972-1994. PLOS ONE, 12(8), e0182725. https://doi.org/10.1371/journal.pone.0182725

Truth and Reconcilliation Commission of Canada. (2015). Canada's residential schools: The final report of the Truth and Reconciliation Commission of Canada: Volume 2. McGill-Queen's University Press. https://publications.gc.ca/site/eng/9.807830/publication.html

Trzcinski, M. K. (2020). Synthesizing scientific knowledge about population dynamics and diet preferences of harbour seals, Steller sea lions and California sea lions, and their impacts on salmon in the Salish Sea workshop 2: November 20-21, 2019, Bellingham, WA. Fisheries and Oceans Canada.

Tubiello, F. N., Rosenzweig, C., Conchedda, G., Karl, K., Gütschow, J., Xueyao, P., Obli-Laryea, G., Wanner, N., Qiu, S. Y., Barros, J. D., Flammini, A., Mencos-Contreras, E., Souza, L., Quadrelli, R., Heioarsdóttir, H. H., Benoit, P., Hayek, M., & Sandalow, D. (2021). Greenhouse gas emissions from food systems: Building the evidence base. Environmental Research Letters, 16(6). https://doi.org/10.1088/1748-9326/ac018e

Tufts, B. L., Holden, J., & DeMille, M. (2015). Benefits arising from sustainable use of North America's fishery resources: Economic and conservation impacts of recreational angling. International Journal of Environmental Studies, 72(5), 850–868. https://doi.org/10.1080/00207233.2015.1022987

UK Government. (1912). Convention Between the United Kingdom, the United States, Japan, and Russia Respecting Measures for the Preservation and Protection of the Fur Seals in the North Pacific Ocean. His Majestry's Stationery Office, 2. https://treaties.fcdo.gov.uk/data/Library2/pdf/1912-TS0002.pdf

UNEP. (2021, September 13). UNEP: 50 years of Environmental Milestones. UNEP - UN Environment Programme. http://www.unep.org/environmental-moments-unep50-timeline

United Nations. (2007, September 13). UN Declaration on the Rights of Indigenous Peoples. https://www.ohchr.org/en/indigenous-peoples/un-declaration-rights-indigenous-peoples

University of Nottingham. (n.d.). The Grey Seal Culls: Scotland. Retrieved January 3, 2024, from https://rdmc.nottingham.ac.uk/bitstream/handle/internal/287/Archaeology_final/the_grey_seal_culls_scotland.html

University of Tromsø. (2023, February 2). Seal hunting. https://en.uit.no/tmu/utstillinger/utstilling?p_document_id=804931

U.S. Fish & Wildlife Service. (n.d.). Mission and Vision. Retrieved January 11, 2024, from https://www.fws.gov/about/mission-and-vision

U.S. National Park Service. (2019, October 29). Conservation, Preservation, and the National Park Service. https://www.nps.gov/teachers/classrooms/conservation-preservation-and-the-national-park-service.htm

USAID. (n.d.). What is Community-Based Natural Resource Management (CBNRM)?

van Velden, J. L., Moyo, B. H., Ross, H., & Biggs, D. (2020). Understanding the bushmeat hunting crisis in African savannas using fuzzy cognitive mapping and stakeholder knowledge. Ecology and Society, 25(3), 21-. https://doi.org/10.5751/ES-11873-250321

Vaugeois, R. (2023). Personal communication with Romy Vaugeois [Personal communication].

Veltre, D. W., & Veltre, M. J. (1987). The Northern Fur Seal: A Subsistence and Commercial Resource for Aleuts of the Aleutian and Pribilof Islands, Alaska. Études/Inuit/Studies, 11(2), 51–72. https://www.jstor.org/stable/42869604

Vetemaa, M. (n.d.). Seal management in Estonia. Estonian Marine Institute, University of Tartu. https://www.fishpoint.net/assets/Projekt/Estonian%20seal%20management_2023-final.pdf#:~:text=Seal%20hunting%20is%20allowed%2C%20but%20there%20are%20severe,%28nature%20protection%20areas%29%20Trade%20ban%20of%20seal%20products

Visit faroe islands. (2022, December 12). The seal woman. https://visitfaroeislands.com/en/about1/myths-legends/the-seal-woman

Wang, H., & Zhao, W. (2021). WHO-Convened Global Study of Origins of Origins of SARS-CoV-2: China Part (Text Extract). Infectious Diseases & Immunity, 1(3), 125–132. https://doi.org/10.1097/ID9.0000000000000017

Ward, S. (2018, January 10). MMPA: 45 Years of Defending Marine Mammals. The Ocean Foundation. https://oceanfdn.org/mmpa-45-years-of-defending-marine-mammals/

Webb, M. (2020). Signed, Sealed, Delivered: An Analysis of the Communication Tactics Used in the Development of the European Union's Ban on Seal Products. Carleton Perspectives on Public Policy, 6, 86–105. https://doi.org/10.22215/cpopp.v6i0.2725

Wegge, N. (2013). Politics between science, law and sentiments: Explaining the European Union's ban on trade in seal products. Environmental Politics, 22(2), 255–273. https://doi.org/10.1080/09644016.2012.717374

Welty, F. K. (2023). Omega-3 fatty acids and cognitive function. Current Opinion in Lipidology, 34(1), 12–21. https://doi.org/10.1097/MOL.0000000000000862

Wenzel, G. (1996). Inuit sealing and subsistence managing after the E.U. Sealskin Ban. Geographische Zeitschrift, 84(3–4), 130–142.

White, H. B., Decker, T., O'Brien, M. J., Organ, J. F., & Roberts, N. M. (2015). Trapping and furbearer management in North American wildlife conservation. International Journal of Environmental Studies, 72(5), 756–769. https://doi.org/10.1080/00207233.2015.1019297

Whiteman, H., & Ramsay, G. (2023, March 26). Australia loves its kangaroos so much it sets annual quotas to kill them. CNN. https://www.cnn.com/2023/03/25/sport/australia-kangaroo-culling-program-intl-hnk-dst/index.html

Whitworth, J. (2023, January 23). EU rejects call to ban kangaroo meat imports. Food Safety News. https://www.foodsafetynews.com/2023/01/eu-rejects-call-to-ban-kangaroo-meat-imports/

WHO. (2024). Severe Acute Respiratory Syndrome (SARS). https://www.who.int/health-topics/severe-acute-respiratory-syndrome#tab=tab_1

Wilkinson, B. W. (2021, July 1). General Agreement on Tariffs and Trade (GATT). The Canadian Encyclopedia. https://www.thecanadianencyclopedia.ca/en/article/general-agreement-on-tariffs-and-trade

Winsnes, C. (2016). Grey seals. NAMMCO Scientific Publications, 6. https://nammco.no/topics/volume-6-grey-seals/

Winter, A.-M., & Hutchings, J. A. (2020a). Impediments to fisheries recovery in Canada: Policy and institutional constraints on developing management practices compliant with the precautionary approach. Marine Policy, 121. https://doi.org/10.1016/j.marpol.2020.104161

Winter, A.-M., & Hutchings, J. A. (2020b). Impediments to fisheries recovery in Canada: Policy and institutional constraints on developing management practices compliant with the precautionary approach. Marine Policy, 121. https://doi.org/10.1016/j.marpol.2020.104161

Withers, P. (2020, July 2). Canada to ban “nuisance seals” killing to keep access to U.S. market. CBC News. https://www.cbc.ca/news/canada/nova-scotia/canada-to-ban-so-called-nuisance-seals-killing-1.5633394

Withers, P. (2023, March 12). Seafood industry urges “extreme caution” on controlling seals to avoid consumer backlash | CBC News. CBC News. https://www.cbc.ca/news/canada/nova-scotia/canadian-seafood-industry-urges-extreme-caution-on-seals-1.6775506

Wolfe, R. J. (2004). Local Traditions and Subsistence: A Synopsis from Twenty-Five Years of Research by the State of Alaska. In Technical Paper 284. Alaska Department of Fish and Game.

Woolf, M. (2023, March 15). Animal-welfare campaigners rail against Pierre Poilievre's plan to expand Canada's seal hunt. The Globe and Mail. https://www.theglobeandmail.com/politics/article-animal-welfare-campaigners-rail-against-poilievre-plan-to-expand/

World Health Organization. (2015). Cancer: Carcinogenicity of the consumption of red meat and processed meat. https://www.who.int/news-room/questions-and-answers/item/cancer-carcinogenicity-of-the-consumption-of-red-meat-and-processed-meat

Wright, G. D. (1984a). Sons and seals: A voyage to the ice. Institute of Social and Economic Research, Memorial University of Newfoundland.

Wright, G. D. (1984b). Sons and seals: A voyage to the ice. Institute of Social and Economic Research, Memorial University of Newfoundland.

WTO. (n.d.-a). Dispute settlement gateway. Retrieved January 11, 2024, from https://www.wto.org/english/tratop_e/dispu_e/dispu_body_e.htm

WTO. (n.d.-b). Dispute settlement—Appellate Body. Retrieved November 17, 2023, from https://www.wto.org/english/tratop_e/dispu_e/appellate_body_e.htm

WTO. (n.d.-c). Technical Barriers to Trade. Retrieved January 11, 2024, from https://www.wto.org/english/tratop_e/tbt_e/tbt_e.htm

WTO. (n.d.-d). The GATT years: From Havana to Marrakesh. Retrieved January 11, 2024, from https://www.wto.org/english/thewto_e/whatis_e/tif_e/fact4_e.htm

WTO. (n.d.-e). What is the WTO? Retrieved January 11, 2024, from https://www.wto.org/english/thewto_e/whatis_e/whatis_e.htm

WTO. (2014a). Reports of the Appellate Body: European Communities—Measures Prohibiting the Importation and Marketing of Seal Products. https://www.wto.org/english/tratop_e/dispu_e/400_401abr_e.pdf

WTO. (2014b, October 8). DS400: European Communities—Measures Prohibiting the Importation and Marketing of Seal Products. https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds400_e.htm

WWF. (2013). Seals in Greenland.

Young, O. R. (1981). The political economy of the Northern Fur Seal. Polar Record, 20(128), 407–416. https://doi.org/10.1017/S0032247400003612

Zhang, Y., & Berhe, H. M. (2022). The impact of green investment and green marketing on business performance: The mediation role of corporate social responsibility in Ethiopia's Chinese textile companies. Sustainability (Basel, Switzerland), 14(7), 3883-. https://doi.org/10.3390/su14073883

FUR INSTITUTE OF CANADA
INSTITUT DE LA FOURRURE DU CANADA

Canadian Seal Products

conservation VISIONS®

Past, Present and Future of the Canadian Seal Fishery: A White Paper for the Seals & Sealing Network / Fur Institute of Canada, 31 March 2024.