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Economy and Society

WP5 - Deliverable 5.51

Scientific and ethical evaluation of the impact of indigenous seal hunting

Harp seal mother and pup (NOAA)

LE CERCLE POLAIRE

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Introduction

Assessing the impact of indigenous seal hunting activity is a complex task. The assessment can be nothing but a cross-sectoral study involving several fields and approaches: ecology and climatology regarding scientific recommendations (ICES, FAO…), regional/national regulations ruling the management and the harvest of seals hunt (NAFO, WGHARP…), arctic relevant multilateral environment agreements on biodiversity (CBD, ICRW, UNFCC...).

Seal hunting is not only a matter of sustainable management of marine resources. It also deals with animal protection and welfare policies with important advances at international, regional and national levels in recent years. As we will see in detail later on, since the 1st of December 2009, the entry into force of the Lisbon Treaty provides a constitutional basis for animal welfare in the EU: « *the Union and the members, since animals are sentient beings, pay full regard to the requirements of animal welfare, while respecting the legislative or administrative provisions and customs of Member States relating in particular to religious rites, cultural traditions and regional heritage* ».

In countries around the world, animal welfare concerns garner more attention as consumers recognize the links between animal health and animal welfare, and animal welfare and human well-being. The challenge is to increase food animal production while simultaneously ensuring good animal welfare and protecting food security.

The earliest animal welfare legislation was developed in countries where industrialized production is the norm and therefore, these legislative instruments tend to focus on farm animals housed, transported and slaughtered. However, animal welfare legislation need not be limited to industrialized production and it progressively included other types of production such as subsistent farming, and more recently, wild animals.

In Europe, the main focus of the discussion related to seal management has been on animal welfare aspects of seal hunting practices. In 1983, the European Union placed a ban on sealskins from certain species of seal pups, and in July 2009 EU nations gave their final approval to a ban on all imports of seal products with the exception of products resulting from hunts traditionally conducted by Inuit peoples living in Alaska, Canada, Greenland, and Russia – and which may only be marketed on a not-for-profit basis.

As we are to deal at the end, with the specific case of EU import ban of seal products (ICTSD, 2009) based on welfare concerns, we will have to examine, from a legal point of view, whether the Indigenous seal hunting practice constitute or not a justified exception under the Article III-121 of the Madrid Treaty (« *respecting the customs of Member States relating to cultural traditions* ») and under Article XX (a) of the General Agreement on Tariffs and Trade (GATT) (measures « necessary to protect publics morals »).

The ban has put the EU application to gain permanent observer status with the Arctic Council at stake. The day before the Council's Ministerial meeting in April 2009, the Canadian Foreign Affairs Minister Lawrence Cannon told CBC News: "*Canada doesn't feel that the European Union, at this stage, has the required sensitivity to be able to acknowledge the Arctic Council, as well as its membership, and so therefore I'm opposed to it*"[1]. Greenland's Premier Kuupik Kleist and other Inuit leaders criticized the ban for being incompatible with international agreements and human rights[2]. The North Atlantic Marine Mammal Commission (NAMMCO) stated that the EU import ban on seal products "*raises serious concerns for the future of international cooperation on responsible management and the sustainable use of renewable natural resources in general* [3]". Both Norway and Canada requested WTO dispute settlement consultations following the EU's decision to ban trade in seal products.

As it is well summarized in the Recommendation 1776 (2006) on Seal Hunting by the Parliamentary Assembly (PACE), « *the international controversy surrounding seal hunting is first and foremost a political debate, bringing different and sometimes conflicting values, objectives and attitudes into play, and that public opinion is particularly sensitive to this matter* ».

Animal welfare often stimulates strong emotions and it is important that, while addressing ethical aspects, developments in the field of animal welfare are based on a firm scientific background. Nevertheless, we understand that along with the scientific and ethical aspects of the evaluation of the impact of Indigenous seal hunting, our study will have to also deal with values and morals in an inter-cultural perspective.

I. Seal Hunting activity

Seal hunting occurs in various parts of the world for commercial, subsistence and cultural reasons. Seal hunting is also carried out in some areas for the sustainable management of marine resources. At least 15 seal species are currently hunted, but the majority of hunted animals belong to four true seal species and one fur seal species:

- harp seal (*Pagophilus groenlandicus*)
- ringed seal (*Pusa hispida*)
- grey seal (*Halichoerus grypus*)
- hooded seal (*Cystophora cristata*)
- Cape fur seal (*Arctocephalus pusillus*)

The seal populations that are hunted for commercial purposes – an estimated 15 million animals – are generally not endangered. Some 900,000 seals are hunted each year around the globe, with the commercial hunt in Canada, Greenland and Namibia accounting for some 60% of the seals killed each year. Hunting for commercial purposes also takes place in Russia and Norway. Around one third of the world trade in seal products either passes through or ends up in the EU market.

Seal hunts around the world are governed by different rules and regulations. In some countries comprehensive systems are in place, while in others the seal hunt is regulated to a lesser degree. Within the EU, certain methods and means of capture and killing are prohibited in areas protected under EU nature law (the Habitats Directive).

I .1. Arctic seals populations

I .1.1. Arctic Seas definition applicable to seals

As seals are marine mammals which have to breath air, they need free regular access to the atmosphere to perform respiration. Because they are not as sea adapted as cetaceans do, seals also need aerial platforms for resting (haul-out), perform their annual fur molting, and nurse their pups during their first weeks as they store enough fat to be isolated of cold waters.

The sea ice is used by seals for those physiological functions and sea ice presence became a limiting factor for seals distribution in the Arctic. Moreover, seasonal distribution, thickness and fracturation of sea ice, especially during the nursing pup season in spring, are crucial for seals survival.

For its seal's survival impact, sea ice presence must be taken in account to build an accurate Arctic Seas biological definition. In this Deliverable, we will define the Arctic Seas to all Arctic and Subarctic waters where sea ice is present during at least the spring months, from February to May-June.

According to this biological definition, the Arctic Seas as we will refer in this document correspond to the FAO Area 18 (Arctic Sea) plus the northern part of Areas 21 (North-West Atlantic except subareas 3 to 6), 27 (North-East Atlantic except South Barents and Norwegian Seas), 61 (North-West Pacific) for the Western Bering and Okhotsk Seas, and 67 (North-East Pacific) for the Eastern Bering Sea (FAO Areas maps available on FAO website: http://www.fao.org/fishery/area/search/en).

Table: Arctic Seas definition

Atlantic Arctic Basin	Pacific Arctic Basin	Central Arctic Ocean
Hudson Bay, Foxe Basin, Ungava Bay (FAO Area 18)	Laptev Sea, East Siberian Sea (FAO Area 18)	(FAO Area 18)
Davis Strait (FAO Area 21)	Chukchi Sea (FAO Area 18)	
Baffin Bay (FAO Area 21)	Bering Sea (FAO Area 61 + 67)	
Greenland Sea (FAO Area 27)	Okhotsk Sea (FAO Area 61)	
White Sea (FAO Area 27)	Beaufort Sea (FAO Area 18)	
Kara Sea (FAO Area 18)	Bays and straits of western Canadian Arctic Archipelago (FAO Area 18)	

Our biological definition is concordant with the regions used by the Conservation of Arctic Flora and Fauna (CAFF) to enumerate Arctic marine mammal species in the Arctic Biodiversity Assessment presented to the Arctic Council in 2013.

Arctic Seas as defined by the CAFF report on Arctic Biodiversity Assessment (2013)

I.1.2 Arctic seals species

Height seals species can be observed in Arctic waters, but two have their main distribution outside Arctic waters in subarctic and temperate waters and are less sea ice dependent than true Arctic seals.

Detailed presentation of population estimates, distribution and their linkage to sea ice environments for reproduction, molting and hauling out are given in Annexe 1: Arctic seals species.

Considering the 8 seal species and the walrus occurring in the Arctic Seas, the total Arctic seals population is about 13,236,000-14,236,000 individuals, with 60% represented by a single species, the harp seal and another 25% by the ringed seal. As far as we now, 75%-80% of all Arctic seals are

concentrated in the Atlantic Arctic Basin (Canadian Arctic Archipelago waters, Hudson Bay, Baffin Sea, Davis Strait and Greenland Sea) when just 1.5-2 millions seals are present in the Pacific Arctic Basin and Okhotsk Sea.

Most of these Arctic seals are strictly dependent on sea ice coverage for breeding and molting and pass their all life inside the ice-covered seas or at the edge of it (see Figue 1).

Additionaly, the three specialized feeders species - the hooded targeting bottom dwelling fishes, the bearded seal and the walrus feeding on bottom living shellfishes - are strictly dependent on continental shelves waters, less than 400 m deep, where there prey concentrate.

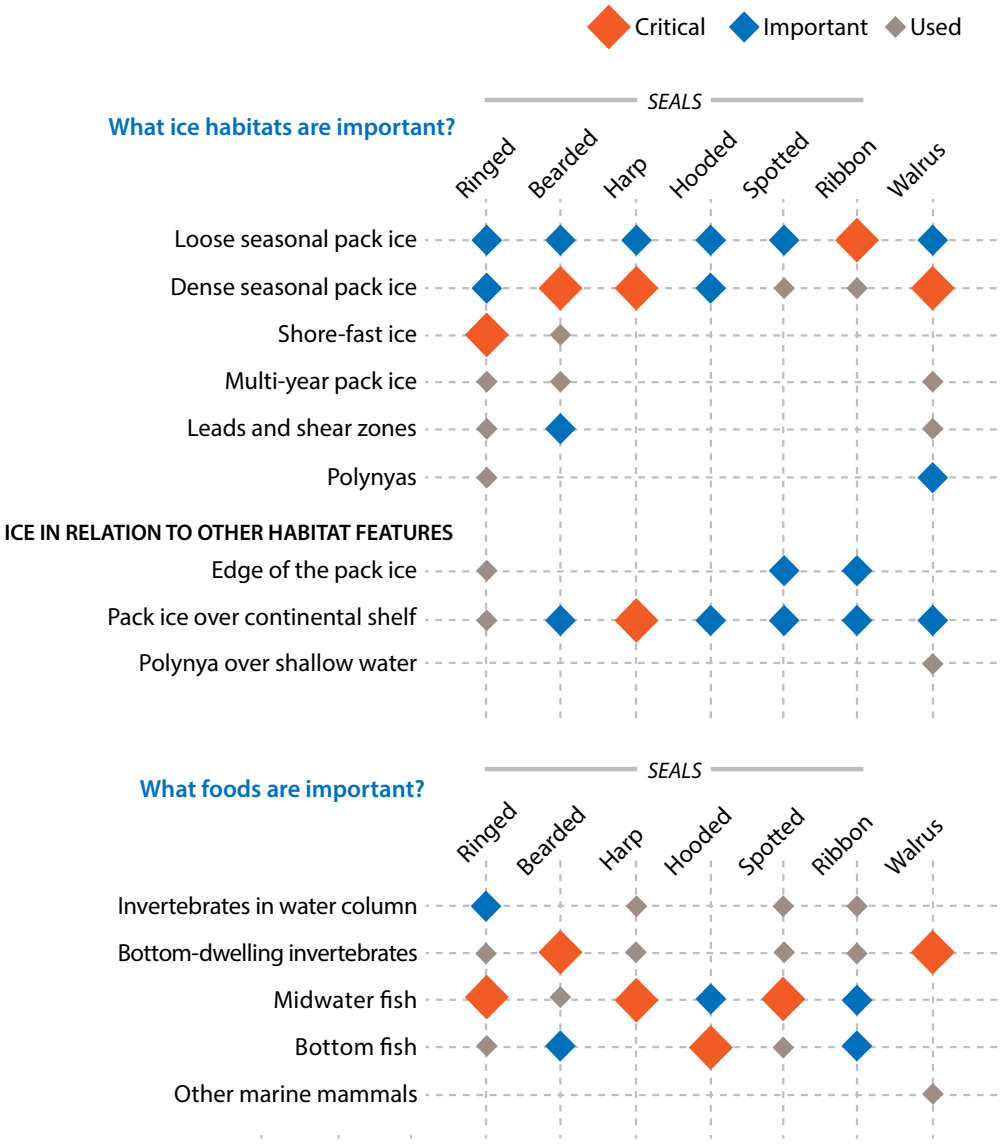


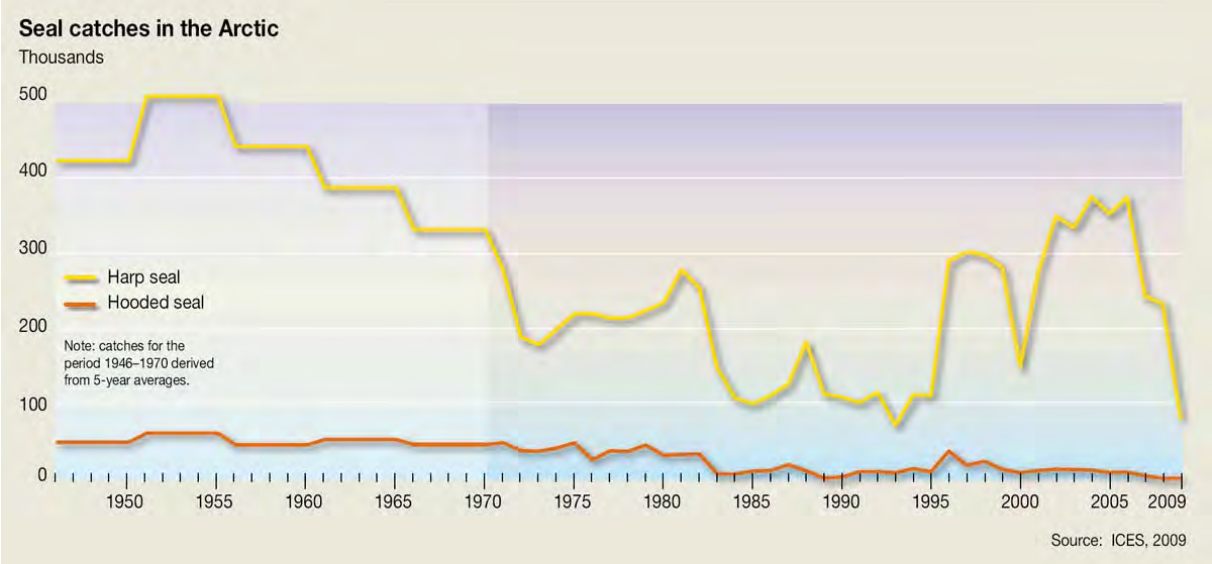
Figure 1 - **Importance of the different sea ice habitats for Arctic seals species**

Harp and ringed seals, the main target of Inuit hunters (respectively 40 and 47% of total Aboriginal catch, see section I.2 and Annex 2), are critically linked to seasonal pack ice, the second depending exclusively on shore-fast ice for its reproduction.

As Climate Change impacts principally shore-fast ice and dense seasonal pack ice (see section II.4.), harp and ringed seals are expected to be highly threatened by the earlier melting season onset.

I.2 Seal catches in the Arctic

Large-scale commercial harvests are restricted to harp and hooded seals, except for the hooded seal population in the Jan Mayen area of the Greenland Sea. Both species faced intense commercial hunting in the 19th and 20th centuries, first for oil, and later mainly for the highly prized pelts of pups. Seal products nowadays also include a significant aphrodisiac trade (particularly for harp seal sex organs), and seal oil has become a popular health product because of its omega-3 content. Canada, Greenland, Norway, and Russia have been and are still involved in regulated commercial harvest of these species.



Ringed seals are also targeted by commercial harvest and occupy the second rank in numbers when Inuit subsistence hunt is included, a large of pelts being sold by Inuit hunters to peltries.

In 2012, the global capture production for arctic seals (FAO Statistics) was: harp seal, 105,990; ringed seal, 43,754; hooded seal, 2,091; bearded seal, 1,458; spotted seal, 271; ribbon seal, 0. The two sub Antarctic seals species were respectively 177 for the grey seal and 0 for the harbor seal.

A detailed presentation of seal catches in an historical perspective is given in Annexe 2: Seal catches

Commercial arctic seal hunting is practiced by Canada, mainly on harp seal in the Front region off Newfoundland, and by Norway in Greenland Sea on harp seal. Russian Federation commercial hunting have largely declined since 1994 for most species and virtually stopped after the ban on catches of harp seals less than 1 year of age pronounced in 2009 as Russian hunters focused on “beaters” pelts. Russian Federation apply a harp and hooded seals hunting ban since 2011.

Arctic seals are also targeted by aboriginal peoples, mainly Inuit, for subsistence (food, pelts, traditional uses) and commercial issues in USA, Canada, Greenland and Russian Federation. This shore-based harvest main targets are the ringed and harp seals, but the other seal species are also killed by indigenous Peoples, for specific traditional uses (clothes and accessories), or on an opportunistic mode.

Most part of the nearly 420,000 Arctic seals harvested in the Arctic Seas since 2010 are mainly hunted by aboriginal Peoples living on bordering lands, on a land-based hunt using sea ice as hunting platforms or small motorized boats see Figure 2).

The aboriginal catch represents about 297,000 seals per year, mostly harp and ringed seals, the most abundant and widespread species living in close association with sea ice.

The very most part of that aboriginal catch is realized by Inuit Peoples from Greenland, Canada, Alaska and Russian Far East Siberia (Chukotka).

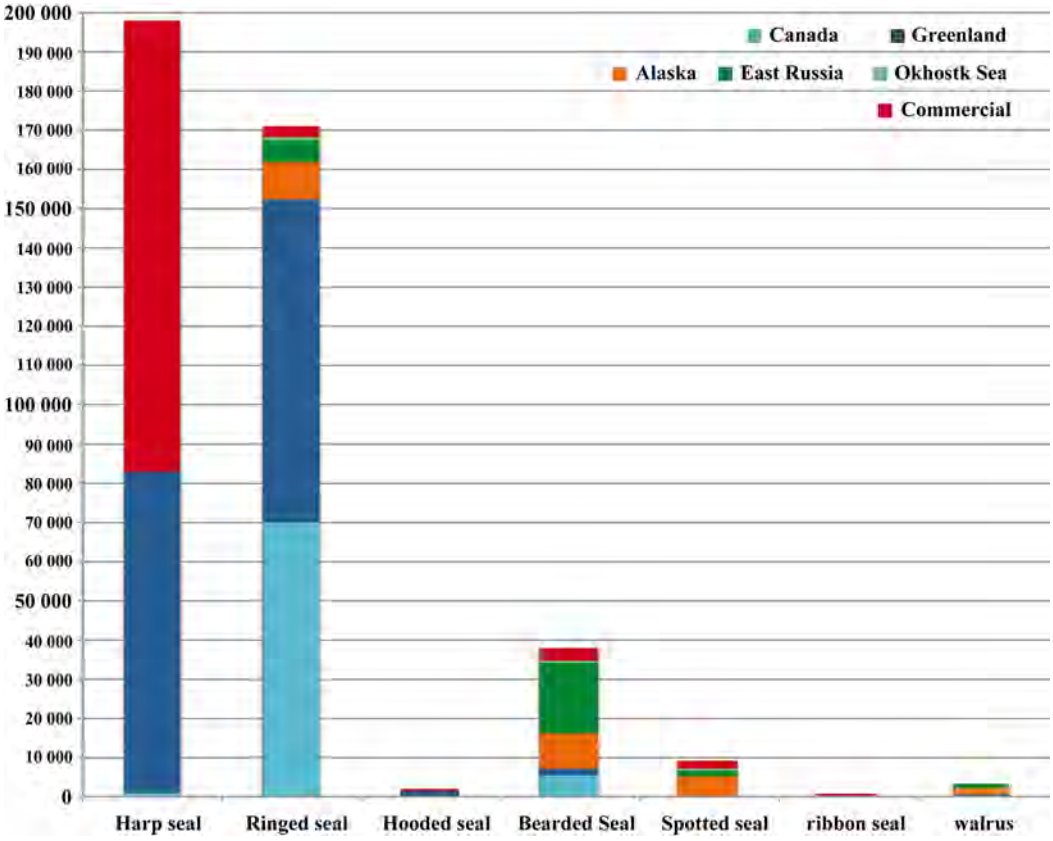


Figure 2 - Total current annual aboriginal subsistence seal harvest and total annual commercial harvest estimates for the six Arctic seal species.

	Harp seal	Ringed seal	Hooded seal	Bearded seal	Spotted seal	Ribbon seal	walrus
Canadian Natives	1,000	70,000	0	5500	0	0	400
Greenland	82,000	82,400	2,000	1,750	0	0	150
Alaska Natives	0	9,500	0	9,000	5,200	193	1,682
Western Russian Natives	0	5,400	0	18,000	1,500	200	1,053
Okhotsk Sea	0	1,000	0	500	500	200	0
Commercial harvest	115,000	2,700	23	3,250	2,000	200	0
Total harvest	198,000	171,000	2,023	38,000	9,200	793	3,285

The main targeted species are the ringed (47% of total aboriginal catch) and harp (40%) seals in the Atlantic Arctic Basin where Inuit and this two seals species are the more numerous and live in higher densities.

If Russian and Alaskan (USA) aboriginal peoples have nearly no commercial use of their catches except at a local or national scale, Canada and Greenland Inuit hunters are allowed to get commercial outcome from their hunt. Thus, 80% of Greenland seals catch result of 2,100 professional hunters activities, the 5,500 leisure-time hunters catching less than 20% of total seals catch.

It is important to note that after having been by far the main actor in seals harvesting during the 19th and 20th centuries, current commercial sealing in the Arctic represent 24% of total catches, focusing on one single species, the harp seal. Although it is restricted to Labrador Sea and Saint Laurent Gulf, two regions situated outside the Arctic Seas, it impacts directly the western Atlantic Arctic Basin populations and Canadian commercial harvest on harp seals have to be taken in account for any Arctic seals management and regulations (see Harp seal distribution in Annexe 1: Seals species).

Norwegian commercial sealing in the Arctic also focus on harp seal and represent 4% of total Arctic sealing.

Both Canadian and Norwegian commercial sealing represent nearly 60% of the total harp seal commercial catches.

Since the closure of beaters hunt by the Russian Federation in 2009 and the no catch advices given for the hooded seal by the Joint ICES/NAFO Working Group on Harp and Hooded Seals in 2007, and walrus ban in 1956, Russian commercial sealing in the Greenland Sea and most of sealing conducted in Chukchi, Bering and Okhotsk Seas stopped.

I.3. Aboriginal seal hunt methods

Seals hunt has been practiced by Arctic Peoples since thousands years in all Arctic coasts where they settled. The Inuit Peoples invaded the Arctic 1,000 years ago, crossed the Beringia from Far East Siberia and Chukotka to Alaska and then in Canadian Arctic and Greenland au XXIII^{e} or XIV^{e} siècle.

Based on seal hunting, Inuit cultures developed specific hunting technics adapted to catch seals according to sea ice seasonal conditions, seals species behaviors and local weather and geographic land distribution.

I.3.1. Current Inuit seal hunt

Four main hunting methods have been developed and are still applied by current Inuit Peoples: “Uuttoq” hunting (sneaking), breathing hole net trapping, ice edge hunting (harpoon or riffle shooting), and coastal boat-based hunting (harpoon or riffle shooting) during summer or in open water regions[30].

Details given below concern Greenland Inuit[30], Kalaalliit from western Greenland, Tunumiit from Eastern Greenland and Inughuit from northern Greenland, but can be generalized to all Inuit Peoples.

“Uuttoq” hunting

In spring, when ringed seals come up through the breathing holes to haul out on the ice to bask, they are easy targets for experienced hunters who use screens to sneak up on an appropriate riffle shooting distance. Hidden behind the canvas, the hunter crawls towards the seal. When he is at close range, he shoots the seal through its head. If the shot misses the head, the seal may manage to disappear down through the breathing hole and it will be lost to the hunter. The method can only be used in the spring period when sun is back and thesea ice layer is still not dislocated by melt.

Breathing hole net trapping

From October to the end of March, netting is the prevailing method since it is impossible to use any other technique during the dark winter months. The success of netting under the ice also depends on the duration and stability of the fast ice cover, the amount of snow, and the frequency of strong wind, all of which influence the possibilities for setting and tending the nets.

The net is generally tightened below sea ice surface between a small iceberg and the coast. The hunter dig three aligned holes a few meters from each other through sea ice, then propel his “tooq” (ice

chisel) in water from one hole in a way he can pick up the handle from another hole. The strap on the "tooq" is used to tight the net between the holes. Nets are visited several times a day, what means to dig again through the refrozen hole[4]. When the seal caught is still alive, it is ended by a head blow with the *took*.

The use of nets for catching ringed seals seems to have been introduced in Greenland by Europeans a few hundred years ago. In some municipalities, using nets under the ice constitutes about two thirds of the total harvest of ringed seals. Especially in the northern parts of Greenland, where most ringed seals are caught, netting constitutes an important method to catch ringed seal during winter due to the dark periods and ice conditions. Using riffles is not an alternative since it is completely impossible to see the seals in the dark. However, hunting with nets becomes less effective relative to the increase in light during the spring.

Hunting from the edge

Another type of hunting in which riffles are used takes place from the edge of the ice in springtime. In this type of hunting the main target are ringed seals. Seals may also be caught through small cracks in the ice, at the edge of the permanent ice or from a drifting ice floe. The hunter will then bring along a kayak or a small boat on his dog sledge.

Coastal boat-based hunting

Hunters in small boats shoot seals found in open water. Mostly the hunting of harp seal for instance is a one-man activity. When the hunter reaches an area where he expects to find seals, he stops the engine of his boat or slows down the speed while systematically searching the area. Too high speed involves noise from the engine and will make the hunt more complicated, since it will scare away the seals and make any judgment of their movements difficult. Experience, good eyesight and excellent hunting skills are therefore required to spot a seal and shoot it from a small boat.

Thus, hunting of harp seals occurs exclusively from small boats with riffles. After having shot the seal, the hunter will, as fast as possible try to reach the seal before it sinks. However, there are without doubt seals that sink before they can be hauled up, especially in the pre-summer period in the months of May and June when harp seals are very lean (see section I.3.2). Consequently, during the first few weeks of the open water hunt, the loss due to sinking is slightly higher than during the reminder of the open water season.

A variation of the edge hunting was employed to catch seals at their breathing hole. This methods is generally a group activity, each hunter posting himself at the edge of a different "*allu*" (breathing hole) have to wait motionless, sometimes for hours, the seal come to breath to shoot or harpoon it. Because of it relatively low profitability, this method is currently rarely used.

I.3.2. The problem of struck and lost

Hunting of harp seals occurs exclusively from small boats with riffles, and there are probably quite a few seals that sink before they can be hauled up. This is especially true in the pre-summer period when harp seals are very lean. Harp seals molt beginning in early April each year (in Greenland), starting from adult males, immature and followed by adult females. During molting animals fast and lose more than 20 % of their body weight mainly in the form of fat. The shooting of seals at substantial distances is the cause of most hunting loss. The loss rate varies primarily according to seasonal changes in the specific gravity of seals - their fat content, mainly as sub-cutaneous blubber, change their density (density of fat rich tissues is lower than low fat tissues like muscles) and thus their floatability or sinking rate - and the salinity of surface water. In May and June, struck and lost rates for harp seals may be as high as 40 – 50 %, but when the major harvest takes place in the autumn, the amount of harp seals lost is heavily reduced due to an increase in blubber thickness. Locality is also a factor, in that seals is shot close to river deltas are more likely to sink because of the relative freshness of the water there. The lower density of water facilitates the sink of seals.

Ringed seals are fattest and the water most saline in the winter, which means that the animals are much more prone to float at that season than they are during spring and summer.

Another factor affecting loss rate is the experience skill of the hunter, an experienced hunter waiting to be closer of its prey before shooting to minimize sinking risk. The quality of shooting material, riffle and ammunitions, may also affect the loss rate. These two factors are impossible to estimate, but we can suppose that professional hunters are more experienced and better equipped than leisure time ones and as, in Greenland at least and possibly in Canada, professional hunters are responsible of nearly 75%-80% of total harvest the impact of these two factors is probably neglictable.

Any technical amelioration allowing a substantial decrease of struck and lost is a progress regarding animal welfare, as most escaping wounded seal bleed to death or drown, as they are too exhausted to swim to the surface to breathe.

I.4. Conservation and Environmental Agreements for Arctic Seals

Whilst a number of agreements and protection measures cover several seal species, prominence is given to the hooded seal, as this species is arguably in most need of attention given its vulnerable status. Documented population declines of hooded seals resulted in the introduction of quotas in the early 1970s in order to achieve sustainable harvests.

In 1984, an ICES Working Group on Harp and Hooded Seals in the Greenland Sea was established. In 1988, the terms of reference were expanded to include harp seals in the White and Barents Seas and the Working Group met in October 1989. In 1989 it was recommended that a Joint ICES/NAFO Working Group on Harp and Hooded Seals (WGHARP) be established with the following mandate:

> *" ... for the purpose of assessing the status of these stocks and providing related advice and information in the areas of both organizations. Contracting Parties to either organization or regulatory commissions who might desire advice on harp and/or hooded seals in a particular geographical area must refer their request to the organization (NAFO or ICES) having jurisdiction over or interest in that area. Advice based on reports of the Joint Working Group would be provided by ACFM in the case of questions pertaining to the official ICES Fishing Areas (FAO Area 27) and by NAFO Scientific Council in the case of questions pertaining to the legally-defined NAFO area. ICES will administrate the Joint Working Group in terms of convening meetings, formulating terms of reference, handling membership and chairmanship, and processing, printing, and distributing Working Group reports."*

Following a request from Norway, WGHARP met for the first time in October 1991. The International Council for the Exploration of the Sea (ICES)/North Atlantic Fisheries Organization (NAFO) Working Group on Harp and Hooded Seals (WGHARP) has become an important source of scientific advice on the management and harvest of harp and hooded seals. WGHARP annually provides quota advice to ICES/NAFO member states for their harvests of these seal species. Since 2007, WGHARP has recommended that no harvest of Greenland Sea hooded seals should be permitted, with the exception of catches for scientific purposes. As for setting quotas for the northwest Atlantic hooded seal, a precautionary approach has been adopted since 2007.

Since 2009, the Russian Federation introduced a ban on harp seal less than one year old (beaters) harvest.

In Canada, the killing of both harp seal white-coat pups or hooded seal blue-backs (pups) for commercial purpose is prohibited, and in Svalbard both harp and hooded seals are protected.

Appendix 3 of the Conservation of European Wildlife and Natural Habitats (Bern Convention) lists protected fauna species, including six seal species with habitats in the Arctic (hooded seal, bearded seal, harp seal, harbor seal, ringed seal, and grey seal). Through the framework of the EU Habitats Directive, signatory states of the Bern Convention have agreed to take appropriate and necessary legislative and administrative measures to ensure the protection of the wild fauna species listed in its appendices, and any exploitation of wild fauna specified shall be regulated in order to keep the populations out of danger.

However, the Bern Convention's applicability to seals in the Arctic is limited. Of the European seal hunting nations, only Norway has ratified the Convention. Russia has not signed the Bern Convention. Greenland, although a part of Denmark, is not part of the European Commission and is not committed by the legislation.

With a focus on animal welfare, in 2010 the EU is putting a ban on all imports of seal products with the exception of products "derived from hunts traditionally conducted by Inuit and other Indigenous communities and which contribute to their subsistence ».

In the USA the Marine Mammal Protection Act (MMPA) limits hunting of marine mammals to Alaska Natives who may take seals for subsistence use and for the production of authentic native handicrafts, which may then be sold. MMPA prohibits all other consumptive use of marine mammals.

I.4.1. Arctic Seals and the IUCN Red List of Threatened Species

The IUCN Red List of Threatened Species identifies and documents those species most in need of conservation attention if global extinction rates are to be reduced and is widely recognized as the most comprehensive, apolitical, global approach for evaluating the conservation status of plant and animal species. In order to produce Red Lists of threatened species worldwide, the IUCN Species Survival Commission draws on a network of scientists and partner organizations, which use a scientifically standardized approach to determine species' risks of extinction.

According to the IUCN Red List of Threatened Species, most Arctic seal species are currently evaluated as having a low risk of extinction, with the exception of the hooded seal. Although the population in the northwest Atlantic is stable, the northern-most breeding population in the northeast Atlantic (West Ice) declined by 85–90% over the last 40–60 years. Even with protective measures taken in the last few years, recent data shows that the decline is continuing through unknown causes. As a result, the hooded seal had been classified as « vulnerable » on both Norway's Red List since 2006 and on the IUCN Red List since 2008. The ribbon seal, spotted seal, and the Okhotsk Sea ringed seal sub-species (*P. h. ochotensis*) have not been categorized by IUCN due to insufficient data.

Table I.4.a: IUCN status of Arctic seals

Common name	IUCN Red List	Justification
Ringed seal[5]	**Least Concern**	For the global assessment at the species level, the Arctic Ringed Seals' numerous status and broad distribution leads to the classification of Least Concern for this species. However, given the **risks posed by climate change** to all Ringed Seal subspecies, including the Arctic Ringed Seals, this species should be reassessed within a decade.
Bearded seal[6]	**Least Concern**	Due to its large population, broad distribution, variable feeding habits and no evidence of a decline, the Bearded Seal should be classified as Least Concern. However, this species is likely going to be **negatively impacted by climate change**, and should be monitored over the coming decades.
Harp seal[7]	**Least Concern**	Due to its large population size, and increasing trends, the Harp Seal should continue to be classified as Least Concern. However, **climate change poses a serious threat** to this species and Harp Seals should be reassessed within a decade
Hooded seal[8]	**Vulnerable**	Hooded Seals in the northwest Atlantic breeding areas

		are currently either stable or increasing modestly. However, the northeast Atlantic stock has declined by 85-90 % over the last 40-60 years. The cause of the decline is unknown, but very recent data suggests that it is on-going (30% within 8 years), despite the protective measures that have been taken in the last few years. Although the Hooded Seal is thought to be panmictic, the precipitous decline in the eastern stock (from over half a million to 70 000) over a period of a few decades warrants that the hooded seal be classified as Vulnerable.
Spotted seal[9]	**Data Deficient**	The Spotted Seal is moderately abundant, but it faces numerous threats and several major subpopulations have declined in recent years. The global number of Spotted Seals is not known, nor is the extent of the current declines. Given **the risk posed by climate change** and the uncertainty regarding the status of this species.
Ribbon seal[10]	**Data Deficient**	Ribbon Seals have an unknown mortality in salmon nets and bottom-set gill nets. This species is likely to be seriously, negatively **impacted by reductions in the extent and seasonal coverage of sea ice** throughout their range. However, it is not possible to evaluate the current situation for this species as the most recent estimates are almost two decades old.
Grey seal[11]	**Least Concern**	Continuing, well documented increases in overall population and most subpopulations, **low levels of localized hunting and widespread conservation measures in most range** states and current population size based on pup production estimates is 400,000. Continued declines in Icelandic waters give cause for concern, but globally, Grey Seals should be classified as Least Concern.
Harbor seal[12]	**Least Concern**	Due to its **large and either stable or increasing population**, on a global scale the Harbor Seal is considered to be Least Concern. However, for conservation concerns at a somewhat finer spatial scale, it is prudent to assess each of the subspecies separately as some populations are small and declining.
Walrus	**Data Deficient**	Although the global population is undoubtedly still quite large, there is evidence of declining populations in two of the subspecies. Climate change is expected to have negative consequences for Walruses, and particularly severe consequences for the Pacific subspecies. Additionally, **little recent information is available regarding current population sizes and trends throughout much of the Walrus's range**. At this time, this species must be classified as Data Deficient.

Although three among six arctic and the two sub-arctic seals species are evaluated as "Least Concern" in the IUCN Red List of Threatened Species, all of them are described as being potentially impacted by the reductions in the extent and seasonal coverage of sea-ice, their natural habitat.

The ringed seal is currently classified as a species of "Least Concern" on the IUCN Red List, due to the large population size and broad distribution of the Arctic subspecies (Kovacs et al. 2008[44]). Kovacs et al. (2008[44]) noted that given the risks posed to the ringed seal by climate change, the conservation status of all ringed seal subspecies should be reassessed within a decade. The ringed seal was chosen by the IUCN Species Survival Commission as one of 10 climate change flagship species to illustrate the impacts of climate change on polar habitats, including the effects of ice loss on ice-adapted species (IUCN Species Survival Commission 2009).

I.4.2. Multilateral Environment Agreements for Arctic biodiversity

According to a recent UNEP study, among the 500 international treaties and other agreements related to the environment, two thirds of these are regional in nature and several global and regional Multilateral Environment Agreement (MEAs) are relevant to the Arctic. There also exist a few MEAs, which contain an exclusive Arctic scope, such as the Agreement on the Conservation of Polar Bears, signed by all Arctic nations that have polar bear populations, and the Agreement between the Governments of the United States and Canada on the Conservation of the Porcupine Caribou Herd.

The objectives, priorities, and levels of implementation of MEAs differ significantly from one agreement to another, even where an overall objective might be protection of biodiversity. The scope of biodiversity-related MEAs varies and includes:

- the conservation of individual species;
- migration routes and habitats;
- the protection of ecosystems;
- trade in species;
- safe transfer, handling, and use of living modified organisms; protected areas; and,
- sustainable use of biodiversity.

Under the United Nations Convention on Biological Diversity (CBD) there is a working group set up under Article 8(j), which deals with Indigenous knowledge as it relates to the conservation and sustainable use of biodiversity.

Biodiversity is defined by the CBD as:

> *"the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems, as well as the ecological complexes, of which they are part; this includes diversity within species, between species, and of ecosystems". Biodiversity includes the multitude of poorly known species, of which there are many in the Arctic, that collectively provide the foundation for food webs and ecosystems. The interactions between humans and their surroundings are also part of the diversity, vitality and sustainability of life on Earth.*

Important MEAs in the context of Arctic biodiversity include conventions such as:

- the Ramsar Convention on Wetlands;
- the Convention on Biological Diversity;
- the UNESCO Convention concerning the Protection of the World Cultural and Natural Heritage (WHC);
- the Convention on Migratory Species (CMS) and its associated agreements such as the Agreement on the Conservation of African-Eurasian Migratory Water birds (AEWA); and,
- the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

Regional and/or species-specific agreements, such as the Bern Convention on the Conservation of European Wildlife and Natural Habitats, the International Convention for the Regulation of Whaling (ICRW), and the Agreement on the Conservation of Polar Bears, are also highly relevant to the conservation of Arctic biodiversity.

The following table[13] shows the MEAs and relevant international fora and their relevance to Arctic Biodiversity:

Arctic-relevant MEAs and international fora	High and direct relevance	Medium Relevance
Legal: MEAs, including species agreements, and mechanisms for development of enhanced cooperation	● Agreement on the Conservation of African- ● Eurasian Migratory Waterbirds (AEWA) ● Agreement on the Conservation of Polar Bears ● Convention for the Protection of the Marine ● Environment of the North-East Atlantic ● (OSPAR) ● Convention on Biological Diversity (CBD) ● Convention on Migratory Species (CMS) ● Convention on Wetlands (Ramsar Convention) ● International Convention for the Regulation ● of Whaling (ICRW) ● United Conventions Law of the Sea (UNCLOS) ● United Nations Framework Convention on ● Climate Change (UNFCCC) ● Stockholm Convention on Persistent Organic ● Pollutants	● Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) ● Convention on the Conservation of ● European Wildlife and Natural Habitats ● (Bern Convention) ● World Heritage Convention (WHC)
International Organizations and Policy Forums	● Arctic Council ● Barents-Euro Council (BEAC) ● European Union – Northern Dimension Policy ● World Trade Organization ● United Nations Forum on Forests (UNFF) ● International Maritime Organization (IMO)	● Council of Baltic Sea States (CBSS) ● Conference of Arctic Parliamentarians (CPAR) ● European Economic Area (EEA) ● Nordic Council of Ministers (NCM) ● Northern Forum

Despite commercial sealing have been practiced on quite a large scale which pushed at least the hooded seal to be classified by IUCN as "Vulnerable", the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) does not listed any of Arctic seals species in any of its three annexes.

With the IUCN Red List reassessment of all mammals species available in 2015, it is highly probable that most of Arctic seals species status will be amended, with all the ice dependent species shifting from “Least concern” to “Vulnerable” or higher endangered categories. If it is the case, the listing of these seal species in CITES Annexe II or Annexe I will be possible.

II. Sustainability of Indigenous seal hunting

II.1. Sustainable use of living resources

The “sustainable use of living resources“ has been define by the Convention on Biological Diversity as follow:

"Sustainable use" means the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.

The CBD produced in 2004 The Addis Ababa Principles and Guidelines for the Sustainable Use of Biodiversity to “provide a framework for assisting Governments, indigenous and local communities, resource managers, the private sector and other stakeholders, about how to ensure that their uses of biological diversity will not lead to its long-term decline.”

Two of these 16 practical principles[14] (PP) seem to be of major interest regarding indigenous seal harvest, the 11th:

> *Users of biodiversity components should seek to minimize waste and adverse environmental impact and optimize benefits from uses.*

and the 12th:

> *The needs of indigenous and local communities who live with and are affected by the use and conservation of biological diversity, along with their contributions to its conservation and sustainable use, should be reflected in the equitable distribution of the benefits from the use of those resources.*

As Inuit peoples are both “active users” and deeply “dependent on the long-term preservation of living resources”, they are directly concerned by those two PP. As far as Inuit “Qaujimajatuqangit” (body of knowledge and unique cultural insights of Inuit into the workings of nature, humans and animals - Inuktitut from Nunavut) and hunting practices are followed by seal hunters, we can expect Inuit hunters to apply those Practical principles.

Traditionally, seal hunting is associated with a deep spiritual connection between the hunter and the seal, conducting the former to acknowledge the second for accepting to be killed, the separation between human and animals kinds being much less marked in the Inuit culture than in European and occidental cultures.

Waste is seen as selfish (at least) by Inuit and all parts of hunted seal are used for alimentation (meat), clothing (pelt), tool manufacture (bones and tendons), oil production (fat and blubber).

Equitable distribution of seal's meat to an enlarged family is also a traditional practice. Such a traditional sharing of hunted and collected natural resources is also of critical importance for ensuring food security for the whole community, a problematic question is those remote regions where 'southern food' is scarce (at least) and very expansive.

Minimizing adverse environmental impact of sealing and maintaining harvest to a sustainable level are both questionable aspects of Inuit seal hunting as “Qaujimajatuqangit” about seal hunting is limited to a local scale and accept overharvest in order to prevent unpredictable low hunting success periods.

IUCN had already produced a policy statement[15] about the sustainable use of wild living resources en 2000, concluding that:

a) Use of wild living resources, if sustainable, is an important conservation tool because the social and economic benefits derived from such use provide incentives for people to conserve them;

b) When using wild living resources, people should seek to minimize losses of biological diversity;

c) Enhancing the sustainability of uses of wild living resources involves an ongoing process of improved management of those resources;

and d) Such management should be adaptive, incorporating monitoring and the ability to modify management to take account of risk and uncertainty

Those conclusions are completed by 4 considerations which could increase the sustainability of wild living resources:

a) The supply of biological products and ecological services available for use is limited by intrinsic biological characteristics of both species and ecosystems, including productivity, resilience, and stability, which themselves are subject to extrinsic environmental change;

b) Institutional structures of management and control require both positive incentives and negative sanctions, good governance, and implementation at an appropriate scale. Such structures should include participation of relevant stakeholders and take account of land tenure, access rights, regulatory systems, traditional knowledge, and customary law;

c) Wild living resources have many cultural, ethical, ecological, and economic values, which can provide incentives for conservation. Where an economic value can be attached to a wild living resource, perverse incentives removed, and costs and benefits internalized, favorable conditions can be created for investment in the conservation and the sustainable use of the resource, thus reducing the risk of resource degradation, depletion, and habitat conversion;

d) Levels and fluctuations of demand for wild living resources are affected by a complex array of social, demographic, and economic factors, and are likely to increase in coming years. Thus attention to both demand and supply is necessary to promote sustainability of uses.

Regarding the management aspect, a question also integrated in the CBD Addis Ababa Principles and Guidelines, Inuit people do ask to be part of and in some extent are already part of management decision-making and actions. Due to their very different political status, Inuit peoples involvement in management is quite different.

In Canada, Inuit are distributed through 3 Federal territories, Nunavut, Yukon and Northwest Territories, and 2 Provinces, Quebec (Nunavik) and Newfoundland & Labrador. In Territories, natural resources management is assumed by local governments, including sealing management. Inuit in Nunavut assumes this management where 83,6% of inhabitants is Inuit (29,118 on 35,591 peoples in 2013). Reversely, in NWT, Inuit are a small minority with 3,100 people without direct access to management decision-making, the same being true in Yukon, with a total population of 255 people.

In Nunavik (91% of 11,000 people), the situation is quite different as the region does not have the same political status, being part of the Quebec Province and, as a minority, Inuit have no direct access to management decision making. But as they are part (65% of administrative working people) of the Nunavik regional government settled in 1978, they participate to Inuit harvest support and wildlife conservation.

Situation for Labrador Inuit (Nunatsiavut: 2,160 people) is a mixt of the Nunavik and Nunavut status as the Nunatsiavut acquired a self government right on their land, coastal northern most Labrador,

in 2005 with jurisdictional authority over health, education and justice, but not on environment and living resources management still decided by the Province government.

In Alaska where Inuit peoples (mainly Inupiaq et Yupik) totalize nearly 50,700 people, natives have no direct involvement in management decision-making, but may defend their interest through the Alaska Inter-Tribal Council and tribal and village governments.

In Greenland, where 89% of inhabitants are Inuit (51,349 on 55,695 in 2012), the government, mostly involving Inuit representatives, is in charge of natural resources management without any intervention of Danish government.

In Chukotka and Far East Siberia, natural resources management is centralized and directly organized by Russian Federation government.

In Canada (mostly Nunavut), Alaska, Greenland and Chukotka, Inuit hunters participate to wildlife monitoring, being involved in some scientific programmes as active partners in a so called community based monitoring (CBM). The scope of CBM is diverse and complex and continues to develop as experiences of integration are shared. These monitoring approaches range from programs involving local stakeholders only in data collection (citizen science) with the design, analysis and interpretation undertaken by professional researchers, to entirely autonomous monitoring schemes entirely run by local people.

The Greenland government is piloting a natural resource monitoring system whereby local people and local authority staff are directly involved in data collection, interpretation and resource management. The scheme is called *Piniakkanik sumiiffi nni nalunaarsuineq* (Opening Doors to Native Knowledge) and produced various management decisions concerning marine habitat conservation, marine fishing techniques and adaptation of hunting seasons to increase protection of threatened species[50].

The main problem concerning sustainable use of living resources remain the opposition between the European ("western industrialized countries") and indigenous perspectives about what is sustainable or not. European position is scientific knowledge based, using large time and space scales, and supposed to be cultural and spiritual perspectives free, but have to deal with ethical and existing legacies. Inuit position is traditional knowledge based, using local space scale and traditional oral knowledge, deeply embedded in cultural and spiritual values, and have to be consistent with everyday life conditions in a very harsh and scarce resources productive environment not compatible with farming or agriculture, where food security is major every-day problem, and the more and more pronounced autodetermination and self governing claims.

II.2. Seals populations trends and sustainability of sealing

II.2.1. Seals populations trends

Because of lack of sufficient data, most Arctic seals populations trends are not available except for very few of them.

Harp seal

The Greenland Sea population seems to be stabilized or in light decrease as the population was estimated as 649,566 seals in 2011, which is, according to modeling, a little bit less than 2008 estimate.

The White and Barents Seas population was estimated as 1,364,700, with a pup production of 163,032 pups, which is slightly higher than the estimates obtained from surveys completed between 2005 (122,658; SE=19,625) and 2009 (157,000; SE=16,956). However, the estimate is considerably lower than survey estimates prior to 2004 (~300,000). The data available are not sufficient to state between a declining or stabilizing population trends.

The northwest population, living between Canada and Greenland, is considered "increasing", especially on the Front region off Newfoundland, with a total pup production estimate of 1,630,300 pups and a total population of 8,110,000 seals. But the pregnancy rate is declining and the mean age of reproductive maturity increase. Consequently, population trends are difficult to assess.

Ringed seal

As ringed seal do not aggregate on whelping grounds, each female giving birth to its pup in under snow lair, pup production is not available for this species and most estimates are based on visible hauled out adult seals on ice during their basking period. For those reason, trends are not available for this species which is supposed to totalize 3 to 4 millions seals.

Hooded seal

The Greenland Sea population is considered as "in decline" with an annual pup production of 16,000 (2007) and the Report of the Joint NAFO/ICES Working Group on Harp and Hooded Seals (WGHARP) in 2012 recommended no harvest to be allowed for Greenland sea hooded seals.

The northwest population, living between Canada and Greenland, is though to be "probably increasing", with a total seal pup production of 116,900 (2005), higher than in the 1980's[16].

The species is though to totalize 662 000 hooded seals.

Bearded seal

As bearded seal do not aggregate on whelping grounds and live mostly solitary in remote regions, no population trends are available for this species which is supposed to totalize 875 000 seals.

Spotted seal

The remoteness and dynamic nature of their sea-ice habitat along with their broad distribution and seasonal movements makes surveying spotted seals expensive and logistically challenging. Spotted seal haul-out behavior likely varies based on many factors such as time of year and time of day, daily weather conditions, and age and sex. Consequently, no current accurate abundance estimates have been published which is supposed to totalize probably 400 000 seals in the Arctic seas.

Ribbon seal

The current population trend of ribbon seals cannot be determined from the time series of imprecise and potentially inaccurate abundance estimates. But High rates of ribbon seal sightings in recent surveys, and reports from hunters that indicate stable or rising numbers, suggest that there has not been a recent dramatic decline[50].

The species is though to totalize 675 000 ribbon seals in the Arctic seas.

Walrus

Using aerial survey data and simulation including catches and age and sex structure of animal caught, the 3 Greenland walrus population were estimated to be possibly decreasing for the Baffin bay, decreasing for the West Greenland / Southeast Baffin island populations and as stable or slightly increasing for the East Greenland population. The Svalbard population shows an increasing trend. The Kara Sea area walrus stock may also be increasing, although information for this area is very limited.

Aerial survey results of Pacific walrus are not directly comparable among years due to differences in survey methods, timing of surveys, segments of the population surveyed, and incomplete coverage of areas where walruses may have been present; and do not provide a reliable estimate of population trend.

The species is supposed to totalize 200 000 - 250 000 walruses.

Harbor seal

Because of variable methods, dates, and localities of the surveys conducted in northwestern Atlantic, no population trend is available for Canadian harbor seal population.

The Greenland harbor seal populations (which totalize about 1,000 seals) are thought to be stable despite some shifts in distribution due to sea ice condition.

The Svalbard population seems to be stable, but its small size (1,888 seals) make it vulnerable to chance events, such as disease epidemics, and to climate change impacts.

Aerial surveys in 2011, 2012 and 2013 yielded a new minimum point estimate of 7,081 for the entire Norwegian coast, but no population trend could be stated.

No population trends are available form the Kara/Barents sea populations nor the Icelandic or Pacific populations.

Gray seal

Norway coast population is thought to have been increasing since 2011 and the Norwegian TAC has been settled to maintain the population in a stable trend. The northern most Norwegian and Russian population trend of Murmansk region is unknown.

Icelandic population seems to be stable with a low pup-production of about 4,200 pups, just above the management Icelandic government objective (4,100 adults). Such a harvesting objective seems to be unsustainable as it does not fit with the 70% maximal rate

Based on surveys conducted in the three main breeding grounds in Atlantic Canada, Sable Island (Front region), Nova Scotia coast and Gulf of St Lawrence populations are all increasing with respective pup production of 62,000; 3,000 and 11,300.

Concerning the Arctic Seas, where the species does not actually reproduce, the gray seal is considered as vagrant, coming from subarctic population stocks.

II.2.2. Sustainability evaluation of harvest rate

The sustainability of seal harvest is equally proclaimed by the divers seal hunting nations, Canada, Greenland, Norway and Russian Federation, but seal hunt impact on seals populations evaluation procedures, based on scientific agencies (DFO for Canada) or independent organisms (ICES), used by them are different and do not apply 'precautionary approach' with the same efficiency.

To be considered precautionary, there needs to be convincing evidence that the management approach to exploitation will generate a low probability of harmful effects on the population. What constitute a harmful effect and an acceptable level of risk of this happening are ultimately value judgments. Nonetheless, such criteria need to be incorporated as specific management objectives so that the probability of meeting them under different scenarios incorporating uncertainty can be evaluated[17].

Canadian management of commercial harp seal hunt is based on the “objective-based fisheries management” procedure (OBFM), a scientific process involving[18]: (i) estimating the production of harp seal pups from aerial surveys; (ii) estimating total population size using a model based on a time-series of estimates of pup production and pregnancy rate data; (iii) projecting the model forwards in time to simulate the effects of varying hunt levels; and (iv) assessing the simulated projections in terms of management objectives.

The OBFM approach is more widely adopted and has been applied to other harp seal hunts, including that in the White Sea (NAFO-ICES). OBFM would be categorized as the “traditional” approach to management, in that it does not have a catch limit algorithm and has not been tested by simulation. OBFM is therefore potentially vulnerable to failure arising from incorrect assessments, including model specification and biased input data. It also provides no guarantee that management measures will provide the desired balance among specified conservation objectives in the long term[19].

Other procedures for setting limits on takes of marine mammals include the Revised Management Procedure (RMP) of the International Whaling Commission and the calculation of levels of Potential Biological Removal (PBR). Both approaches are widely acknowledged to be precautionary, attempt to provide a fully specified catch algorithm, ensure a very low probability that the stock will decline below a given level, and are robust to errors in input data. Both the RMP and PBR follow the "management procedure type approach", where rules for setting catch limits are agreed in advance, and long-term performance has been tested by computer simulation.

The RMP utilizes a time-series of abundance and catch data that make the algorithm complicated compared with the single equation involving current abundance that is the basis of PBR, but utilizing these data result in RMP catch limits becoming more precise over time.

NAFO/ICES Working Group on Harp and Hooded Seals, the scientific advisory committee followed by the NAMMCO for seal hunt management in Greenland Sea, Barents Sea and White Sea, uses the OBFM for its general seal hunt impact evaluation but limits the catches allowed within the PBR for data-poor species to reduce the risk of overexploitation due to catches exceeding the seal replacement yield. Norway and Russia, at least in Atlantic Arctic Basin, follow NAFO-ICES advices for their commercial seal hunting management and TAC definition.

Greenland do not yet manage its seal hunt through TAC process or any other catches management direct procedures but its regulating actions on local hunting season opening and age and or sex ratio of catchable seals, boat size, seal hunt permits delivery and protected areas is based on NAMMCO reports and advices for the East Greenland and the Canadian scientific data for the West Greenland seals populations. In addition, local seals catches reports are taken in account in decision making despite their questionable reliability.

In some cases, mostly harp seal, walrus and other aggregating species on whelping grounds, utilization of direct pup-counting data series would be more performant than a single model-based estimate of current total population, as used for PBR, which have to deal with the difficulties to estimate reproductive success and mortality rates which may vary greatly from year to year with climate and other Arctic ecosystem variables which vary on a chaotic mode.

It is important to note that seals being long living species, with a sexual maturity delayed as late as 4 to 5 years for most species, pup-counting data have to be considered cautiously as a decrease in pup production will impact the seal reproductive capacity 4 to 5 years later at least.

For non-aggregating species, ringed and bearded seals, which are also living in the most remote parts of the Arctic seas, the development of management procedures is problematic because of the scarcity of sufficient and reliable population estimates and trends and the lack of reproductive and mortality rates on which to built accurate abundance model used by both RMP and PBR.

To summarize, management procedures for seal hunting used by the different sealing nations have to be homogenized and improved to maximize the precautionary approach as IWC done for whales management. Those management procedures have to be adapted to the great variability of data availability beyond the aggregating and non-aggregating species, include clear management objectives in terms of conservation and economic sustainability, allowing different scenarios to be tested by simulation. Additionally, testing simulations would have to explore the different scenarios for Global Change effects on seals populations, particularly for sea ice dependent species.

II.3. Seals products Indigenous use trends

The diet of Arctic indigenous peoples has changed considerably in recent years through the introduction of non-local foods available from stores[58]. Traditional foods typically account for less than half of energy intake. In Greenland, for example, consumption of local foods ranged from 10% of the diet of women in Nuuk to one quarter of the diet in the hunting districts of Uummannaq and Qaanaaq. The same studies found that consumption of local foods also varied by the age of the person, from an average of 13% local food for those under 30 years of age to one quarter for those older than 50. Nonetheless, traditional foods can provide the majority of many vital nutrients (protein, vitamins, minerals) in some communities where stores are absent or poorly provisioned.

Another indicator is participation in local food production, which can illustrate the cultural significance of hunting, gathering and fishing. For example, a 2007 study in the Inupiat community of Kivalina in Alaska found that at least one household member in 95% of households surveyed had harvested wild food that year. Sharing among households remains important and widespread, so that levels of use are often higher than levels of participation in the actual harvest. In the Kivalina study, fish were the most widely used (98% of households), followed by marine and land mammals (by 93%). The extent of use in Kivalina is typical of most Alaska villages.

The annual replacement value of traditional food consumed by Inuit in Nunavut has been evaluated to approximately 40 million CAD (Statistics Canada 2001). Moreover, beef, lamb, cow milk, chicken eggs and other 'southern' foods are often expensive in Arctic communities, though where local foods are sold commercially, their prices may be high as well.

Documentation of the harvest and use of wild foods in the Arctic is inconsistent, with varied methods and indicators in use, and often large gaps between surveys. As a result, comparison at a regional scale and trends of use of wild food are nearly impossible.

In Alaska, harvests in the 1990s in areas largely beyond the tree line in the Arctic, western, and southwestern parts of the state averaged, respectively, 234 kg, 301 kg, and 169 kg of edible food per person per year. In the Arctic area, marine mammals comprised the largest share, at just over 40% of the total harvest, followed by fish and terrestrial mammals. In the other areas, fish contributed over 60% of the total harvest. In all areas, birds, shellfish, plants and other foods made only modest contributions by weight. There are several indications that overall harvest levels are declining around Alaska, due to many factors, but the trend varies spatially and temporally, making it difficult to confirm any patterns in the limited data that exist.

In Canada, the 1989 harvest in the Northwest Territories (NWT, which at the time included what is now Nunavut) was about five million kg of fish and animals, or 232 kg per person. More recent data from the current NWT focus on participation rather than harvest (Northwest Territories Bureau of Statistics 2009). About half of NWT residents participate in hunting, fishing or trapping. 40-60% of the residents of small communities obtain three quarters or more of their meat and fish from hunting and fishing in the NWT, a figure that has not changed in the past decade. In medium sized communities, however, consumption of local fish and meat appears to be declining. Participation in hunting, fishing and trapping has declined in the past decade or two, but appears to be stabilizing.

Local wild food production operates differently in Greenland than in Canada or Alaska. Professional hunters, who sell their products in local markets known as *brædtet*, provide 80-90% of the locally produced meat that is consumed, with the rest coming from leisure time hunters' personal activity. The number of active professional hunters is decreasing, however, and the average age of hunters has increased sharply in recent decades. In 1987, half of the professional hunters were under 35 years of age, whereas today only a quarter of the hunters are that young. Another quarter of hunters are over 55 years old. Informal exchange of hunting and fishing products in small settlements remains important, but the professional hunting in Greenland is experiencing an overall downward trend.

In Arctic Russia, there is both commercial hunting and personal-use (or subsistence) hunting. In the post-soviet period, the population has dropped across much of the Russian Arctic, and higher prices have made access to hunting more difficult. As a result, most commercial hunting activity has declined. Subsistence hunting and fishing, however, have increased, especially around settlements, as wild foods

have become increasingly important in local diets due to the lack of alternatives. Traditional marine mammal harvests have been resumed in Chukotka, for example. At the same time, some illegal hunting has increased as enforcement has declined. The future of hunting in the Russian Arctic is tied closely to economic conditions in the region and across the country, making projections difficult at best.

Some qualitative interviews realized on an opportunistic mode by Le Cercle Polaire in west Greenland since 2009 indicate that cultural globalization affect food consumption in medium to large sized communities in the regions, particularly in young population as seal meat "have to be accompanied by French fries to be eaten by kids“. But, such effects of cultural shifts can only express when and where access to 'southern food' is available at reasonable prices which make it competitive with hunted meat indirect coasts (fuel for boats, riffle ammunitions and other equipments).

To summarize, the impact of globalization on Inuit feeding preferences and traditional hunting way of life seems to favorize the regression of seal hunting interest and seal meet consumption in young Inuit along with the development of southern products availability in Arctic regions, the increasing education level (more pronounced in Russian north and Nordic countries), and the access to other cultures and non traditional knowledge sources through the internet and other globalized communication channels (GSM, TV…). That trend is more pronounced in Greenland, Alaska and some parts of Canadian Arctic, and is clearly dependent on the secured access to 'southern' food in the remotest settlements. Such a phenomenon is by definition slow, following Human generational pace, but could have measurable effects on seals harvest as soon as a couple of decades, and possibly coinciding with the summer ice free Arctic Ocean onset, the most critical period for Arctic seals survival.

II.4. Uncertainty about Climate Change impact

II.4.1. The shift to a seasonal Antarctic-like sea ice in the Arctic

If the major impact of Global Change in the Arctic, a summer ice-free Arctic Ocean, is certitude, when and where stay open questions.

If the onset of such a seasonal Antarctic-like sea ice variability in the Arctic, with a sea ice covered Ocean in winter and ice-free Ocean in summer, can't be predicted with certainty (5 to 70 years depending of the models and scenarios), we can be sure that Arctic seals as well as the all Arctic marine biodiversity will be faced to that seasonal sea ice shift before the end of the century. The shifting between the normal Arctic system (a huge winter arctic sea ice extent covering all the Arctic seas and northern most parts of subarctic seas and a permanent summer melting resistant sea ice covering half of winter extent) to an Antarctic-like system has already begun, impacting coastal and continental shelves waters of Arctic seas, the most productive parts of the Arctic ocean where arctic seals live.

Detailled analysis of the global effects of the seasonal sea ice shift is given in Annex 3 : Climate change impact on Arctic Seals.

II.4.2. Impact of Climate Change on Arctic marine ecosystems

Climate change is by far the most serious threat to Arctic biodiversity and exacerbates all other threats.

The impacts of climate change include a long list of changes in the physical environment, which will have profound effects on Arctic biodiversity. The conditions will vary spatially, but aside from temperature increases, the most pronounced changes are likely to include[20]:

- accelerating loss of sea ice cover, especially multi-year ice, and
- earlier and more variable sea ice and snow melt
- later onset of autumn sea ice formation and snow precipitations

- disappearance of coastal ice shelves
- more frequent and severe extreme events (icing, erosion, storms, flooding, fire)
- ocean acidification.
- increased precipitation with more winter snow
- increased freshwater discharge into the Arctic Ocean
- increased periods of summer drought but with more severe rains
- flooding of low coasts
- coastal erosion
- increased frequency of winter thaw-freeze events including rain-on-snow resulting in ice crust formation
- earlier drying of ponds
- disappearance of perennial snowbeds
- thawing permafrost and thermokarst development with drainage of peatlands and ponds or establishment of new ponds

The extent to which these effects are expected to develop varies between projections, but the overall direction is clear, and several of them are already evident now.

II.4.3. Climate Change impact on Arctic Seals

Climate change predictions for the coming decades may change the prognosis for some seal species significantly. In a warmer Arctic, endemic seals will face to extreme levels of habitat change, the most dramatic being the reduction in sea ice extension as well as a sooner melting in spring (see section II.4.1).

Impacts of sea ice loss depend on the use of the different kinds of icy habitats by the seal's species for their reproduction, molting and hauling-out behaviors and by where they catch their preys (see Fig. II.4.3-A). As detailed knowledge about the way each species is linked to sea ice is lacking, there is a significant difference of opinion regarding seal species that is most vulnerable to climate change. Most likely all ice-associated species will face great challenges.

For more details, see Annex 3 - Climate Change impact on Arctic seals.

Of the Arctic seals, the hooded seal is generally considered as the most sensitive as it has very specific feeding requirements and use sea ice for whelping and molting.

Considering sea ice conditions requirements for denning and whelping, ringed seal appear to be more at risk than any other seals with a direct impact on pup survival of shore-fast ice and snow cover conditions.

As most of Arctic seals avoid multi-year sea ice, too thick and far from productive continental shelves, this icy habitat has the less impact on seals survival. The paradoxe is that it is given as the very last habitat to resist to summer sea ice melts in some models at the end of the 21st century, a reluctant habitat not suitable for seals.

Less ice, together with increased water and air temperatures, will impact seals' mobility and the density and distribution of their prey. It will increase competition from invasive temperate species and increase predation from subarctic species formally unable to reach them, such as killer whale. Finally, it will increase the risk of disease, and possibly increase the risks from contaminants. Seals will also be affected by an increase in human activities like shipping and exploitation of natural resources in areas previously inaccessible due to ice.

Regarding natural evolutionary adaptation abilities of mammalian species, 5 to 70 years is very short, a lap of time covering less than one generation in the worse hypothesis to 3 generations in the better case, a lap of time drastically too short for any kind of genetic adaptation process.

With seals species which behaviors are much less plastic than primates or cetaceans ones, most scientist think very unlikely they can develop efficient behavioral adaptations to sea ice retreat and elongation of melting season, especially in shifting northward their whelping grounds as melting sets sooner and sooner. Most sea ice seals systematically return to their birth site to reproduce despite the poor sea ice cover[58].

Seasonal pack ice, especially when it extend over continental shelves, the most productive regions of Arctic seas, is used by most Arctic seals, being of critical importance for their feeding, most of their preys living in close relation with ice covered continental shelves.

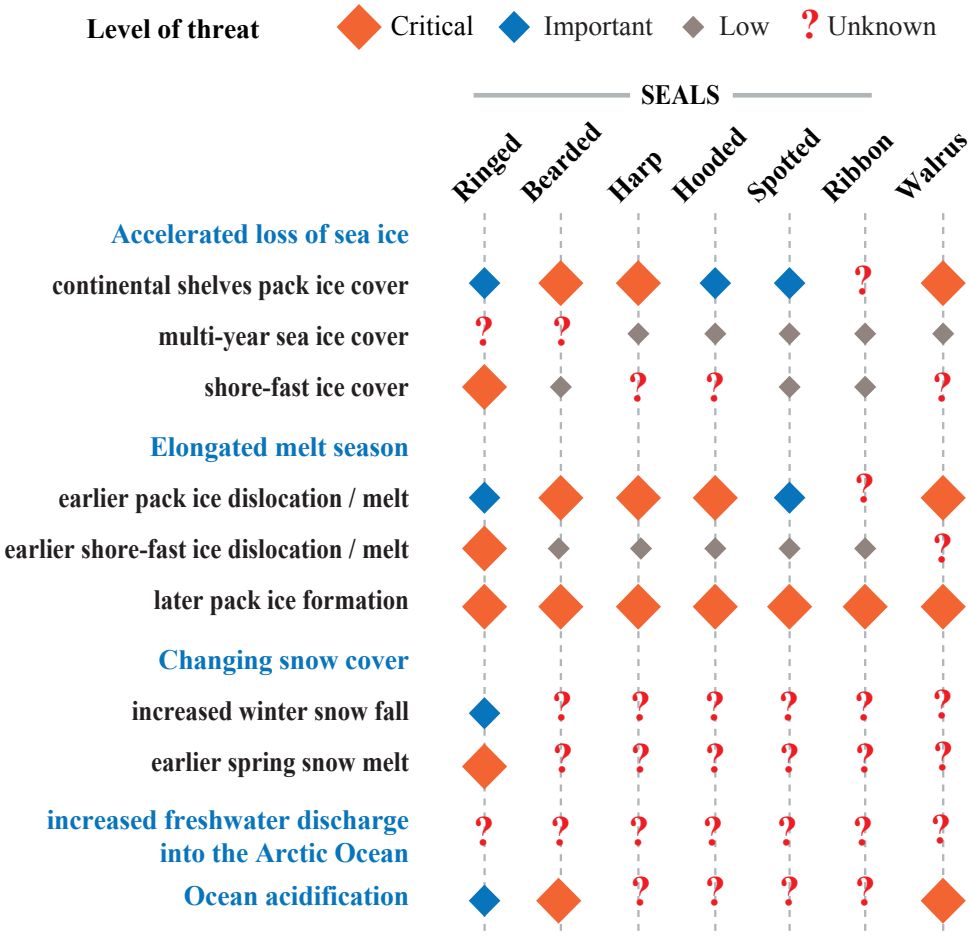


Figure 3 -B **Expected Climate Change impact on the Arctic seals and walrus**

Harp and ringed seals, the main target of Inuit hunters (respectively 40 and 47% of total Aboriginal catch, see section I.2 and Annexe 2), are critically linked to seasonal pack ice for all aspects of their life, the second depending nearly exclusively on shore-fast ice for its reproduction.

As Climate Change impacts principally shore-fast ice and dense seasonal pack ice, harp and ringed seals are expected to be highly threatened by the earlier melting season onset. Those changes would greatly reduce reproductive success, sooner dislocation and melting of ice reduce pup survival, as well as increase adult mortality due to expanded energetic costs for their molting (thermoregulation cost much higher in water than above ice in air) and for feeding as sea ice will be located farer of their feeding grounds. Seal pup survival in ringed seal will also be reduced by the changing regime of snow fall, the reduction of snow on shore-fast ice reducing the availability of whelping dens for the mothers or inducing higher mortality rates in pups due to insufficient protection against the atmospheric cold and predation by polar bears and Inuit hunters.

Considering the lack of reliable knowledge about the future reaction of Arctic seals population to Climate Change, specially for harp and ringed seals, the main target of Inuit hunters, the Precaution Principle should be applied to seals harvest, both commercial and subsistence, and hunting quotas should be strictly linked to reliable report of all catches, including struck and lost animals, a principle also applyable to Inuit hunters, to maintain an efficient sustainable management of seals stocks as long as it will be possible in the changing Arctic Ocean.

III. Indigenous seal hunting and Animal Welfare legislations

III.1 What does « animal welfare » mean ?

In addition to the various religious, ethical and philosophical bases for animal welfare, there is increasing recognition of the ties between animal welfare indicators and animal health. In countries around the world, animal welfare concerns garner more attention as consumers recognize the links between animal health and animal welfare, and animal welfare and human well-being. The challenge is to increase food animal production while simultaneously ensuring good animal welfare and protecting food security.

What we mean by « Animal welfare » depends in part of values that differ between cultures and individuals. These differences can be summarized under three broad headings (Fraser, 2008):

1- physical health and biological functioning of animals

2- « affective states » of animals

3- ability to live in a reasonably « natural » manner

As pointed out by a recent FAO legislative study[21], because the earliest animal welfare legislation was developed in countries where industrialized production is the norm, these legislative instruments tend to focus on farm animals housed, transported and slaughtered in high technology environments designed to intensify production. However, animal welfare legislation need not be limited to industrialized production. Well drafted legislation can and should apply to other types of production such as subsistence farming and small-scale commercial production. Different scales of production raise different concerns, but the basic animal welfare principles are common to all.

Animal welfare often stimulates strong emotions and it is important that, while addressing ethical aspects of new technologies whenever appropriate, developments in the field of animal welfare are based on a firm scientific background

III.2 International context

III.2.1 The World organization for Animal Health

The World Organization for Animal Health (OIE) is the intergovernmental organization in charge of improving animal health worldwide. The OIE has increased in prominence and influence in recent years, especially since it was identified in the World Trade Organization (WTO) Agreement on the Application of Sanitary and Phytosanitary Measures (STS Agreement) as the source of international standards for animal health.

The OIE has elaborated health standards for intensive farming. These standards are found in the OIE Terrestrial Animal Health Code (the Code). The Code aims to ensure the health of terrestrial animals and the safety of animal products in international trade. The OIE and its member states are committed to the harmonization and implementation of the animal welfare standards contained in the Code, while taking into consideration economic and social development needs.

The World Trade Organization (WTO) international trading system is designed to eradicate barriers to international trade through the creation and enforcement of market access rules. As noted earlier, the SPS Agreement identifies the OIE as the source of binding international standards on animal health.

Article XX of the General Agreement on Tariffs and Trade (GATT)[22] lists trade-restricting measures that can be exempted from WTO rules (WTO, 2008), including measures "*necessary to protect public morals" (para. (a)) and measures "necessary to protect human, animal or plant health*" (para. (b)). Legal arguments have been framed to justify an exemption for animal welfare trade restrictions under

both paragraphs, although it is generally agreed that animal welfare issues can more easily be justified as protecting human or animal health than public morals. Yet, because the WTO has not yet directly addressed the issue, the arguments themselves and the likelihood that they might succeed are all speculation.

III.2.2 Universal Declaration on Animal Welfare

"A world where animal welfare matters and cruelty ends"

In recent years, a number of NGOs under the leadership of the World Society for the Protection of Animals (WSPA) have advocated that the United Nations elaborate and adopt a Universal Declaration on Animal Welfare (UDAW). A global petition launched to support the UDAW initiative had acquired over 2.2 million signatures by September 2010 (www.udaw.org). According to established principles of international law, the UDAW would not be binding although it would represent a consensus among states regarding animal welfare and would therefore be considered customary international law.

In 2007, the International Committee of the OIE decided to support the development of a UDAW that would call on countries to acknowledge the importance of animal welfare and that would, at the same time, recognize the OIE as the principal international animal welfare standard-setting body. The International Committee considered that a UDAW would "*complement and promote the work of the OIE, and facilitate global acceptance of OIE standards and their application at a national, regional and global level*".

III.2.3 Animal Welfare and NGOs

If animal welfare international NGOs have originaly targeted farm, companion and laboratory terrestrial animals, some of the most important (Humane Society International, International Fund for Animal Welfare…) developed huge public awareness campains since the 1970's denounciating cruelty of seal hunt. These campains where largely relayed by national NGOs (Cnada, US, UK, Belgium, Netherland, France…) and some environment protection NGOs, such Greenpeace. The first EU seal ban in 1983 resulted from the huge EU citizen's support to NGOs campains against pup seals killing.

Most of national and international NGOs with Animal welfare concern had never targeted Inuit seal hunting, but their actions against commercial sealing killing methods resulted in brutal collapses of sealskin market damaging Inuit ability to sell their own products, and some have presented official apologies to Inuit communities.

Resulting from a regain of intensity of activism against seal hunting durint the early 2000', EU pronounced a second seal ban in 2009. However, during the 2008 EU seal ban stakholders consultation process, participating NGOs asked for the Inuit exemption, a measure unsufficient to minimize sealskin market collapse.

III.3 EU agreements

The Council of Europe (COE), an international organization whose membership consists of the governments of nearly all the countries on the European continent, has been one of the leading fora for the promotion of animal welfare since the 1960s. Seeking to recognize the importance of animal welfare and the contributions animals make to human health and the quality of life, over time the COE has adopted six conventions on animal welfare. These have facilitated regional harmonization of animal welfare standards in the COE's member states.

In line with the COE conventions on animal welfare, the Parliamentary Assembly of the Council of Europe (PACE) has adopted 3 Recommendations and a Resolution adressing the seal hunting.

Since the Maastricht Treaty in 1992, when the Declaration on the Welfare of Animals annexed to the Treaty was the first reference to animal welfare in EU legislation, the legal basis for animal welfare in EC treaties has been progressively strengthened. A detailed historic presentation of these is given in Annex 4.

IV. EU seal ban dispute

IV.1. Historic context

1983

The first EU seal import ban on sealpup skins was initiated in the last 1970's by US and Canadian NGOs (IFAW, Greenpeace, PETA, Humane Society International US and Canada…), campaigns against harp seal white coats and hooded seal bluebacks large scale harvest on spring sea ice off Newfoundland, shinned in the spotligh by celebrities such as Brigitte Bardot in Europe.

Images of clubbed and bloody baby seals on white sea ice largely used by the NGOs sparked a massive public outcry which leads the EEC to ban sealpups harvest products import in the EEC.

2009

Responding to new NGOs public awarness against seals harvest, mainly conducted by the European Union office of IFAW in Brussels and relayed by most of European Animal welfare NGOs, the second EU seal import ban is mostly an Animal welfare scope legislation.

In December 2005, the Dutch Parliament iniciated a legislative proposal to ban the import, export and all marketing of harp and hooded seals and their derived products. The Resolution asks the European Commission to produce a legislative proposal for a seal ban.

Italy introduced in 2005 a temporary ban on seal products.

In 2006, the German Parliament voted unanimously on a motion urging the government to ban seal products.

In September 2006, the European Parliament called for an end to the trade in seal products. The Resolution asks the European Commission to produce a legislative proposal for a seal ban.

The Parliamentary Assembly of the Council of Europe called in November 2006 on its Member States to introduce national bans on seal derived products.

Consequently, the European Commission asked the European Food Safety Authority (EFSA), to prepare a study on the welfare aspects of the killing and skinning of seals. The report was submitted on December 2007.

In April 2007, Belgium voted a generalized ban on all seals products, followed by the Netherlands in July 2007 and Slovenia in 2008.

On April 2008, The COWI (independant consultancy firm) final report of Assesment study on regulatory frameworks for and the management practices of the different seal hunts was submitted to the EU Commission.

From December 2007 to February 2008, EU Commussion conducted a Public consultation allowing EU and non-EU citizen to express their view on regulation of seal hunting.

In July 2008, the European Commission adopted a proposal for a regulation banning the trading of seal products within, into, and from the European Union to ensure that products derived from seals killed and skinned in ways that cause pain, distress and suffering are not found on the European market.

The EU Commission regulation was adopted in September 2009 and entered into force the 20 August 2010.

During all the process, IFAW European Union organized protest demonstrations, being present in Brussels during the EU Commission session in september 2009 with giant seal figure.

IV.2. From limited to generalized seal import ban

The EU in response to animal welfare concern has pronounced two different seal bans legislations:

- The Council Directive 83/129/EEC of 28 March 1983[23] concerning the importation into Member States of skins of certain seal pups and products derived therefrom, confirmed by an indefinite extension of the Directive adopted through Council Directive 89/370/EEC of 8 June 1989
- Regulation (EC) No 1007/2009[24] of the European Parliament and of the Council on trade in seal products, implemented by the Commission Regulation (EU) No 737/2010 of 10 August 2010[25] 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.

These two seal bans were initiated by NGOs and were justified by the EU Council by "renewable public pressure" (2003) and "doubts… expressed about some of the methods used for hunting seals, such as shooting, netting and clubbing, that can cause avoidable pain and distress" on one hand, and, on the other hand, in a more "Nature conservation" objective by " Doubts about the effects of non-traditional hunting on the conservation of harp seals in the East Atlantic, the Barents Sea and the White Sea" (2003).

It is important to note that for the 2009 seal ban decision, the animal welfare argument was the sole justification that was given, excluding any "Nature conservation" justification.

The 1983 Directive, as well as the 2009 Regulation, foreseen "limited exemptions to respect the fundamental economic and social interests of Inuit and other indigenous communities".

IV.3. Indigenous Peoples perspective

As a stakeholder's perspective, Former Vice-President of ICC Canada, M. Violet Ford, argued that Inuit seal hunting management is intrinsically sustainable and fully consistent with the Convention on Biological Diversity:

Inuit practice sustainable development through a combination of age-old practices and modern institutional frameworks. Inuit pursue their economic goals and economic self-reliance while at the same time practicing sustainable use. Traditional practices of the Inuit relevant to marine resources have been carried out in a manner that contributes to and enhances their sustainable use. Inuit are for the most part a marine-based Indigenous People who rely heavily on marine biodiversity as a food source and for economic self-reliance, and this includes the hunting and harvesting of seals.

This resource has always been hunted and harvested in a sustainable and humane manner. In 1983, the EU passed a limited import ban on some seal products, with an exemption for Inuit. The result was a global collapse in prices for seal products and an attendant 220% increase in the suicide rate of adult male hunters, who are one of the key holders of traditional knowledge.

Sealing in Nunavut represents between CA$4 million to CA$6 million of food each year. Before the 1983 European Union seal ban, incomes from seal pelts could reach up to CA$1 million annually. Those incomes allowed Inuit to buy the equipment and gas necessary to continue to hunt, thus provide then with a crucial source of food[26]. In a small community like Resolute (Nunavut), income from sealing dropped from CA$54,000 in 1982 to CA$1,000 in 1983.

With the white and blue coats ban, the most commercially valuable seal's fur, the whole seal fur market collapsed but recovered partially during the 1990's.

Today, another seal import ban by the EU has been introduced. Is this history repeating itself?

The difference today is that Inuit are producing seal products for economic self-reliance and since these bans are in place, they impact severely on the economy, livelihoods, and traditional knowledge and culture of the Inuit, and on the sustainable use of this biodiversity.

The Canadian seals' products market, mainly provided by Newfoundland commercial harvesting, were severely impacted, the average price for one seal fell drastically by more than 50% within one year[27]:

While in 2006 almost 300,000 seals were landed, generating around 30 million Canadian dollars with an average of about 102 dollars per seal, a massive drop occurred in 2007 when the legislative process for a ban was in full progress. The following year around the same number of seals of around 200.000 was caught while the average price dropped to 32 dollars, amounting to a landed value of 6.6 million dollars. In the adoption year of the ban, 2009, the number of seals dropped to 53,531, generating merely 857,000 dollars with an average of 17 dollars per seal. Since then, the average price has slightly increased and amounted to 19 dollars in 2011, with a number of seals ranging at around 38,000 with a landed value of 735,000 dollars[55].

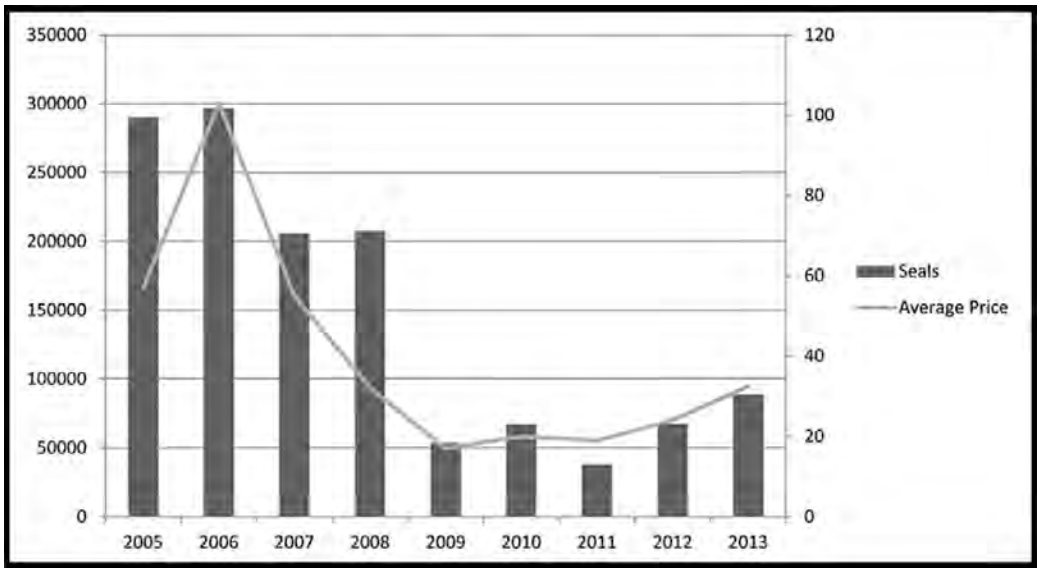


Figure 4- **Number of seals landed in Newfoundland and average seal's skin price since 2005**[55].

The same collapse has been observed in Greenland where the sealskin industry met a 237% decrease of its sealskins turnover (buying to Greenlandic hunters - tanning - seling to internal and external markets). Sales to export market have fallen drastically and around DKK 40 million have been lost from sales in the EU market[28].

Year	EU	Outside EU	Number of sealskins sold	Value in 1.000 DKKR
2004	71 %	29 %	115.723	45.477
2005	69 %	31 %	108.372	54.399
2006	66 %	34 %	91.026 s	59.681
2007	43 %	57 %	45.043	20.889
2008	16 %	84 %	31.307	11.132
2009	22 %	78 %	19.602	5.201
2010	26 %	74 %	23.167	5.760
2011	36 %	64 %	Not available	Not available

Source: Great Greenland A/S

Figure 5 - **Evolution of Greenland sealskin trade since 2004**[29]

Directly dependant of seal's skin market prices, Inuit people encontred an important decrease of their subsistence seal-hunting outcome. The amount of that economical lost is difficult to estimate because of the great variability (if not opacity) of calculation modes used by the different sources. The better evaluation should be by 50% or more on average, but much more higher for northernmost living Inuit, in the most remoted settlements.

"W*ith the cost of living in the Arctic regions many times that of southern regions, it is important that Inuit are able to sell sealskins at a reasonable price and that Inuit artisans and fashion designers have equal opportunity to develop a viable world market for their inspired creations. Even with an Inuit exemption, the effect of a ban on seal-products will render the price of sealskins so low as to make it virtually pointless for seal hunters to sell them.* [30] "

Another difference with the 1983 ban is the existence, since 1992, of the Convention on Biological Diversity and its objectives which include the conservation and sustainable use of biological diversity, and the fair and equitable sharing of benefits arising from its utilization. This treaty provides for involvement of Indigenous communities in the sustainable use of biological resources coinciding with its objectives.

CBD is particularly significant because it recognizes, in its preamble, the close and traditional dependence on biological resources of many Indigenous and local communities that embody traditional lifestyles, and the desirability of equitable sharing of benefits arising from the use of traditional knowledge, innovations, and practices relevant to the conservation of biological diversity and the sustainable use of its components.

This preamble, combined with Article 8(j), is seen as one of the key articles for Indigenous communities. This article provides that each contracting party shall as far as possible and as appropriate:

> *"Subject to its national legislation respect, preserve, and maintain knowledge, innovations and practices of Indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices."*

Indigenous Peoples have been very influential with state governments to ensure that decisions of the Conference of the Parties (COP) provide for the full and effective participation of Indigenous Peoples, and are an indication of the commitment that state governments are making to implement Article 8(j). One such decision adopted by the COP is Decision VII/12 relating to the Addis Ababa Principles and Guidelines for Sustainable Use.

These principles and guidelines provide a framework for assisting governments, Indigenous and local communities, resource managers, the private sector, and other stakeholders to use biodiversity in a sustainable manner. The Addis Ababa Principles and Guidelines could be applied in the case of seal management and overall marine governance by Inuit. Principles and guidelines relevant to the seal ban include Principles 1 and 9:

- Principle 1 states that when an international agreement adopts a policy regarding the use of biodiversity, national laws must be compatible if sustainability is to be enhanced. The associated operational guidelines involve a consideration of local customs and traditions and identify any overlaps, omissions and contradictions in existing laws and policies.
- Principle 9 provides that sustainability of use depends on biological parameters of the resource being utilized and recognizes that social, cultural, political, and economic factors are equally important; it is therefore necessary to take such factors into account and involve Indigenous and local communities, and the people experienced in these different fields, at all levels of the

decision making process. The guidelines state that such factors that could influence the sustainability of management should be taken account of.

The EU seal import ban is inconsistent with the CBD objectives by Inuit

The principal Canadian Inuit organization, Inuit Tapiriit Kanatami, and divers Canadian, Norwegian, Greenlandic professional hunters, manufacturers and traders of seal products, consider this principle has not been applied in the introduction of the seal import ban (SIB). Thus, the seal import ban imposed by the EU can be seen as inconsistent with the CBD objectives and contravenes COP Decisions, such as the above stated Principles and Guidelines which have not been applied in light of the biodiversity being used, the conditions under which they are used, and the cultural context in which use is taking place.

The Eu seal import ban does not fully meet the UN Declaration of the Rights of Indigenous Peoples

Probably as important as the economic aspect, Inuit representatives denounce the "colonialist" interpretation of Indigenous Rights to self-determination as Aiju Peters, an Inuit lawyer and seal's clothes and garnments designer, exposed in an article published in 2010 in the Arctic Journal[57]:

"for a seal-product to be exempt from the ban it not only has to "contribute to Inuit subsistence" but also must be "traditionally hunted" by an indigenous member of the Inuit homelands. This stipulation is very colonial- it implicitly paints a picture of Inuit out on the land, without any contemporary aid, such as store bought clothes, snow machines or rifles. The regulation defines Inuit as "members of the Inuit homelands where they hold aboriginal rights." This does not recognize that according to the Nunavut Land Claims Agreement, 1993. Inuit in Nunavut have the right to define who is Inuit, not the European Parliament.

The regulation does recognize that under the United Nations Declaration on the Rights of Indigenous Peoples "the hunt is an integral part of the culture and identity" of indigenous peoples. However. the regulation omits to mention that the UN Declaration also states that "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.""

IV.4. The EU seal ban has been validated

The World Trade Organization rejected Canada and Norway claims

Considering the EU seal import ban violated the "Free Exchange" principle of World Trade as defined by the World Trade Organization (WTO), Canada and Norway submitted claims against the EU SIB to WTO Dispute Settlement Body (DBS) in February 2012. Examined by a Panel, the DBS concluded on the 25th November 2013[31] that:

"it fulfills the objective of addressing the EU public moral concerns on seal welfare to a certain extent, and no alternative measure has been demonstrated to make an equivalent or greater contribution to the fulfillment of the objective as the EU Seal Regime"

and, despite some inconsistences with EU obligations regarding the Agreement on Technical Barriers to Trade, that:

"it has nullified or impaired benefits accruing to Canada and Norway under these agreements".

The Court of Justice of European Union validated the EU seal import ban

In the same time, the principal Canadian Inuit organization, Inuit Tapiriit Kanatami, and divers Canadian, Norwegian, Greenlandic professional hunters, manufacturers and traders of seal products, made a claim to the Court of Justice of the European Union (CJEU), pointed out, in particular:

"that the principal objective of the basic regulation is the protection of animal welfare and that such an objective does not fall within the exclusive competence of the EU".

The General Court dismissed the action on the 25th April 2013[32], confirming that:

"the objective of the basic regulation, which is the improvement of the conditions of functioning of the internal market, taking into account the protection of animal welfare, cannot be satisfactorily achieved by action undertaken only in the Member States and requires action at EU level"

and observed that:

"in response to concern and pressure from citizens concerned about animal welfare, several Member States had adopted or were in the process of adopting legislative measures aimed at restricting or banning economic activity linked to the production of seal products. Consequently, the coexistence within the EU of different commercial conditions resulted in a fragmentation of the internal market."

Finally, the General Court pointed out that:

"the legislature took care to ensure that the fundamental economic and social interests of Inuit communities engaged in the hunting of seals as a means to ensure their subsistence were not adversely affected. For that reason, the regulations provided for an exception to the ban on the placing on the market of seal products, where those products resulted from seal hunting by Inuit communities and other indigenous communities for the purposes of subsistence."

Irrespective of those decisions, the principal Canadian Inuit organization, Inuit Tapiriit Kanatami, still contested the validity of EU seal ban until the recent Canada – EU Joint Statement signed the 10th of October 2014.

Canada, EU Joint statement gives Inuit seal products access to EU market

Resulting from Canada – EU Comprehensive Economic and Trade Agreement (CETA) negociations initiated in 2014, Canada and the European Union produced the 10th of October 2014 a Joint Statement on Access to the European Union of Seal Products from Indigenous Communities of Canada.

The joint statement sets out the framework for cooperation to ensure that Canadian Indigenous communities are treated the same as any other Indigenous community seeking access for seal products in markets within the European Union.

The joint statement[33] recognizes the importance of preserving traditional ways of life in Indigenous communities and establishes that the two sides will:

- ensure that nothing prevents the participation of Canadian non-Indigenous persons and organizations from processing, manufacturing and marketing Canadian Indigenous seal products;
- explore possibilities for supporting Indigenous communities and traditional ways of life through capacity building and the exchange of best practices;
- explore how Indigenous communities can benefit from the new opportunities opened up by the Canada-European Union Comprehensive Economic and Trade Agreement to develop their economic, social and environmental potential; and
- ensure that Indigenous seal products imported into the European Union are not limited due to their type or intended purpose.

An expert group will work in a collaborative manner with stakeholders to establish the administrative arrangements required for access to the EU available under its exemption for seal products from Canadian Indigenous communities.

If the Canada-EU deal allows "non-indigenous persons" to process, market and manufacture seal products from indigenous harvesters, non-indigenous hunters appear to be left out of the agreement.

This Joint agreement has been denounciated by the Canadian Sealers Association[34] which was "*very disappointed in the Government of Canada's decision to sign a trade agreement with the European Union this coming Friday 26 September, without directly including the east coast seal industry and favoring a very restrictive exemption for Aboriginals. It clearly demonstrates that their understanding of the east coast seal harvest is so narrow and misguided that it is destroying an industry that had been in existence for hundreds of years and is an intricate part of life for all rural people especially in Newfoundland and Labrador, where a very large part of the seal population congregate off our coast, for several months each year.*

A strong commercial sealing industry is essential, if we are to keep a large seal population from getting out of control, and further raising havoc with a very delicate eco-system, that is already being tested to its limits. Also for most sealers, income from harvesting seals has historically represented about one-third of their annual income and it is absolutely essential, that it be maintained".

With this agreement, Canada appears to now accept the indigenous exemption that the European Parliament created in 2009, a condition which had banned Canadian Inuit seal's products from EU market since 2010 as Canadian Inuit and non-Inuit hunters where undistinguishable.

Inuit representatives welcomed the Joint agreement as an important first step in restoring economic opportunities for Inuit sealers[35]:

"*The exemptions applied to the European Union's prohibition on the importation of seals and seal products unfairly discriminated against Canadian Inuit, and we are hopeful that today's announcement marks the commencement of a process that will rectify this concern*," said Nunavut Premier Peter Taptuna.

Terry Audla, the president of Inuit Tapiriit Kanatami, said in a statement that ITK is "encouraged" by the Canada-EU joint statement and sees it as an important first step in restoring economic opportunities for Inuit sealers.

"*We believe that implementing such a plan will take much work and cooperation from all sides. It is critical that Inuit have direct participation as this work proceeds*," Audla said.

Audla said ITK will continue to push for direct Inuit participation in the implementation of the Canada-EU agreement.

And ITK also said that the plans announced Oct. 10 must work for all four Inuit regions and must include a "realistic phase-in timetable."

"*We remain hopeful that the trade of seal products — an abundant, renewable, sustainable and natural resource – be once again a generator of economic growth for Inuit communities*," Audla said.

IV.5. Political consequences

The most evident consequences is the reinforcement of tensions in political and economical cooperation with Canada and Norway which submitted claims against the EU to WTO Dispute Settlement Body.

The whole Arctic countries follow the position expresses by the Canada:

"*Europeans need to learn that the Arctic is not terra incognita, it is not like the Antarctic (...) Many people in Europe believe they should take a role in governing areas that are not anyone's territory.*

Well, the Arctic happens to be owned by the countries around it, and a third of it is in Canadian territory" Peter Harrison, senior federal bureaucrat responsible for Arctic affairs since 2008[36]

and seted aside the EU Permanent observer membership to the Arctic Council demand since 2009:

"*Canada doesn't feel that the European Union, at this stage, has the required sensitivity to be able to acknowledge the Arctic Council, as well as its membership, and so therefore I'm opposed to it (…) As long as this European Union doesn't have the required sensitivity to the needs of northerners, I see no reason why they should be … a permanent observer on the Arctic Council,*" Lawrence Cannon, Canada Minister of Foreign Office, avril 2009[37].

Tensions with all Inuit Peoples representatives have also emerged, mostly with Canada and Greenland Inuit for who EU seal import ban is a "colonialist" interpretation of Indigenous Rights to self-determination (see section IV.3).

The problem of the right for Inuit to self-determination (see section IV.3) is particularly sensitive in a period where most of Inuit Peoples ask for more autonomy and participation to decision-making to their governments (Nunavik particularly in Canada) and in international fora (Arctic Council…) and as Greenland is on its way to gain full independance from Denmark.

The Canada – EU Joint agreement on Inuit seal's products may partly solve the Canadian Inuit problem, but having access to the EU market does not mean their seal's products will be effectively bought by EU consummers, a problem already faced by Greenland Inuit. The Joint agreement will certainly have more positive impact on general diplomatic bilateral relations and possibly allow the EU to finally gain its Observer status in the Arctic Council.

On the sealskin market

After the Russian Federation, Belarus and Kazhakstan banned harp and hooded seal skins import and export in 2011, followed by Taywan in 2013, the non-EU international sealskin was severly reduced as the Russian Federation constituted the second most important sealskins and seals products importator.

To balance the sealskin market retraction due to closure of EU and Russian Federation markets, the Canadian Northern Economic Development Agency has spent in 2014 CA$51,200 on a marketing plan to help grow Canada's international seal and long fur market in China and Turkey, two of the most important fur trade spots. In addition to the money the federal government invested, the government of Nunavut and Northwest Territories each contributed $7,300 and the Fur Harvesters Auction gave $25,400. The total contribution for the marketing plan was $91,200[38].

Does that campaign will be sufficient to restaure the sealskin market is a pending question, but important if seal-hunting cessation is one of the goals of EU seal import ban.

V. Scientific and Ethic evaluation of Indigenous seal hunting

V.1. Scientific evaluation of Indigenous seal hunting

As far it is possibly evaluated with available data about seals' population trends (see section II.2.), seal hunting is currently conducted in a sustainable living resources harvest as defined by the Convention on Biological Diversity (see section II.1.).

The two main targeted species, harp seal (40% of total aboriginal catch and 93 % of commercial sealing) and ringed seal (47% of total aboriginal catch, non-targeted by commercial sealing) are respectively the most (8 millions harp seals) and second most abundant (3-4 millions ringed seals) Arctic seals species and are not considered to be threatened.

Despite current commercial and Aboriginal Arctic seals harvest are conduced in a sustainable manner see section I.2 and II.2), Climate Change impact on Arctic ecosystems within the following decades will very likely make them unsustainable as all ice-dependent seals species will be markedly threatened by sea ice retreat and its side effects.

The fading effect of globalization on Aboriginal Peoples interest to traditional seal hunting and seals products uses may reduce progressively Inuit seal hunting pressure on Arctic seals populations (see section II.3.), with a substantial reduction of seals catches at the mid 21th century and after. But this seal hunting decrease won't balance the seals' population decline due to the Climate Change, the first being about thousands seals a year and the second about tens or hundreds thousands seals a year.

The need of an International management of seal hunting

As Climate Change goes on, the need of more efficient Arctic ecosystems and seals populations monitoring will increase drastically to secure their sustainable management. As Arctic seals distribution is not limited to one country, and Inuit hunters live in four different countries with different legislations and management processes, monitoring and management have to be placed at the international level.

Considering the *Precaution Principle* underlying sustainable use of living resources, the very high level of uncertainty of the Arctic seals survival with the changing sea ice conditions in the Arctic, Arctic seals species hunting should, at least, be largely restricted (all species) and suppressed for some species or populations (hooded seal, eastern Atlantic harp seal and Atlantic walrus). Restriction should be managed at the international level as all species distribution cover more than one Nation territory. Such an international management could be accomplished through the CITES convention, with most species listed in Annexe II (limited hunting to quotas revised annually) and the most endangered species and populations listed in Annexe I (no killing allowed).

Additionally, an international Arctic Seals Management Organization (ASMO), involving Inuit representatives, countries welcoming Arctic seals and walrus in their jurisdiction (including the EU) and all concerned stakeholders, would be necessary to coordinate and unify monitoring efforts, management decisions and legislations to cover the entire Arctic seas ice-habitats used by seals. Such ASMO, devoted to all Arctic seals species, should be completed by an independent scientific advising structure, possibly an enlarged Joint ICES/NAFO Working Group on Harp and Hooded Seals scientific advice (regular population estimate and catches reports), to allow the ASMO to set accurate Total Allowable Catch for each species.

Such an Arctic Seals Management organization could be created inside existing international organizations like IWC as subsection like the Small Cetaceans sub-committee active since 1979 or through the enlargement of NAMMCO jurisdiction to cover the complete Arctic Seas; two possibilities that would accelerate its creation and efficient functioning.

As primary users of Arctic living resources, Arctic Aboriginal representatives should be involved in such an Arctic Seals Management organization, as well as other professional stake holders (including Inuit hunters organizations and seals products manufacturers) and scientific advisors, to fully participate to the decision making process.

This involvement would meet one of their demands and ensure their better participation to data collection about seals species needed for population estimates and catches reports, still problematic as most Inuit hunters are aware of unjustified hunting limitations.

V.2 Ethical evaluation of Indigenous seal hunting

V.2.1. Indigenous seal hunting and Indigenous rights

EU has also translated in its legislation Aboriginal Rights and Traditions defense, one subject on which EU is particularly active in international fora. EU goals on those subjects are defined as follow:

"*The rights of indigenous peoples are a priority under the European Instrument for Democracy and Human Rights. The goals are to increase indigenous peoples' rights and capacity to control their own social, economic and cultural development, while enhancing territorial rights and capacity for sustainable management of biological resources.*[39]"

EU supported the UN Declaration on Rights of Indigenous Peoples adopted in 2007 and:

"…seeks to integrate indigenous issues into all aspects of its external policies (political dialogues, multilateral fora, financial support). The EU is also funding projects through the European Instrument for Democracy and Human Rights. Many of the projects are run by international organisations or non-governmental organisations. They typically support indigenous representatives as they seek to participate in relevant UN activities, or support organisations working to promote the International Labour Organization's Convention 169."

Devlopement cooperation actions of the EU are driven by the European Consensus on Development, a December 2005 Joint statement by the Council, Member States, the European Parliament and the European Commission. As an "Overseas countries and territories" linked to Denmark, Greenland receive EU financial support each year through EuropeAid (EU Directorate-General responsible for designing EU development policies and delivering aid[40]) for its development (25 M€ + 42,8 M€ to support fishing).

For more details, see D.5.61 "Operational Conditions of an effective participation of Arctic Indigenous Peoples in the future Arctic".

On the definition of "subsistence" and "traditional hunting"

Inuit Peoples are particularly aware by "the interest from foreign countries to define "Inuit", "subsistence" and "traditional hunting"", asking to EU and other non-Inuit countries to "abide by definitions already adopted by the UN and that other not defined terms should be defined in the relevant fora with the participation of relevant indigenous peoples and governments"[57].

As the definition of "subsistence" and "traditional hunting" terms have a much larger scope of applicability than seal hunting, in particular for Indigenous peoples inside the EU territory (Saami) and overseas countries and territories, EU could initiate this work in those relevant international fora (UN, UNESCO…).

V. 2.2. Indigenous seal killing methods and animal welfare

Statement in that particular perspective have to take in account the best scientific knowledge available about seals physiology, which has been well documented by the Panel on Animal Health and Welfare in its report to the EU Commission in 2007[63]. A more general consideration about seals normal living conditions, and particularly natural death, have also to be considered in order to evaluate the "natural" suffering and fear fellings, the two conditions used to estimate wild living animal welfare.

Except in North Greenland where net trapping is largely used, riffle shoots ("Uuttoq" hunting, ice-edge hunting and coastal boat-based hunting) are currently the main killing method used by Inuit hunters in Greenland, a tendency which is with high probability also affecting Canadian, Alaskan and Siberian Inuit sealing.

As they are the best way to minimize the ricks of escape of wounded-to-death animal or rapid sinking of the seal, head shoots are the prefered target and ensure an instantaneous death with the lower risk of any suffering or fear feelings by the animal.

Region	Distribution of catches with nets	Distribution of catches with riffles	Distribution of total catches
North Greenland	68 %	49 %	54 %
Vest Greenland	19 %	26 %	24 %
South Greenland	2 %	9 %	7 %
East Greenland	11 %	17 %	15 %

Distribution of the hunt of ringed seals by use of nets or riffle and in total per region for the years 1993-2007[30]

With net trapping, seal's death result from a drowning process with suffocation, a death which is generally considered as highly stressful by Europeans and Western people. It is important to consider that drowning is one of the most frequent reason of natural death for seals and other marine mammals as starvation, illness or any kind of incapacity to swim up to the surface to breath make them sink and die by suffocation.

In the Arctic ice covered seas, drowning can also result of the rapid refrozen of sea surface in an open lead or breathing hole, or by the closure of those by the movements of drifting ice plates moved by currents and winds, a quite frequent event and probably increasing with Climate Change.

Net trapping was judged as death to be "clearly protracted, and suffering is likely to be prolonged" due to remarkable diving adaptations of seals by the European Food Safety Authority (EFSA). But reversly to "leghold trapping" used on terrestrial mammals, net trapping result in a death analogous to a natural and frequent death in seals' natural life. Consequently, net trapping should not be considered as "cruelty".

Additionally, the sea ice retreat resulting from Climate Change may reduce the use of net trapping in northernmost Greenland, at least during spring, as sea ice stability degradation will make net trapping more difficult and the increasing of open ice-free waters spaces will facilitate the use of riffles from boats, an easier and much less time-consumer method currently preferred in more open waters areas.

In a similar way, the pup killing (mostly clubbing, "hakapik" in Canada mainly used by professional sealers on harp seals) in spring, especially the ringed seals' white coat, usually performed in the shore-fast ice lairs when pups are still nursed by the mother, have not to be considered as "cruelty", as most of times the mother is also killed, what would result in the death of nursed pup by starvation, a fact recognized and used to justify the Inuit exemption in the EU 2003 pup-seal ban. The Scientific Panel of the EU has recognized clubbing as very efficient in terms of instantaneous death or unconsciousness when performed correctly[63].

Moreover, in Inuit culture, the hunter follows a long learning process, observing experimented hunter during years before killing his first seal. This long learning process is not only a practical

formation but also a cultural and spiritual learning conducing the hunter to kill his prey in a way making the seal "*accepting to be hunted again when it return to life*". For Inuit, the "good hunting practice" is not only a question of efficiency but also of respect of "a spiritual kin".

It has to be underlined that as for any wildlife hunt, killing conditions can't be controled as they are for farmed or captive animals, so that "best hunting practice" (i.e. instantaneous death or unconsciousness) can't be guaranteed for all seals killed. But, as hunter traditional formation is a long process, involving a strong spiritual and cultural frame in which hunting practices are embended, rates of those "bad kills" are likely to be less important than for commercial seal hunting where profitability prevail on animal welfare.

Larger sea ice conditions unpredictability due to Climate Change is likely to increase such "bad kills", as traditional knowledge and experience are less useful in such changing conditions.

For tose reasons, it seems to us that Inuit hunting methods respond, as far as possible with wild marine animals, to the general principle of EU legislations as first Council Directive (74/577/EEC) exposed in 1974: "*to avoid in general all forms of cruelty to animals*" and "*to avoid unnecessary suffering*".

V. 2.3. Balancing Animal welfare and Indigenous Peoples rights

During the 50 past years, animal welfare has become one of the preoccupations of the EU populations, strongly linked to ecological sensibility, and supported, has ecology does, by very active NGOs. As a result, the EU has included it at various levels of its legislation (see section III.3).

It also conduced the EU to ban seal hunting products in response to NGOs pressure, on the basis of non-scientific arguments, the cruelty of killings seals pups for the first ban, and doubts about possible cruelty of all killing method used by Inuit and commercial sealers (see section IV).

If animal welfare sensibility has to become more important in EU citizen concerns, as EU Commission role is to translate societal willing in legislations and legacies, EU may evolved to a more and more emotional guided community, with more restrictions on living resources use, despite their sustainability or not (ecological aspects), which would place the EU in opposition with most of its economic and political partners.

Does seal's products market have to be maintened is not only a question of Animal welfare but also a question of Indigenous Peoples Rights.

As seal-hunting provides Inuit Peoples food security, especially in the most remoted community of the Hight Arctic, cultural identity and self development, it meets the requirements of the UN Declaration on Rights of Indigenous Peoples and specific articles of CBC and other international agreements concerning Indigenous Peoples rights (see sections I.4 and II.1), all supported by the EU.

But in a highly changing world, not only because of the Climate Change, defending the traditional way of life of 156 000 Inuit, when most of the rest of Humanity have to adapt their habits could become challenging.

Moreover, Inuit don't ask for their way of life to be "museifyed" (*i.e.* kept fixed as objects in a Museum, what Inuit denounce as 'colonialism') in old traditional ones - hunter in sealskins seeking for killing a seal with a harpoon to cover his basic needs (meat, clothes, oil for light…) -, what the current seal ban Inuit exemption make in a certain extent, by limiting seal hunting to basic subsistence with no commercial purpose.

As all developing country or people, Inuit Peoples are seeking their ways to be part of an economically globalized world by using their natural resources, which are scarse and mostly of marine origins. Most of all, they clame their right to self-determination and to be fully part of the decision-making about all aspects of Arctic governance, including seal products commercialization and natural resources management.

In that perspective, Inuit exemption in its present acception is inaccurate and could be amended through, for exemple, a temporary exemption application, what could minimize the "museifyed" perception of Inuit seal hunting by EU citizen, or the creation of an "Inuit hunting product" labell to help to maintain a restricted market (recognized unsufficient by both Inuit representatives[54] and the Scientific Panel of the EU Animal Health and Welfare[63]) acceptable for EU citizen…

Unlike ecological scope, which can be objectived by scientifical tools, Animal Welfare and Human Rights are questions of sensibilities, opinions, believes and morality, all hightly emotional values and therefore culturally dependant as well as submitted to unpredictable changes through time.

Balancing animal welfare and Inuit rights is a social question in which natural and social sciences can be only asked to light all aspects of the question, but the decision remains political.

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ACCESS
Arctic Climate Change
Economy and Society

WP5 - Deliverable 5.51

Scientific and ethical evaluation of the impact of indigenous seal hunting

ANNEX 1

Arctic seals species - distribution, population size and sea ice linkage

LE CERCLE POLAIRE

LCP, participant no. 26

SEVENTH FRAMEWORK PROGRAMME

www.access-eu.org

As seals are marine mammals that have to breath air, they need free regular access to the atmosphere to perform respiration. Because they are not as sea adapted as cetaceans do, seals also need aerial platforms for resting (haul-out), perform their annual fur molting, and nurse their pups during their first weeks as they store enough fat to be isolated of cold waters.

The sea ice is used by seals for their vital functions and sea ice presence became a limiting factor for seal's distribution in the Arctic. Moreover, seasonal distribution, thickness and fracturation of sea ice, especially during the nursing pup season in spring, are crucial for seal's survival.

Height seals species can be observed in Arctic waters, but two have their main distribution outside Arctic waters in subarctic and temperate waters and are less sea ice dependent than true Arctic seals. One more Phocids species, the walrus, is endemic to Arctic seas.

1 Subarctic seals species

Height seals species[1] can be observed in Arctic waters, but two have their main distribution outside Arctic waters in subarctic and temperate waters and are less sea ice dependent than true Arctic seals.

a. Harbor Seal

The harbor seal[2] (*Phoca vitulina*) occupies ice free coastal waters of the continental shelf and slope in the Canadian Arctic Archipelago (Hudson Bay, Baffin Bay, Davis Strait), Greenland coasts (as far north as 70°N), Iceland, Western coast of Svalbard, coastal Norwegian Sea, Barents, White and Kara Seas in the Atlantic Arctic Basin, and in southern Bering Sea in Northern Pacific waters (Aleutian Archipelago). Living far of sea ice margin in ice-free coastal waters in the most part of its range (temperate coastal waters of northern Europe and Northern America), except in Greenland, Svalbard and Canadian Arctic Archipelago, the harbor seal have to be considered as a Sub Antarctic seal. The small isolated Svalbard population totalize around 1 000 individuals.

Harbor seal reproduce on sandy beaches or rocks in temperate waters or on ice floes, coastal fast ice and drifting pack ice in the Arctic. Reproduction season varies from spring to early summer (February to July[3]), lasting in early spring in temperate waters (California) and extending as far as early July in Arctic regions (Baffin and Ellesmere lands in Nunavut, and Greenland) and Northern Europe.

In Arctic region, birth often takes place on shore fast ice or small drifting icebergs in fjords. Weighting 16 kg at birth, the pup, coated in a nearly black waterproof fur, stay on sea ice during 4 to 6 weeks before weaning (mean 24 days)[5]. In contrast with true Arctic seals, pups are able to swim a few minutes after their birth.

Harbor seal distribution

Soon after breading, adults harbor seals haul out on beaches, rocks or sea ice for molting[4], during July and August in Arctic regions.

Combining recent estimates yields a worldwide population of 350,000 to 500,000 ringed seals[5].

b. Grey Seal

The grey seal[6] (*Halichoerus grypus*) live in cold temperate waters of northern Atlantic (as far north as southern coast of Iceland and Cape North in Norway) and is present in subarctic seas along Canadian coast (Labrador sea), Norwegian and Russian coasts (Norwegian Sea, Barents Sea and White Sea). Some vagrant grey seals are regularly observed on southwestern coast of Greenland and Canada (Davis Strait, Ungava Bay, Hudson Strait), in ice-free coastal waters during summer. As its presence in Arctic waters is due to vagrant individuals and lies in ice-free waters during summer, the grey seal can't be considered as an Arctic seal.

Grey seal distribution

In contrast with harbor seal and Arctic seal species, drifting sea ice floes or iceberg are not used by grey seals for hauling out. Molting, calving and nursing, and rest take place on sandy beaches and rocks along the ice-free seashore. This species is negatively correlated to the sea ice extend, avoiding ice covered waters and shores.

Grey seal reproductive season extend from September to November in Eastern Atlantic and from January to February in Western Atlantic. Birth occurs on shore, on reproduction sites where colonies can count as much as 6 000 seals. The pup stay on its birth beach during its nursing time, lasting between 3 and 6 weeks. At weaning, the pup molt its pale yellowish fur, acquiring its adult waterproof coat before going at sea.

Estimates of grey seal populations are based on pup production, and totalize a global total population of nearly 210,000-470,000 seals.

Total population estimate in Canada is about 250 000 divided into two main herds, one largely located in the southern Gulf of St Lawrence and the other at Sable Island on the Scotian Shelf. In the North Sea, total population is estimated to be between 117,000 and 171,000 at the start of the breeding season; Ireland population is about 2,000 seals; Iceland; 11,600; Norway, 3,100; Russia (White Sea), 1,000-2,000; Baltic Sea, 22,000; and USA, 7,300[7].

2 Arctic seals species

Six seals species are all year round present in Arctic Seas. Two have a circumpolar distribution (ringed and bearded seals), two are restricted to Atlantic Arctic Basin (harp and hooded seals) and two to the Pacific Arctic Basin (ribbon and spotted seals). Additionally, the walrus is divided in two sub-species, one occupying the Pacific Arctic Basin, the other the Atlantic arctic Basin.

Table 1 - Geographic range of Arctic seals

Common name	Scientific name	Geographic Range
Ringed seal	*Pusa hispida*	Circumpolar, Hudson Bay, Northern Labrador Sea, Northern Pacific (Northern Bering Sea, Northern Okhotsk Sea)
Bearded seal	*Erignathus barbatus*	Circumpolar (except central Arctic Ocean), Hudson Bay, Northern Labrador Sea, Northern Pacific (Northern Bering Sea, Northern Okhotsk Sea)
Harp seal	*Pagophilus groenlandicus*	Atlantic Arctic Basin: Northern Hudson Bay, Baffin bay, Davis Strait, Labrador Sea, Greenland Sea, Northern Norwegian Sea, Barents Sea, White Sea, Laptev Sea
Hooded seal	*Cystophora cristata*	Atlantic Arctic Basin: Baffin Bay, Davis Strait, Northern Labrador Sea, Greenland Sea, Northern Barents Sea,
Spotted seal	*Phoca largha*	Chukchi Sea, North Pacific (Bering Sea, Okhotsk Sea)
Ribbon seal	*Histriophoca fasciata*	Chukchi Sea, North Pacific (Bering Sea, Okhotsk Sea)
Walrus	*Odobenus rosmarus*	Pacific Arctic Basin (Chukchi Sea, Laptev Sea); Northern Bering Sea Atlantic Arctic Basin (Kara Sea, Barents Sea, Greenland Sea, Baffin Bay, Davis Strait Hudson Bay, Foxe Basin)

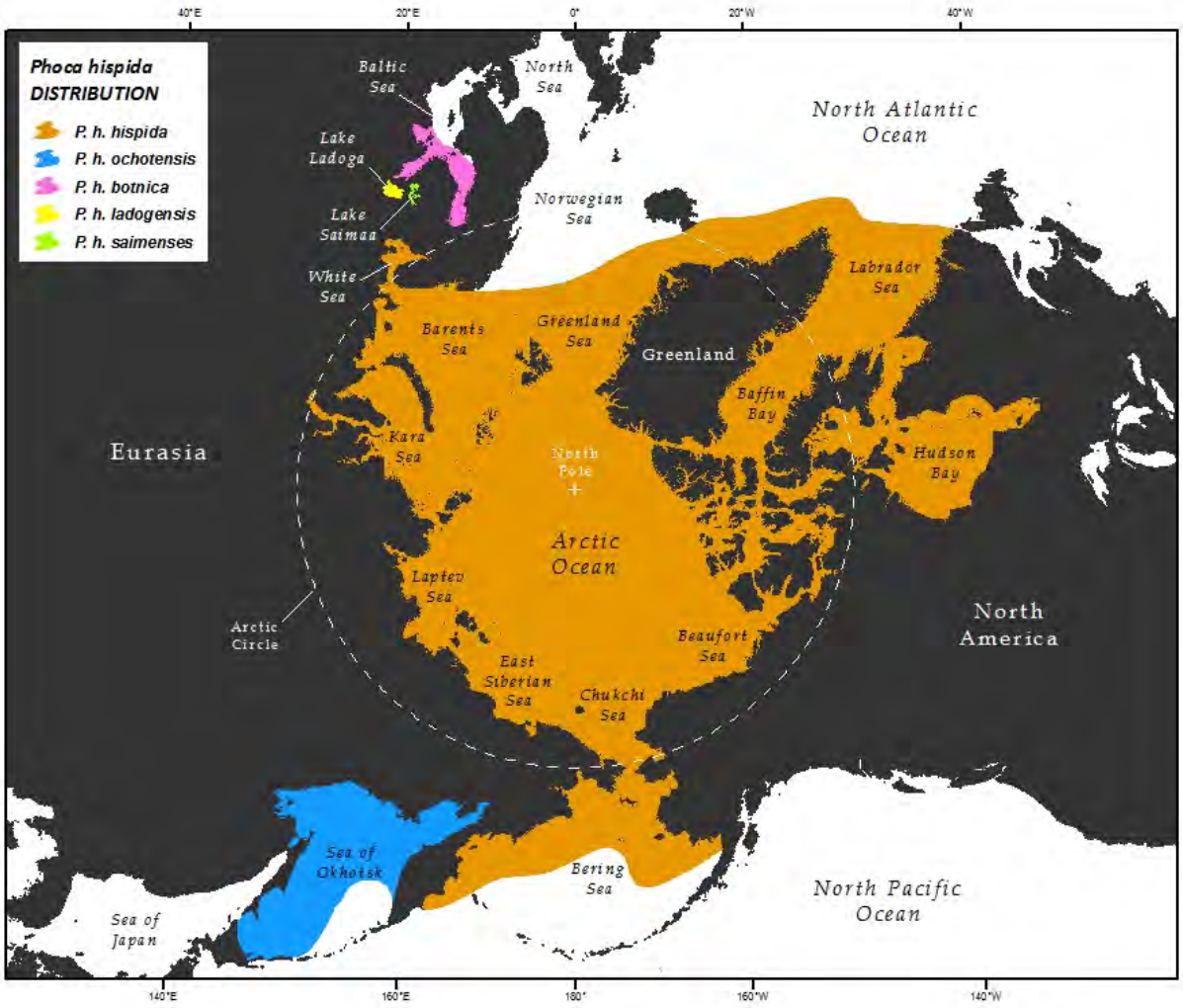
a. Ringed seal

The ringed seal (*Pusa hispida*)[8] is one of the two most abundant and the most widespread endemic seal species in the Arctic[9]. It is unique in its ability to maintain breathing holes in thick sea ice, and hence it occupies areas unreachable by other seals, exploiting all ice covered Arctic and Subarctic Seas.

The ringed seal is the smallest of all living seal species, with males reaching a length of 1.5 m and a weight of 95 kg, and females 1.4 m and 80 kg.

Isolated populations of ringed seals are present in the northern Baltic Sea, Ladoga Lake and Lake Saimaa in Northern Europe, each of them constituting a different sub-species completely separated of the core Arctic distribution of the ringed seal.

One more sub-species lives in Okhotsk Sea, isolated from the main Arctic sub-species by the Kamchatka Peninsula. Population stock is unknown despite the estimation of 800,000-1,000,000 proposed by Miyazaki in 2002, because of lack of recent data. 85% of this sub-species live in northern Okhotsk Sea, and thus have to be considered as Arctic.



The latest review of available estimates of ringed seal populations was published in the NOAA Technical Memorandum NMFS-AFSC-212 published in 2012 :

Table 2 - Reported estimates of ringed seal numbers by subspecies and region. Several of the reported estimates were based on surveys with incomplete coverage or without correction for seals in the water (basking numbers).

Subspecies - Region	**Total numbers**	**Basking numbers**	**Comments and assumptions**
Arctic ringed seals	**2,060,000**		
- Greenland Sea & Baffin Bay	787,000		Surveys in 1979 and stable since
- Hudson Bay		53,400	Mid-point between 2007 and 2008
- Beaufort & Chukchi Seas	1,000,000		Extrapolated to include pack ice
- White, Barents & Kara Seas	220,000		Most surveys from 1975-1993
Okhotsk ringed seals	**676,000**		General 'correction' of 30%
Baltic ringed seals	**10,000**		Comprehensive survey in 1996
Ladoga ringed seals	**3,000 - 5,000**	2,000	Latest survey in 2001
Saimaa ringed seals	**270**		Some evidence of modest growth

According to our definition of Arctic Seas, the total number of ringed seals in the arctic seas is roughly 2,736 millions seals, an estimate which has to be taken with caution as a large part of Siberian coasts are not included and as survey methods and dates and corrective coefficient used to estimate submerged seals are quite different.

Anyhow, the Arctic ringed seal is not the most abundant seal species in the Arctic as it was used to say and represent in the most optimistic perspective less than half as harp seals populations, probably between 3-4 millions seals.

Ringed seals is strictly restricted to ice covered waters all year round and occurs in areas of land-fast and drifting pack ice over virtually any water depth. They reproduce, molt and haul out on ice and do not migrate to open water areas in the winter. They do long seasonal migration, following the receding sea ice during summer and back to wintering grounds at fall.

Females give birth in a birth lair excavated in a snowdrift over a breathing hole, and it is here that her pup is born in late March or April. The white-coated pup nurses for 5 to 7 weeks, but is also quite active during this period and may spend a large proportion of its time making short feeding dives under the ice. The white natal coat that is shed in 4 to 6 weeks, the lugano, is replaced by a coat with juvenile coloration, the beater coat.

Ringed seal does not aggregate nor form any kind of colonies as does harp seals. They are patchy distributed on sea ice, with greater densities on land fast ice and pack ice than on offshore pack ice.

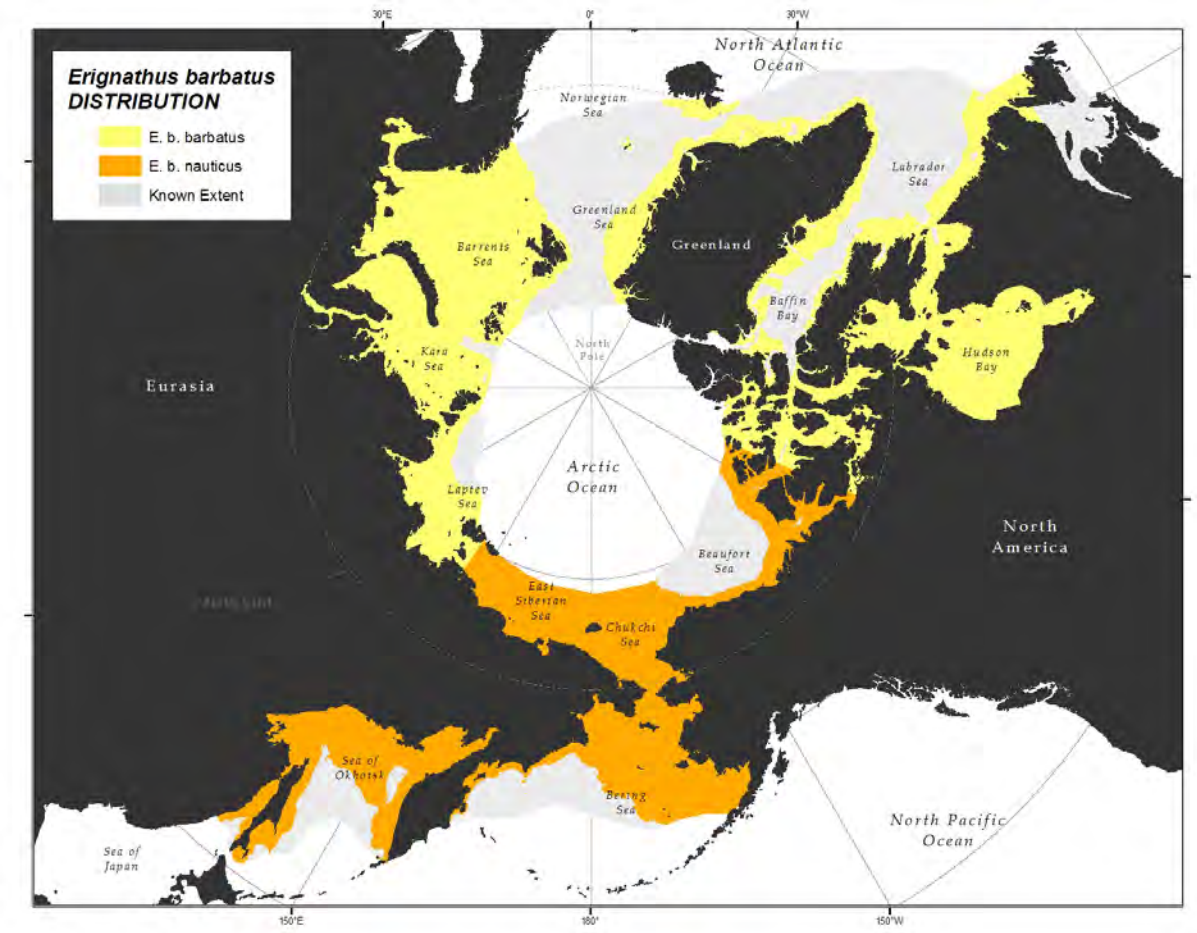
As midwater fishes feeder, the ringed seal seems to have a large fishes species spectrum, targeting coastal species during the whelping season in spring, but probably hunting continental shelf fish's species as well as continental slope species depending on seasonal pack ice distribution.

b. Bearded seal

The bearded seal (*Erignathus barbatus*) is the largest of the northern Phocids, with adults of both sexes measuring 2.1-2.4m and weighing 200-250kg. It is distributed in all Arctic Seas from 80-85°N to Northern Okhotsk and Bering Seas in Northern Pacific and Northern Norwegian Sea, Northern Iceland coast, most of Labrador Sea and Saint Laurent Gulf in Northern Atlantic.

Two sub-species are described, the Atlantic bearded seal for the Atlantic arctic Basin and North Atlantic Ocean, including eastern part of Canadian Arctic Archipelago, and the Pacific bearded seal in the Pacific Arctic Basin and North Pacific Seas of Okhotsk and Bering.

Mainly associated with drifting pack ice, bearded seals are usually found singly in seasonally ice-covered waters. During the ice season they prefer to inhabit areas of broken pack ice and drifting ice floes, but are quite versatile and also occur in areas of shore fast ice and thick ice where they are able to maintain breathing holes. Many of the seals move long distances to follow the receding ice in the summer[10]. They are known, for example, to move from the White and Kara Seas to the northern Barents Sea and from the Bering Sea to the Chukchi Sea. In other areas such as the Laptev, Okhotsk and White Seas they do not follow the ice, but spend the summer in open water, sometimes hauling out on land, preferably on gravel beaches[11]. Bearded seals have also been reported as hauling out and swimming in rivers that empty into Hudson Bay[23]. Young bearded seals in Alaska may be found in open water, not associated with ice, in summer and autumn.



Global population estimate for bearded seal is not known. Crude published estimates for parts of the bearded seal's range include: 200,000-250,000 in the Sea of Okhotsk, including 60,000-75,000 off eastern Sakhalin Island (1968 to 1990) and 250,000-300,000 in the Bering Sea, including 83,000-87,000 in the western Bering Sea. A minimum estimate for Canadian waters of 190,000 animals was suggested in 1996 based on data collected over a 35-year period. No more recent estimates exist for these regions and the Atlantic and Russian Arctic Seas bearded seal populations never have been estimated[12].

Pupping and molting take place on the ice. Most pups are born from mid-March to early May, later in the north than in the south. The pup is nursed for about 18-24 days, although this time may vary. Weaning seems to be less abrupt than in most Phocids species, with some pups learning to catch small prey while they are still nursing.

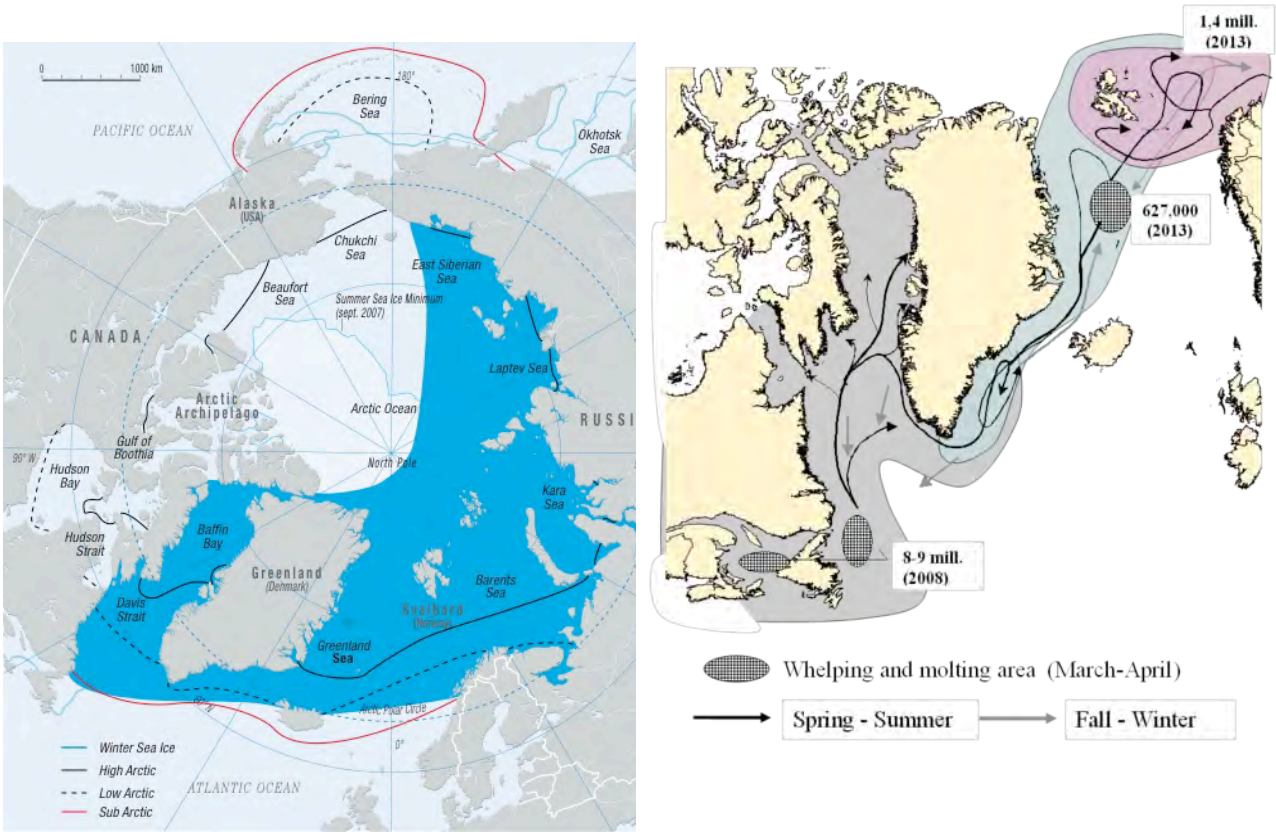
Able to swim 2 hours after birth, early aquatic ability of the bearded seal pups is facilitated by the rapid neonatal loss of the heavy lugano coat and its unique composition made of a mixture of long soft wavy hairs lost at weaning, and shorter waterproof stiff-hair coat not loose.

Specialized on bottom dwelling invertebrates (mostly shellfishes), the bearded seal is strictly linked to continental shelves waters where its preys aggragate.

c. Harp seal

The harp seal (*Pagophilus groenlandicus*)[13] is the most abundant piniped species in the Northern Hemisphere. Globally this species numbers close to 8 million animals. Pup production at all breeding sites combined is at least 1.4 million pups per year currently.

Harp seal is restricted to the Atlantic Arctic Basin, including northern Hudson Bay and the Foxe Basin of the Canadian Arctic Archipelago waters, limited westward by to Ellesmere, Baffin lands and Labrador. It has also been observed in the Laptev and East Siberian Seas of the Pacific Arctic Basin and in the northern most part of Norwegian Sea.



Harp seal distribution
(left: general distribution; right: whelping and molting areas of the 3 Atlantic Arctic Basin)

Two sub-species are distinguished, one western population breeding on Northwest Atlantic coasts (Gulf of St Lawrence and the Front off Labrador and Newfoundland), whose summer feeding grounds are located in Davis Strait and Baffin Bay, and a second eastern population whose breeding grounds are located off Jan Mayen in Greenland Sea and in coastal waters of White Sea and feeding grounds extend from Eastern Greenland to at least 82-85°N of Svalbard and Franz-Joseph Archipelagos and eastward to Severnaya Zemlya archipelago.

Some vagrant individuals have been observed as far as northern Spain, Germany and in Laptev and East Siberian Seas where they seem to occasionally hunt during summer.

The Northwest Atlantic stock of harp seal is estimated to number 5.9 million animals. This latest estimate for Canadian waters is significantly higher than the previous estimate produced in 2000, when the Gulf and Front herds combined were estimated to number 5.5 million. This is a marked recovery from an estimated low of around 1.8 million in the early 1970s. Catch levels have been

increased repeatedly for this population during the last decade and likely now exceed potential biological removal levels by 1.5 – 5.9 times. Given this level of removal the population is likely to now be in decline.

The breeding group in the West Ice near Jan Mayen was estimated at 296,000 in 1994; this population increased to approximately 348 000 by 2003.

The White Sea breeding group was estimated to be 1.8 million animals when last surveyed in 2000[14].

Females give birth on open free-floating pack ice to pups near the southern limits of their range from late February to mid-March or April. Pups nurse on high-fat milk for approximately 12 days. The "white-coats" newborns have long, wooly, white fur, which is loosed through a first molt at 6 weeks old.

During breeding in February and March, mating season which follows directly the breeding (females came in estrus as soon as they weaned their pup) and when molting in late spring, harp seals aggregate in large numbers of up to several thousand seals on the pack ice.

The feeding migration to north during summer, following the northward migration of midwater fishes they feed on, and back south to breeding grounds in autumn may be accomplished in more or less important groups, but isolated individuals can be observed regularly.

d. Hooded seal

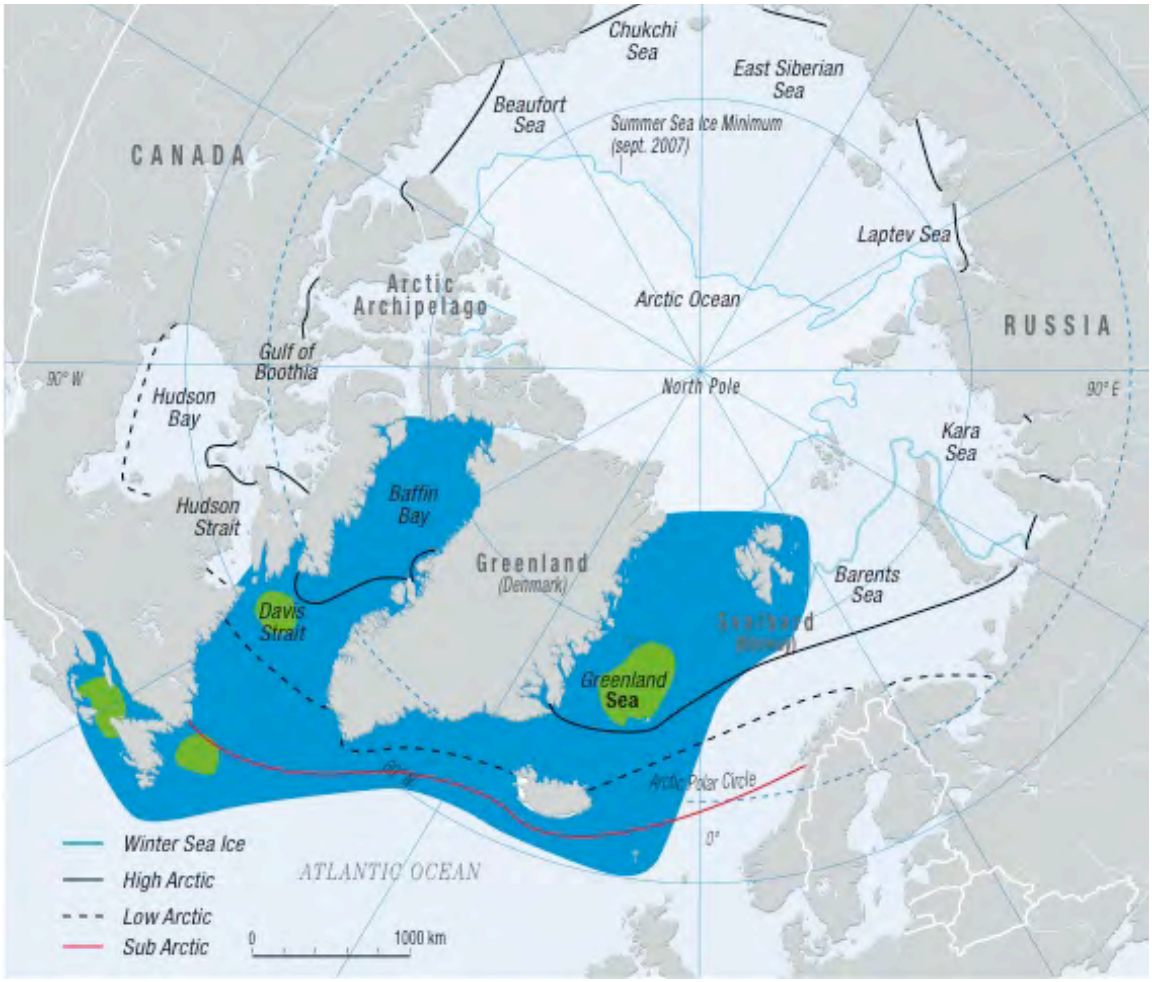
The hooded seal (*Cystophora cristata*) [15] is a large seal living in the North Atlantic waters, from the Saint Laurent Gulf and Northern Labrador Sea to western Norwegian Sea around Iceland, and the most part of the Atlantic Arctic Basin in Davis Strait and Baffin Bay in the west and Greenland Sea as far north as Svalbard Archipelago, at nearly 80° N.

There are four major pupping areas: near the Magdalene Islands in the Gulf of St Lawrence, north of Newfoundland in an area known as the “Front,” the Davis Strait and in the West Ice in the Greenland Sea near the island of Jan Mayen.

The western hooded seal stock was estimated to 592,000 individuals in 2005, with a population trends in moderate increase compared to 1970's years. The eastern population was estimated to 70,000 seals, which correspond to 10-15% of the level observed some 60 years ago.

This strong population depletion induced the closure of hunt for this eastern stock and inscription to Norwegian red List as “Vulnerable”.

Nearly 90% of the eastern population reproduces on pack ice in the “Front”, around Sable Island.



Hooded seal distribution

They breed on pack ice, in late March and early April, and are associated with it much of the year, though they spend significant periods of time pelagically, without hauling out.

The breeding season for this species is very short, usually lasting only about 2.5 weeks, and mating takes place in the water. This species has the shortest lactation period for any mammal, with most pups being weaned in four days. Newborns present a slate blue-grey coat (giving them the name "blue-black"), with a pale cream color on the belly, which they will molt after about 14 months.

Hooded Seals molt in July, with each breeding stock congregating at a separate, traditional site, north of their whelping areas. Following the molting period each stock disperses in the Arctic waters. It is though that hooded seals are mainly solitary during the summer feeding season, concentrating occasionally on prey concentration areas along the pack ice margin.

As a specialized feeder, the hooded seal is strictly dependent on bottom dwelling fishes living on the continental shelves and coastal waters of the Atlantic Arctic Basin.

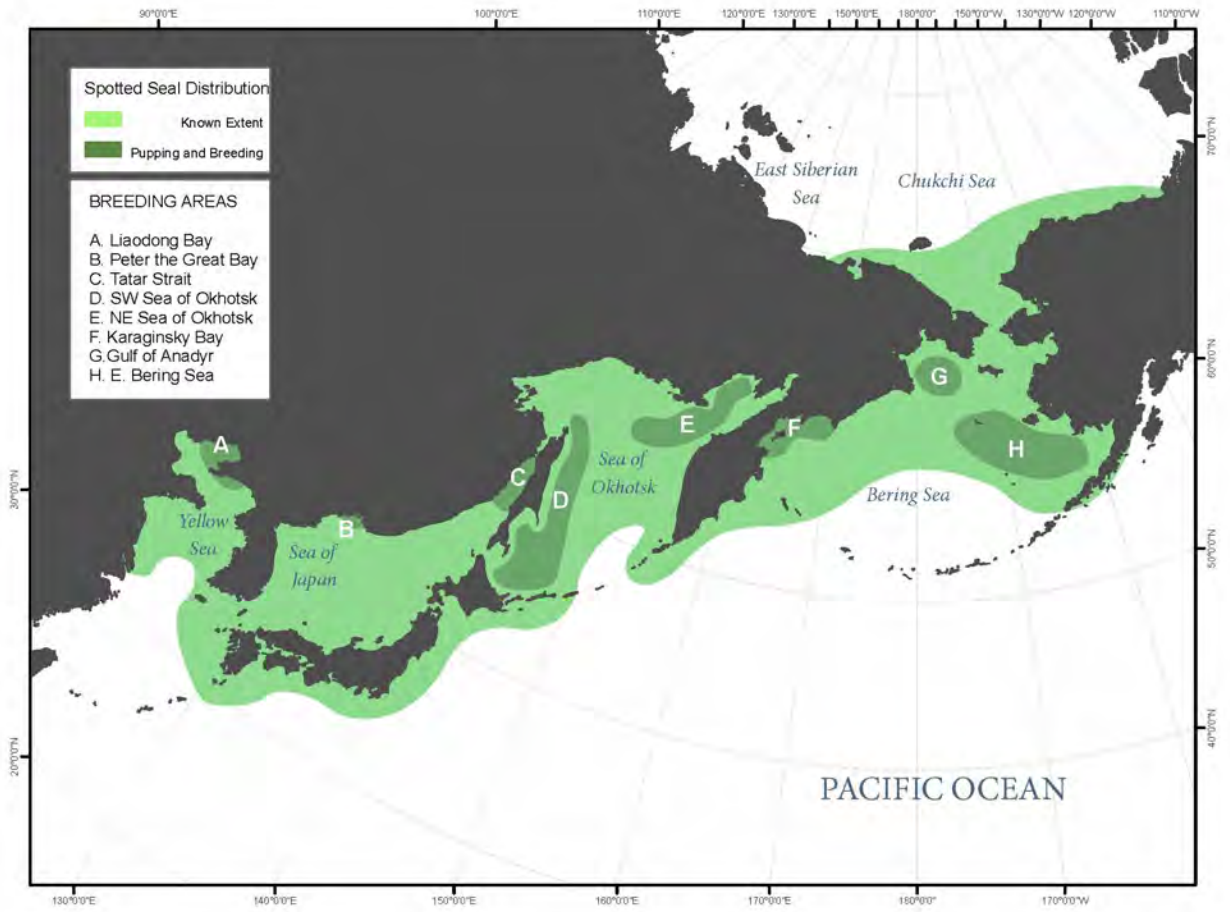
e. Spotted seal

The spotted seal (Phoca largha)**16** is a mid sized seal living in the Sea of Okhotsk and the Sea of Japan and reach China in the northern Yellow and Bohai Seas. They are widespread in the Bering and Chukchi Seas and range north into the Pacific Arctic Basin to about the edge of the continental shelf, west to about 170°E longitude and east to the Mackenzie River Delta in Canada.

Spotted seals are separated into three populations. The Bering Sea population includes approximately 100,000 in the western Bering Sea near Kamchatka, in the Gulf of Anadyr in Russia, and in the eastern Bering Sea in Alaskan waters (the only population in the US estimated at 59,000 seals in 2009). A second population of about 100,000 seals breeds in the Sea of Japan and the Sea of Okhotsk. A third population of about 3,300 seals is to the south in Liaodong Bay, China and Peter the Great Bay, Russia.

There is also a smaller population of 300 spotted seals living in waters off Baekryeong Island located far north of the west coast of South Korea.

The abundance of spotted seals has never been well quantified. Poorly documented estimates suggest a total population size in the 1970s of perhaps 400,000, with 200-250,000 in the Bering-Chukchi Seas and perhaps 170,000 in the Okhotsk Sea.



They inhabit the southern edge of the pack ice from winter to early summer. In late summer and fall, spotted seals move into coastal areas, including river mouths. They breed mostly on sea ice and haul-out on sea ice when it is available, but they also haul out on beaches and sandbars.

Breeding season ranges from January to mid-April with a peak of pup births in mid-March, mostly on the surface of sea ice but sometimes on land. Males are thought to be annually monogamous and form "family" groups consisting of a female, male, and a pup during breeding season. Pups are born in a white lanugo coat that is shed at or before weaning which occurs about four weeks after birth.

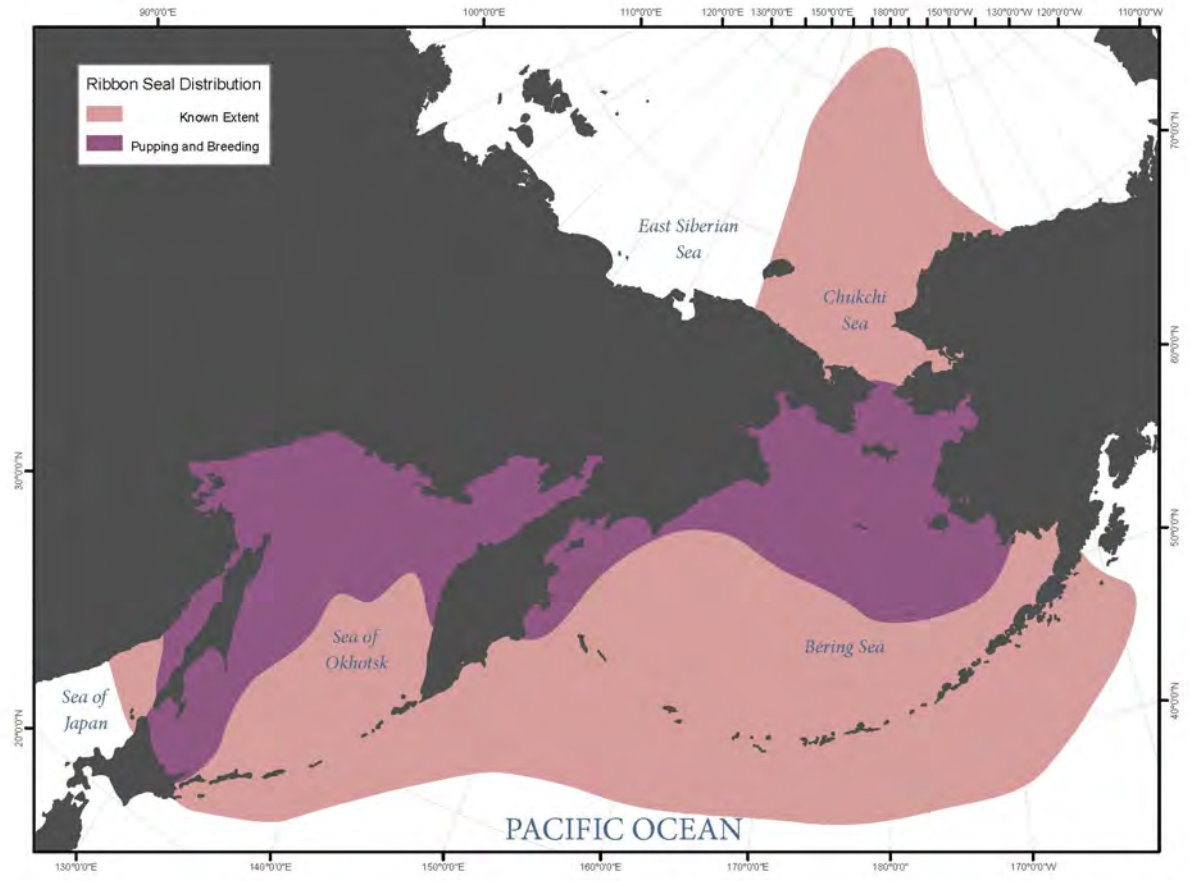
In late spring and summer many spotted seals leave the sea ice and haul-out on land to rest when they are not foraging. On some haul-outs in Kamchatka the number of animals on shore may reach over 10,000 individuals. As sea ice reforms in October-November spotted seals again use the ice as their primary feeding and resting habitat.

Feeding on midwater fishes, spotted seal seems to target species living in shallow waters of the continental shelves, comprises between 0 and 400 m deep.

f. Ribbon seal

The ribbon seal (*Histriophoca fasciata*)[17] is a medium sized seal inhabiting the Bering, Chukchi, and Okhotsk seas and high latitudes of the western and central North Pacific Ocean, from Hokkaido and the northern Sea of Japan, north and offshore to the East Siberian Sea in the Russian Federation to the western Beaufort Sea and south to the Alaska Peninsula in the United States.

Three separate populations of ribbon seals have been proposed associated with aggregations of breeding animals - the Bering Sea, the southern Sea of Okhotsk and the northern Sea of Okhotsk. Bering Sea population was estimated at 140,000 seals in 1987 and 630,000 in Okhotsk Sea in 1988-1990, with the northwestern population representing 85% and southern population 15%. The current abundance and trends are unknown.



Ribbon seals occupy the pack ice that overlies deeper water near the continental shelf break out, from late winter until summer. They prefer areas of 60-80% ice coverage, rarely use shore fast ice, and do not haul-out on land unless moribund. Pups are born on ice floes from early April to early

May. They are fed for four weeks on their mother's milk, staying on ice as their white coat is not waterproof.

Broken pack ice is preferred over solid ice sheets and highly concentrated pack ice, as ribbon seals can only open and maintain access holes in ice up to approximately 15 cm thick. Their whereabouts when pack ice breaks up or disappears from the Bering Sea and the Sea of Okhotsk is not well known. It has been suggested that animals from the Bering Sea population summer in the Chukchi Sea and those from the Sea of Okhotsk might move into the southern Bering Sea. A few ribbon seals are seen on ice or harvested by Alaska Natives in the Bering Strait and Chukchi Sea after mid-June. Many ribbon seals are probably pelagic during the fall, not hauling out on land or ice, until the next winter.

Midwater fishes feeder, ribbon seal seems to target species living near the continental slope, as they concentrate mostly in deeper waters, at least during the whelping season.

g. Walrus

The walrus (*Odobenus rosmarus*) is a very large sized piniped, weighting as big as 2 tones for 3.5 meters long for bigger males, recognizable by its overgrown superior canines forming tusks in both sexes. Those tusks can be used as icepicks to help the animals haul itself up onto the ice, but they are also employed as defense weapons against polar bears and other walruses. It is thought that their main use is to dig the sea floor to extract shellfishes (mussels) they detect with their vibrissae.

Two geographically and genetically sub-species are identified, the Atlantic walrus (*O. r. rosmarus*), living in the Atlantic Arctic Basin, and the Pacific walrus (*O. R. divergens*), living mostly in Bering and Chukchi seas with a small additional population in Lapev Sea.

Pacific walruses range throughout the continental shelf waters of the Bering and Chukchi Seas, occasionally moving into the East Siberian Sea and the Beaufort Sea. During the summer months most of the population migrates into the Chukchi Sea; however, several thousand adult males aggregate near coastal haul-outs in the Gulf of Anadyr, Russia; Bering Strait, and Bristol Bay, Alaska. During the winter breeding season walruses are found in three concentration areas of the Bering Sea where open leads, polynyas, or thin ice occur, generally one group occurs near the Gulf of Anadyr, another south of St. Lawrence Island, and a third in the southeastern Bering Sea south of Nunivak Island into northwestern Bristol Bay. The summer distribution of walruses in the Chukchi Sea occurred primarily on sea ice over the continental shelf from the Alaska to Chukotka coasts with large numbers of animals near Hanna Shoal in the United States and Wrangle Island in the Russian Federation.

The size of the Pacific walrus population has never been known with certainty. Due to overharvesting, the total population was estimated to 50,000-100,000 in the mid 1950's, and is believed to be at least 129,000 in the 2000's with a very large uncertainty (55,000-507,000), the aerial survey realized in 2006 coverage being incomplete and was not able to asses the proportion of submerged animals[18].

The Atlantic walrus ranged historically from the central Canadian Arctic in the west to the Kara Sea in the east, north to Svalbard and south to Nova Scotia.

In Canada, four populations have been identified in Canada: 1) South and East Hudson Bay, 2) Northern Hudson Bay-Davis Strait, 3) Foxe Basin, and 4) Baffin Bay (High Arctic). A fifth population—the “Southeast Gulf of St. Lawrence and Scotian Shelf” or “Maritime” population—was abundant along the Atlantic coast of Canada but has been extirpated by overharvesting[19].

The Baffin Bay population is shared by Canada and Greenland. There may also be exchange between the Northern Hudson Bay–Davis Strait and Central West Greenland populations.

Another population is present on eastern coasts of Greenland, in Greenland sea with possible exchanges with the Svalbard-Franz-Joseph population of northern Barents sea. This Svalbard population may also have contacts with the eastern most population living around Novaya Zemlya island, in Kara sea and southeastern Barents sea.

Population size of the Atlantic walrus is though to be 20,000-30,000 animals[20], most of them living in Canadian and Greenland waters with a total of nearly 17,000 walruses: 500 in southeast Hudson bay; 6,000 in Northern Hudson bay and Davis Strait; 5,500 in Fox Basin; 1,759 in Baffin bay (Canadian High Arctic + northwestern Greenland); 2,500 in Baffin island and central-west Greenland; 1,430 in east[21]. Svalbard population is estimated to 2,000 walruses and 3,000 for the Russian Barents and Kara Seas population[22].

Walrus distribution. Atlantic walrus in blue; Pacific walrus in orange (source CAFF).

Walruses are social and gregarious animals. They tend to travel and "haul out" to rest on ice or land in densely packed groups. On land or ice, in any season, walruses tend to lie in close physical contact with each other. Young animals often lie on top of adults. Group size can range from a few individuals, up to several thousand animals.

Mating occurs from December to February in broken pack-ice habitat, birth occurring between March and May. Just prior to parturition, pregnant females separate from the herd and give birth to their offspring alone on pack ice. New mothers remain on the ice fasting for the first few days postpartum before joining back the herd. Walrus pups suckle for between two and three years on relatively low-fat milk, with weaning taking place much more gradually than among most other seals.

Feeding on almost entirely on bottom dwelling shellfish, walruses are strictly linked to shallow waters of the continental shelves where their prey live in patchy concentrated populations.

Walruses generally occupy first-year ice and are not found in areas of extensive, unbroken ice. Expansive areas of heavy ice cover are thought to play a restrictive role in walrus distributions across the Arctic and a barrier to the mixing of populations. In winter, walruses tend to concentrate in areas of broken pack ice associated with divergent ice flow or along the margins of persistent polynyas extending above productive continental shelves. Females and their young spend the summer months along the southern margin of the pack ice; moving further into the ice pack during storms. When suitable sea-ice is not available, mainly during summer and fall, walruses haul out to rest on land. Factors thought to influence haul-out site selection include: proximity to food resources; isolation from disturbances and predators; social factors and learned behavior; and, protection from strong winds and surf. Adult males use land-based haul-outs more than females or young, and consequently, have a greater distribution through the ice-free season. Most female walrus and their young stay with the drifting ice pack throughout most of the year, only coming to shore when sea-ice is completely absent.

In conclusion

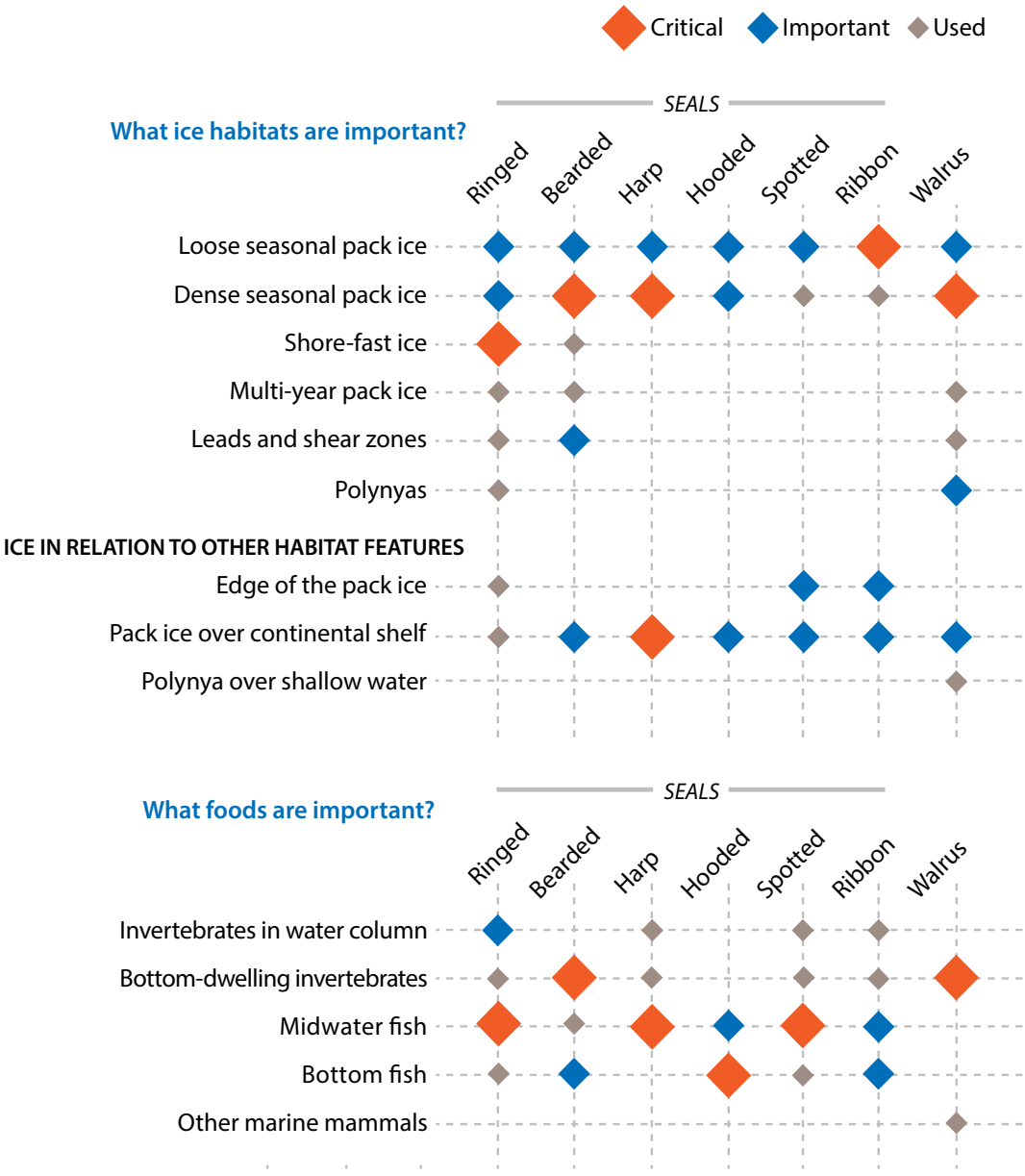
Considering the 8 seal species and the walrus occurring in the Arctic Seas, the total Arctic seals population is about 13,236,000-14,236,000 individuals, with 60% represented by a single species, the harp seal and another 25% by the ringed seal. As far as we now, 75%-80% of all Arctic seals are concentrated in the Atlantic Arctic Basin (Canadian Arctic Archipelago waters, Hudson Bay, Baffin Sea, Davis Strait and Greenland Sea) when just 1.5-2 millions seals are present in the Pacific Arctic Basin and Okhotsk Sea.

Table : Comparative overview of Arctic seals characteristics

	Population	**Arctic Seas Pop.**	**Population trends**	**Sea ice dependency**
Ringed seal	3 to 4 millions	3 to 4 millions	unknown	strict (whelping + molting)
Bearded seal	750,000?	750,000?	stable	strict (whelping + molting)
Harp seal	8,048,000	8,048,000	increasing locally	strict (whelping + molting)
Hooded seal	662,000	662,000	decreasing	strict (whelping + molting)
Spotted seal	400,000?	400,000?	unknown	strong preference (whelping + molting)
Ribbon seal	770,000?	675,000?	unknown	strict (whelping + molting)
Harbor seal	350,000-500,000	1,000	stable	optional (Svalbard and Greenland)
Grey seal	210,000-457,000	vagrant	increasing locally	none
Walrus	230,000-280,000	200,000-250,000	variable	strict (whelping + molting) optional (hauling-out)

Most of Arctic seals are strictly dependent on sea ice coverage for breeding and molting and live their all life inside the ice-covered seas or at the edge of sea ice.

More over, seasonal pack ice, specially when it extend over continental shelves, the most productive regions of Arctic seas, is mostly used by Arctic seals, being of critical importance for their feeding, most of their preys living in close relation with ice covered continental shelves.



Importance of the different sea ice habitats for Arctic seals species

Harp and ringed seals, the main target of Inuit hunters (respectively 40 and 47% of total Aboriginal catch, see Annex 2), are critically linked to seasonal pack ice, the second depending exclusively on shore-fast ice for its reproduction.

As Climate Change impacts principally shore-fast ice and dense seasonal pack ice (see main text section V.4.), harp and ringed seals are expected to be highly threatened by the earlier melting season onset.

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Scientific and ethical evaluation of the impact of indigenous seal hunting

ANNEX 2

Seals catches in the Arctic

LE CERCLE POLAIRE

LCP, participant no. 26

SEVENTH FRAMEWORK PROGRAMME

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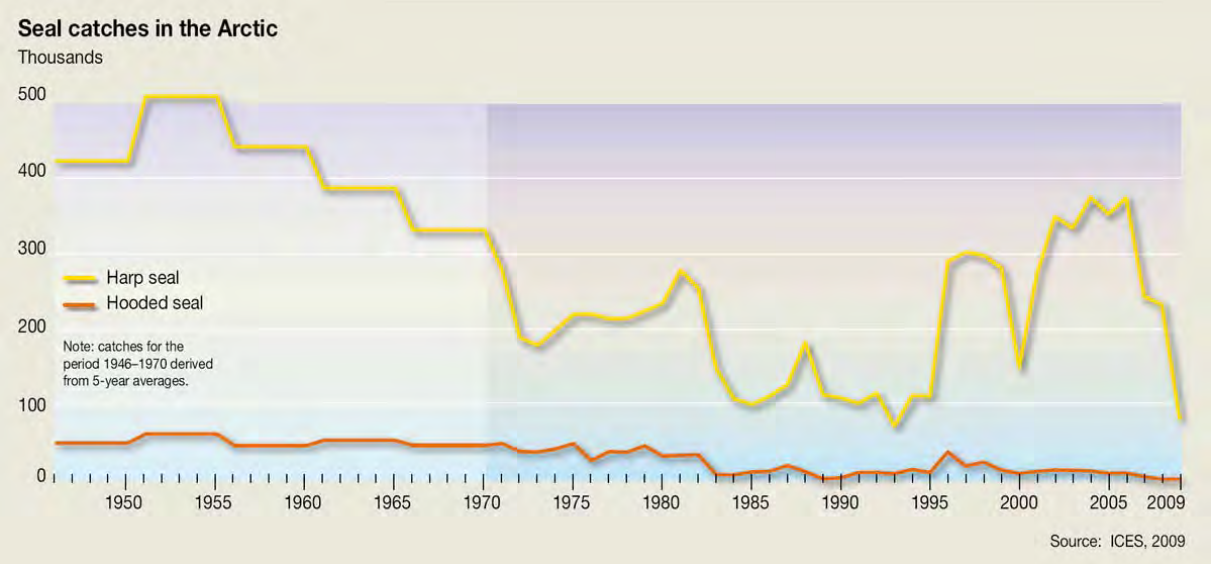
Large-scale commercial harvests are restricted to harp and hooded seals, except for the hooded seal population in the Jan Mayen area of the Greenland Sea. Both species faced intense commercial hunting in the 19th and 20th centuries, first for oil, and later mainly for the highly prized pelts of pups. Seal products nowadays also include a significant aphrodisiac trade (particularly for harp seal sex organs), and seal oil has become a popular health product because of its omega-3 content. Canada, Greenland, Norway, and Russia have been and are still involved in regulated commercial harvest of these species.



Ringed seals are also targeted by commercial harvest and occupy the second rank in numbers when Inuit subsistence hunt is included, a large of pelts being sold by Inuit hunters to peltries.

In 2012, the global capture production for arctic seals (FAO Statistics) was: harp seal, 105,990; ringed seal, 43,754; hooded seal, 2,091; bearded seal, 1,458; spotted seal, 271; ribbon seal, 0. The two sub Antarctic seals species were respectively 177 for the grey seal and 0 for the harbor seal.

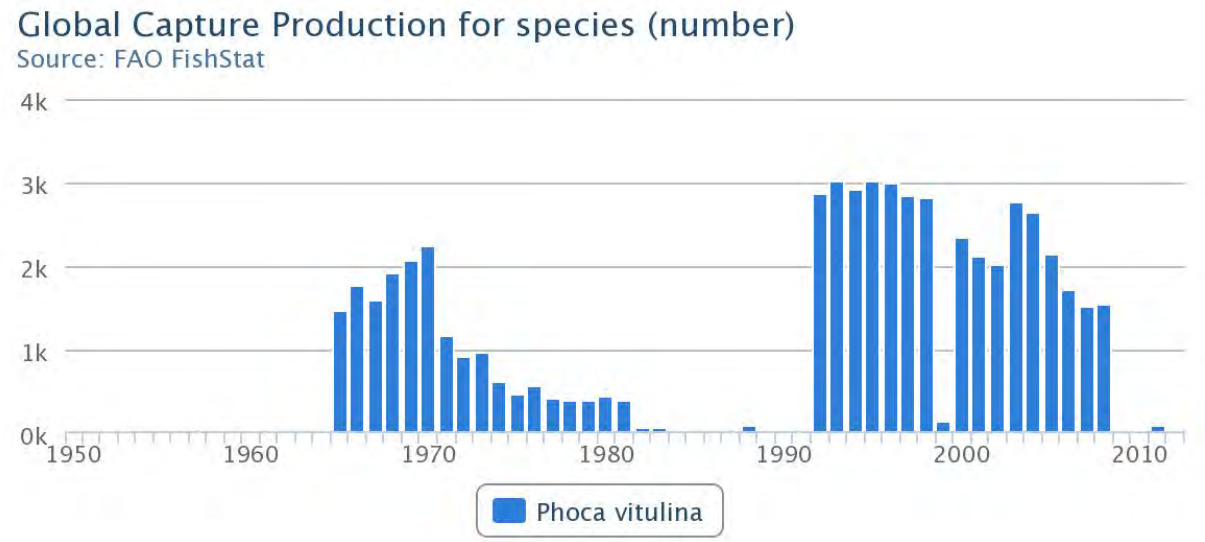
1. Subarctic seals hunting

In the Arctic Seas, the two subarctic seals (grey and harbor) are caught or hunted on an opportunistic mode, mainly by Inuit hunters, and represent a very low amount in the total seals catch in Greenland and Canada.

a. Harbor seal hunting

Harbor seal catch in Greenland (coastal subarctic waters of West, South and East coast) was during the 2000's less than 50 seals per year[1], mainly pups and subadults, which are killed by both professional and leisure-time Inuit hunters on an opportunistic mode.

The harbor seal was by 1 December 2010 completely protected against hunting and listed on the Greenland Red List as "critically endangered".



The main hunting grounds for harbor seal are in subarctic regions, in Iceland (208 pups and adults, plus 43 by-cached in nets[2] in 2012) and Norway where hunting is limited to game hunting at very low levels.

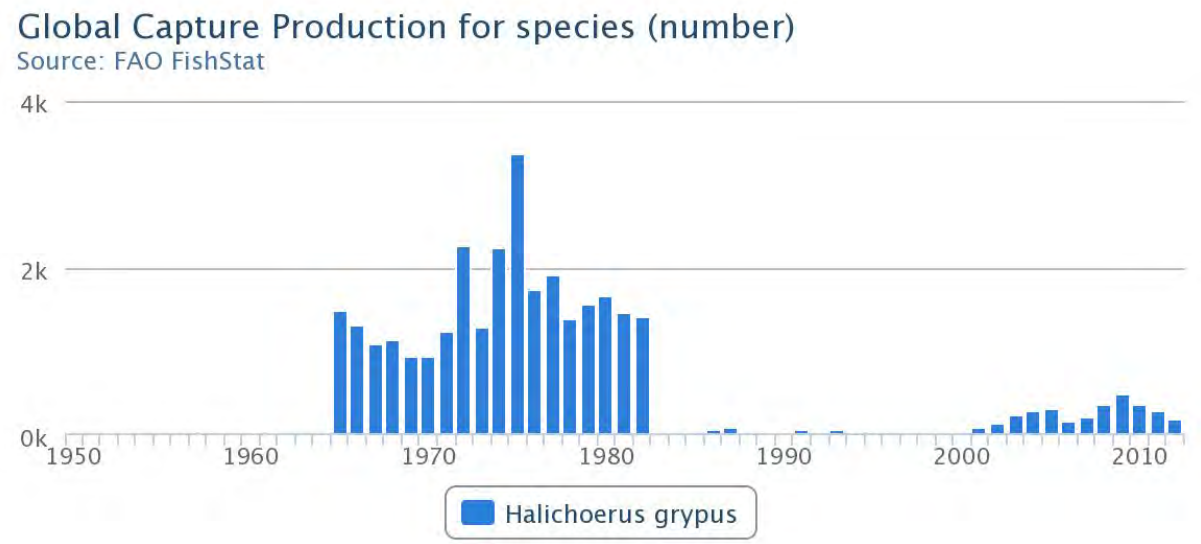
Harbor seals are listed in the Russian Red Books of the Murmansk Region, but poaching and illegal shooting of seals at fishing nets does occur[3].

Harbor seal harvest in Arctic Seas is officially closed since 2010, but poaching does probably still exist in some remote parts of Russian Arctic.

b. Grey seal hunting

Grey seal is actively hunted in Canada mainly along the Eastern Shore of Nova Scotia (Scotian Shelf) and in the Southern Gulf of St Lawrence, where an annual Total Allowable Catch (TAC) is settled by the Ministry of Fisheries and Oceans at 60 000 seals per year since 2011, with more than 60% for Scotian shelf. But official catches registered by Canadian Service Advisory Secretariat (CSAS) is much under the TAC, with 3,631 grey seals for 2013 (commercial harvest, 106; Science collections, 0; nuisance removed, 3,525[4]).

The nuisance remove of grey seals are allowed to mitigate the grey seal depredation impact on fisheries.



Grey seal is hunted in small numbers in Iceland (174 pups and adults, plus 30 by-catches in nets[5] in 2012) and in Norway (about 300 grey seals from 2003 and 2007[6]).

Grey seal is protected and registered in the Red Books of the Russian Federation (White and Kara seas) and hunt prohibited[7].

Grey seal being visited by vagrant individuals but not present regularly, the species is completely protected, listed as "Critically endangered" on the Greenland Red List.

There is no grey seal harvest in the Arctic Seas as all of the catches occur in Northern Labrador Sea and Saint Laurent Gulf.

2. Arctic seals hunting

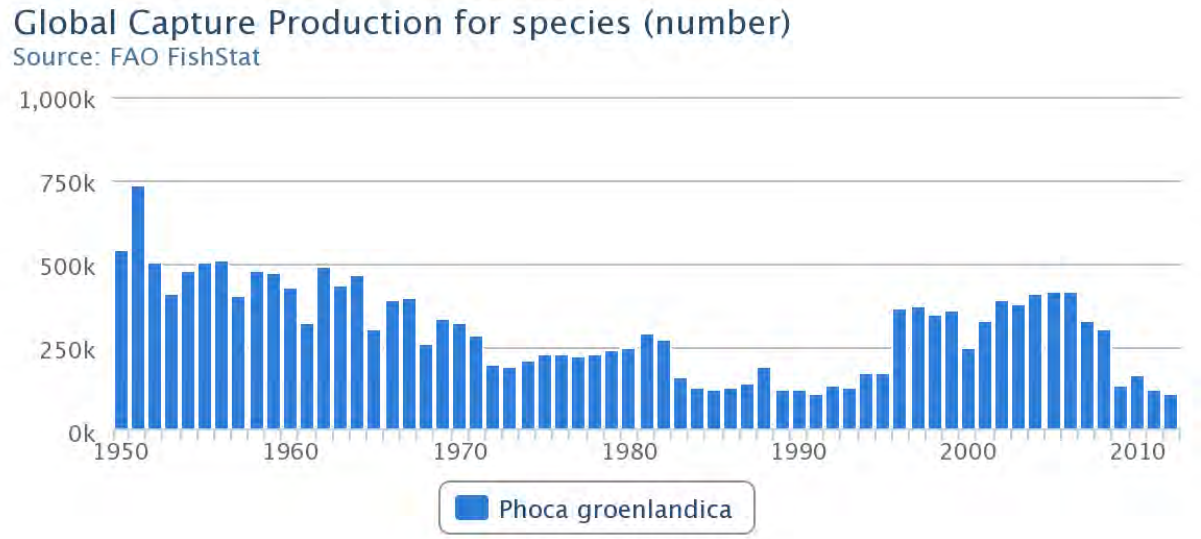
Commercial arctic seal hunting is practiced by Canada, mainly on harp seal in the Front region off Newfoundland, and by Norway in Greenland Sea on harp seal. Russian Federation commercial hunting have largely declined since 1994 for most species and virtually stopped after the ban on catches of harp seals less than 1 year of age pronounced in 2009 as Russian hunters focused on "beaters" pelts.

Arctic seals are also targeted by aboriginal peoples, mainly Inuit, for subsistence (food, pelts, traditional uses) and commercial issues in USA, Canada, Greenland and Russian Federation. This shore-based harvest main targets are the ringed and harp seals, but the other seal species are also killed by indigenous Peoples, for specific traditional uses (clothes and accessories), or on an opportunistic mode.

a. Harp seal hunting

The most productive arctic seal species, the harp seal is the main target of commercial seal hunting. They have been the object of commercial harvesting, principally on the whelping grounds, for fur and oil, dating back to the late 18th Century. In particular, harp seal pups have been clubbed in large numbers for their "white coats".

Until 1964, the commercial catches were nearly 400,000 seals per year, with peaks up to nearly 800,000 seals a year (736,222 seals in 1951), before diminishing to 100,000 seals/year during the 1970's to 1990's. The late 1990's and 2000's were marked by a rebound of commercial hunting with a mean annual catch of 400,000 seals.



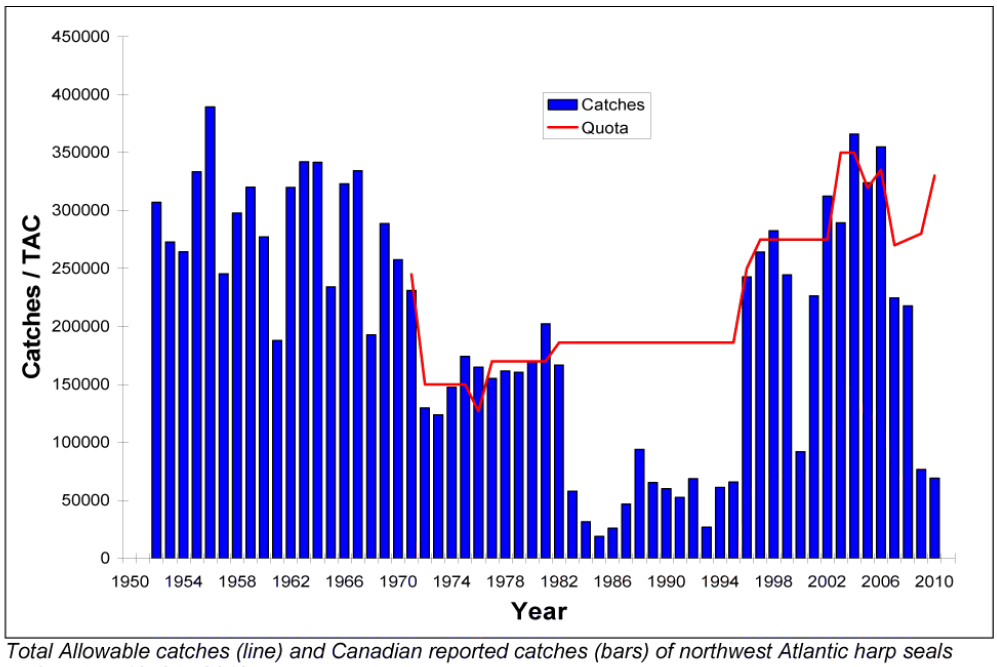
Since 2009, harp seal harvest have been reduced to around 100,000 seals/year. This catch reduction seams to be not related to the annual quotas settlements by countries involved in commercial hunting as Canada, the main harp seal hunting country, passed its Total Allowable Catches (TAC) from 275,000 in 2008 to 400,000 in 2011, a level maintained since then despite the reduction of catches.

The ventilation of the Canadian TAC is as follow : Commercial hunting 371,160 seals; personal use 2,000 and Developmental allocation (research of new commercial outcomes) 20,000[8].

Included in the Commercial allocation, the aboriginal TAC allocation represent 1.8% of total TAC with 6,840 seals.

The catches realized in the Canadian Arctic, captures made by Inuit, is estimated to 1,000 seals/year for the 2002-2011 period, representing 0,3% of commercial catches in 2002 and 2.6% in 2011[9].

Greenland haven't set any regulating quota for seal hunting management and considerer the harp seal population is sufficient for a sustainable hunting such as it is practiced in Greenland. During the latest decade the average catch was 82,000/yr[10]. harp seals. Greenland totalizes about 2,100 full time and 5,500 leisure time hunters, the former being responsible of roughly 80% of catches[11].



Total Allowable catches (line) and Canadian reported catches (bars) of northwest Atlantic harp seals and quotas, 1952 to 2010.

Canadian commercial (plus TAC) and Greenland catches of harp seals (,000s), 2000-2010.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Canada											
TAC	275	275	275	350[1]	350[1]	319.5	335	270	275	280	330
Catch	92.1	226.5	312.4	289.5	366.0	323.8	354.9	224.7	217.8	76.7	69.1
Greenland											
Catch	98.5	85.4	66.7	66.1	70.6	91.7	92.2	82.8	N/A	N/A	N/A

[1] Maximum annual catch under the three year management plan, totalling 975.

Norwegian commercial hunting on harp seals mainly concern the eastern Greenland population with a mean annual catch of 5,941 seals (2008-2012). Total catches in 2012 were 5,593 harp seals (including 3740 pups), whereas 16 033 harp seals were taken in 2013 (including 13 911 pups). These catches represented 22% and 54% of the 2012 and 2013 TACs which was set at 25 000 age 1+ animals (where two pups balance one age 1+ animal)[12].

Norwegian vessels were also used to hunt in the White and Barents Seas, with 5,000 to 10,000/year seal catch until 2007. Since 2008, the commercial catches are very low and no Norwegian vessels hunted in the region in 2012 and 2013 despite a quota settled at 7,000 harp seals.

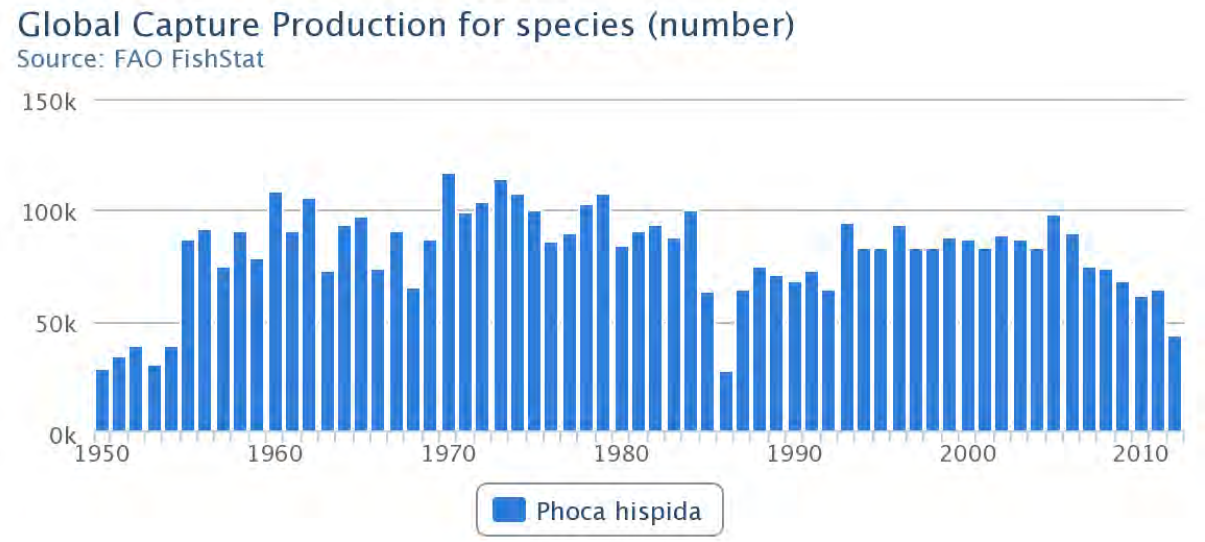
Since the ban on catches of harp seals less than 1 year of age pronounced in 2009 by the Russian Federation, there were no commercial Russian harp seal catches in the White Sea nor Greenland Sea since then, as Russian operators focused mainly on “beaters” (three to four weeks to one year old pups which have the most valuable coat). The mean annual pup catches until 2009 were roughly 3,000.

The total combined commercial and subsistence annual harvest for the complete Arctic Seas is about 198,000 harp seals, with large underestimation because of lack of accurate seals struck-loss measurements. The part due to Inuit hunter is about 83,000 seals/year, mostly in Greenland.

b. Ringed seal hunting

First target of Inuit professional and leisure-time hunters, the ringed seal harvest exist for millennia and remain a fundamental subsistence resource for many northern coastal communities today. Ringed seals were also harvested commercially in large numbers during the 20th century, which lead to the depletion of their stocks in many parts of their range. Ringed seal meat has been

used as food for people, sled dogs, and livestock; their skins sold for cash, traded for goods, or used for clothing, crafts, or other household items; their blubber rendered into oil for food and fuel; and their flippers, bones, and viscera used for many household, industrial, or medicinal purposes.



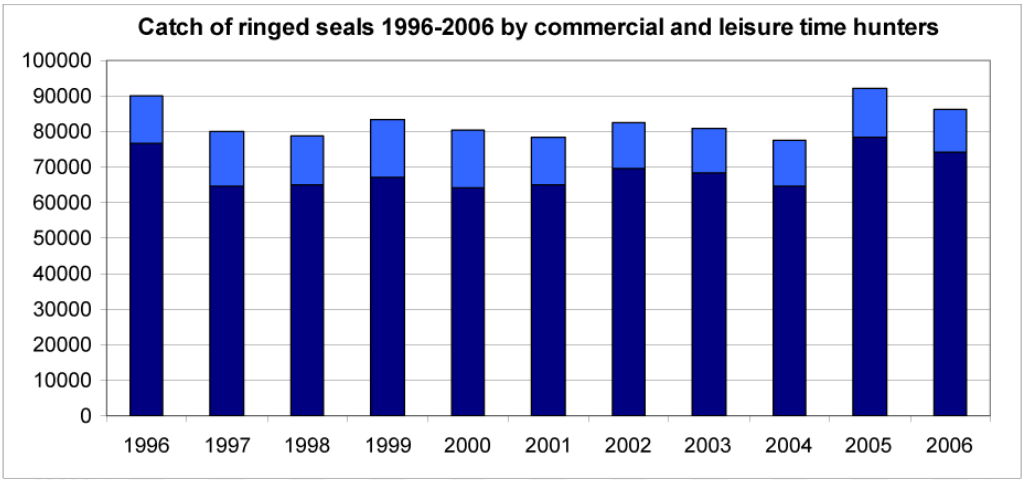
The total annual capture production of ringed seal commercial harvest declared to FAO was 43,754 seals for 2012 but the total actual harvest, including aboriginal take (allowed by permit or not), is more likely about 180,000 seals/year[13].

In the USA, ringed seal have been an important subsistence resource for many Alaska Native communities along the coasts of the northern Bering, Chukchi, and Beaufort Seas for centuries, however, their harvest levels decreased during the 1970s from 7,000-15,000 to 2,000-3,000 by 1979, likely due to changes in the Natives' lifestyle and the enactment of the MMPA in 1972. As of August 2000, an estimated 9,500 ringed seals were harvested for subsistence use in Alaska per year[14]. Commercial harvesting of marine mammals has been prohibited in U.S. waters since 1972 by the MMPA.

Ringed seals are by far the most important seal species for human consumption and utilization in the Canadian Arctic. The harvest levels were probably highest, likely exceeding 100,000 ringed seals per year, during the 1960s and 1970s when both the value of sealskins and the local demand for seal products were particularly high. Ringed seals are primarily hunted throughout the Canadian Arctic for subsistence uses by Inuit hunters. TACs or allocations are not set for ringed seals in Canada, but any commercial harvests are regulated by licenses and permits. In absence of formal monitoring or reporting, the estimates made by Reeves et al. (1998) of 60,000-80,000 killed are likely the most recent available for Canada's annual ringed seal take.

Seal hunting is a vital component of everyday life and culture in Greenland and provides a significant amount of nutrition and income to families living in remote coastal communities. The ringed seal harvest fluctuated between about 45,000 and 75,000 per year during the 1960s, steadily increased during the 1970s to a peak of almost 100,000 in 1979, and then decreased to a nearly constant level of about 70,000 per year during the 1980s and early 1990s[15]. The reported annual catch of ringed seals in Greenland averaged 82,421during 1995-2006. About half of the total number of sealskins taken from harp, hooded, and ringed seals in Greenland during 2000-2006 were sold to tanneries each year, with the other half presumably being used for private purposes. Thus, the seal hunt in Greenland is both subsistence oriented and a commercial activity (Greenland Home Rule 2009). Currently, there are no national laws providing protection for ringed seals in Greenland or catch

quotas regulating their harvest, however, sealing is regulated in a wildlife sanctuary in Melville Bay and a national park in northeast Greenland, and most municipalities restrict the area, season, or method of seal hunting through bylaws.



In most years, leisure time hunters account for about 1/5 of the harvest of ringed seals in Greenland, which underpins the cultural and socio-economic inportance of hunting seals.
Light blue: leisure time hunters, dark-blue: commercial hunters.

Large-scale commercial harvesting of marine mammals began in Svalbard shortly after its official discovery in 1596, however, ringed seals did not appear to play an important role in these early harvests since hunters preferred larger prey, such as bearded seals and walruses. Since 1946, Norwegian hunting records indicated that ringed seal catches varied between 0 (several years) and a maximum of 745 per year (in 1973). Currently, ringed seals are protected in Svalbard during the breeding season (March 20 to May 20), but licensed hunters can take seals at other times of the year outside of the national parks and nature reserves. Systematic harvest records are not kept in Svalbard, but can be estimated to some few hundred seals are taken annually, mainly for dog food.

In mainland Norway, ringed seals are hunted for sport, and the harvest is regulated by quotas and licensing with only a few hundred seals taken each year[16].

Ringed seals were harvested in the Russian Arctic as long as 3,000-5,000 years ago, but they do not appear to have been subjected to intensive sealing in the region, as were harp seals and Pacific walruses. The combined catches of ringed seals from the White and Barents Seas was 12,600 in 1933 and averaged about 5,600 per year during 1954-1965, while the harvest of ringed seals in the Kara Sea was 13,200 in 1933 and averaged about 2,900 per year during 1960-1962. Those numbers only reflect the commercial harvest conducted by the fishing industry and procurement companies and could be increased by 10-15% to account for data missing. Individual hunters may have taken up to 200 seals per year for subsistence in those regions where Inuit are absent. The average annual harvest of ringed seals declined constantly and dropped to about 800 in the White Sea during 1985-1994 and to less than 400 in the Barents and Kara Seas combined during 1985-1992. Current harvest levels of ringed seals in the western Russian Arctic are not available but during 2002-2005, TACs for ringed seals ranged from 1,000 to 2,500 in the Barents Sea and from 1,000 to 1,300 in the White Sea. A quota of 1,500 was set for the Kara Sea there in 2005. In 2008, ringed seal TACs were set at 100 in the Barents and Kara Seas and 500 in the White Sea.

The Soviet sealing fleet conducted large-scale commercial harvests in the Bering Sea during 1961-1969, and about 5,100 ringed seals (or 6,400 accounting for hunting losses) were killed each

year. Large-scale ship-based harvests of ringed and bearded seals have been prohibited in the Bering Sea since 1969, but small-scale ship-based harvests of these species continued. The annual ship-based harvest did not exceed 3,300 ringed seals (4,100 accounting for losses) during 1970-1990.

Historically, the largest harvest of ringed seals from the Russian portions of the Bering and Chukchi Seas came from shore-based hunting by native peoples. The annual harvest of ringed seals by Russian Natives living along the coast of the Chukchi Sea averaged 25,000 during the late 1930s and 15,500 during the late 1950s. In the Bering Sea, the shore-based harvest was between 30,000 and 35,000 ringed seals per year during the "postwar years" but decreased to 10,000- 12,000 ringed seals annually "in later years" and decreased to not more than 3,000-4,000 ringed seals per year in the early 1980s in Bering and Chukchi Seas[17]. This reduction of aboriginal harvest has been attributed to the movement of native peoples from small coastal camps to larger settlements and a subsequent change in their social traditions[18].

Ringed seal TACs in the western Bering Sea and along the eastern coast of the Kamchatka Peninsula ranged between 5,900 and 6,500 per year during 2002-2005 and were set at 1,900 in 2008, the most recent year for which TACs are available. Ringed seal TACs were set at 200 in the Laptev and East Siberian Seas and 5,200 in the Chukchi Sea and Chukotka Zone in 2008.

Seals have been hunted by native peoples along the coasts of the Sea of Okhotsk for centuries, and prior to the 1950s, the subsistence hunters' annual take did not exceed 25,000-35,000 seals of which about 50% were ringed seals. The commercial harvest in the Sea of Okhotsk began in 1932 and ranged between 38,938 and 81,710 (Avg. = 70,000) ringed seals per year during 1955-1968. An annual harvest limit of 32,000 ringed seals was imposed on sealing ships in the Sea of Okhotsk in 1969 and the large-scale ship-based harvests ended in the Sea of Okhotsk in 1994. A catch restriction of 7,000 ringed seals per year was also imposed on the shore-based harvest in the Sea of Okhotsk in 1975. TACs set by the Russian Federation allowed for 20,100-22,600 ringed seals to be harvested annually from the Sea of Okhotsk during 2002-2005, however, the actual harvest (including the four seal species, ringed, bearded, spotted and ribbon seals) was less than 1,000 seals per year during 1995-2005.

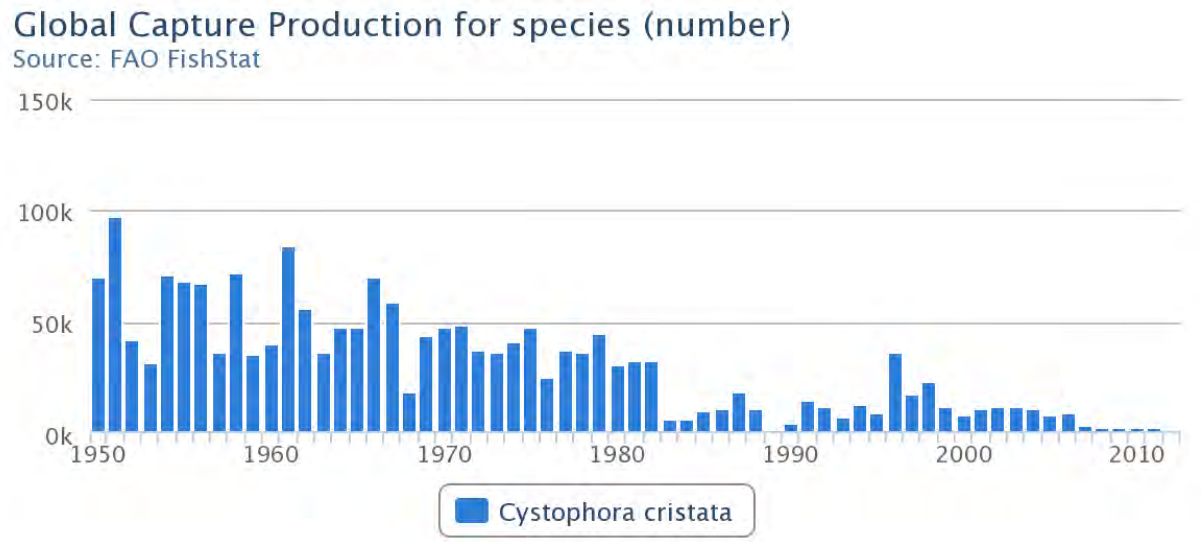
The ringed seal TAC in the Sea of Okhotsk was lowered to 3,500 in 2008 and the current harvest level is believed to be much lower than 1,000 ringed seals per year[14].

The total combined commercial and subsistence annual harvest for the complete Arctic Seas is about 161,820-181,820 ringed seals, with large underestimation because of lack of accurate seals struck-loss measurements and on subsistence takes by some aboriginal communities in Russian administrated regions.

Most of that annual catch are realized by aboriginal people representing 158,000-178,000 ringed seals/year, principally in Canadian Arctic (60-000,-80,000) and Greenland (82,000).

c. Hooded seal hunting

The West Ice stock of hooded seals has been subject to commercial exploitation for centuries by German, Dutch and British companies. Harp seals were the most important catch object in the early seal hunting years in the Greenland Sea, whereas hooded seals occurred more frequently in the catches from the 1890s on. After 1920, a substantial increase occurred in the Jan Mayen hooded seal hunt with average annual catches ranging between 40 and 50 thousand individuals. Quotas for the Jan Mayen stock were imposed in 1971.



Annual catches reported to FAO were between 50,000-100,000 during 1950's, around 50,000 during1960's and felt below 50,000 during the 1970's. From 1983 to 2006, the mean annual catches decreased to 11,700 hooded seals, with approximatively half of captures made by Norwegian and Russian sealing fleets in Greenland Sea. Global production capture decreased by 1,482 in 2012 following the cessation of commercial harvest by Russian and Norwegian fleets in Greenland Sea.

The Jan Mayen population (Greenland Sea) is managed jointly by Norway and Russia. The population is assessed every second year by a Joint Working Group of the International Council of the Exploration of the Seas (ICES) and the North-West Atlantic Fisheries Organization (NAFO) and management advice is provided by ICES. ICES made an assessment of current status in an historical perspective of this stock in 2007. Model explorations indicated a decrease in population abundance from the late 1940s and up to the early 1980s. In the most recent two decades, the stock appeared to have stabilized at a low level of approximately 71,000. This may be only 10-15% of the level observed 60 years ago. Consequently, ICES advised no catch on this stock in 2007 and no catch quota have been attributed for hooded seal in Greenland Sea since then. Results from the most recent (2012) pup survey suggest that current pup production remains very low, and lower than observed in comparable surveys in 1997, 2005 and 2007. Models predicted a total hooded seal population for the region of 82 830 seals in 2013 which can't support any sustainable commercial harvest.

Since 2007, 19 to 413 hooded seals annual catches special permits have been given for research purposes for the Greenland Sea population (22 in 2013 with 15 pups to Norwegians scientists)[13].

In Greenland, both professional and leisure-time hunters catch hooded seals since thousands years, hunting on a land-based mode. At its highest level, during the late 19th century, annual harvest were about 10,000-15,000 seals in Western Greenland. During the 1950's, the annual total catch were 1,000-1,500 hooded seals and began to increase during the 1960's to reach 6,000 seals in the 1980's (about 3,600 in Western Greenland; 2,400 in Eastern Greenland)[19]. After a decline in 1983 and last 1980's, the mean annual catch stabilized to 6,500 hooded seals (4,842 in 2006)[12]. During the 2006-2009 period, catches decreased again, reaching 1,983 hooded seals in 2009 (1,624 in West and 358 in Southeast)[20].

In Canada, hooded seals harvest was conducted on a commercial mode since the 19th mainly on the "Front Shelf" off Newfoundland in Labrador Sea and was 5,000-10,000 seals during the 1950's, reaching 10,000-15,000 during the 1970's and early 1980's. DFO maintained a TAC of 10,000 hooded seals during the early 2000's despite the fact that real catches felt down to a few hundreds seals (389 in 2006)[12]. The actual Canadian TAC of 8,200 hooded seals was stated in 2007 and catches are restricted to the Front region. However, catches of hooded seals (1+ only, pups and blue-black are prohibited) have remained extremely low in recent years (10 in 2009; 0 in 2010; 1 in 2011)[21].

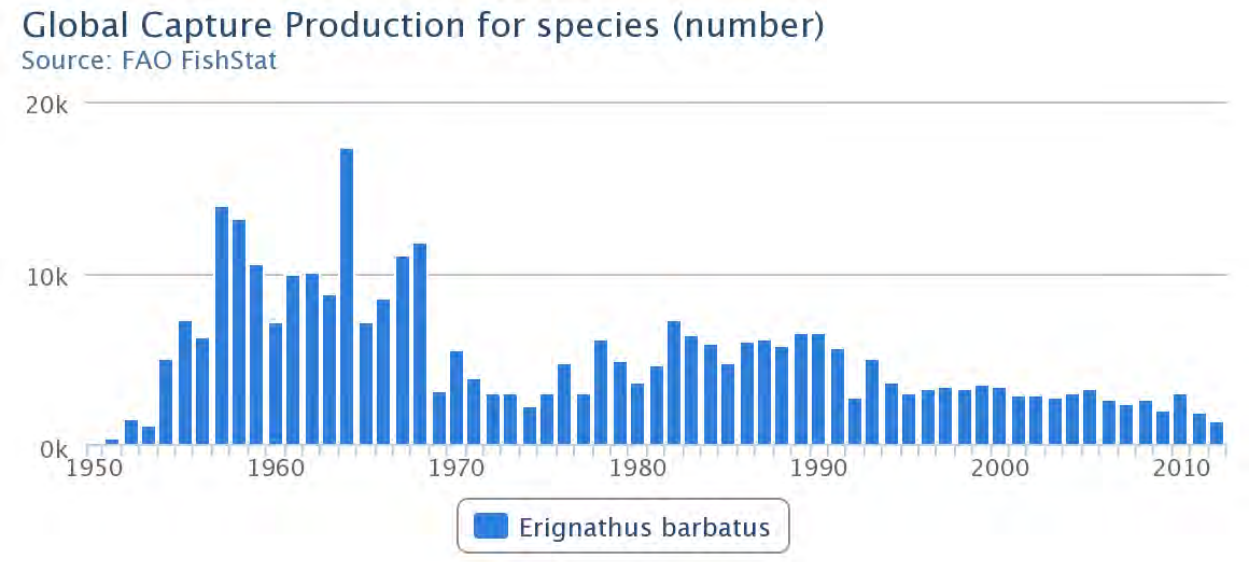
The total combined commercial and subsistence current annual harvest for the complete Arctic Seas is about 2,000 hooded seals, practically restricted to Greenland. This estimate is probably underestimated because of lack of seal struck-loss evaluation.

d. Bearded seal hunting

Bearded seals have been, and continue to be, hunted by humans. Subsistence hunting goes back to prehistoric times, and they are still a mainstay of many local villages in the far north. They are a source of food, but also provide valuable hides for clothing and covering boats. Bearded seals have been an important subsistence resource for Native communities along the coasts of the Arctic Seas since the earliest occupation of humans. Hunters mostly take seals during their northward migration in the late spring and early summer, using small boats in open leads among ice floes close to shore.

Most of the total bearded seal harvest is due to aboriginal subsistence hunting but, as for other Arctic seals, a part of it has a commercial outcome, mainly in Greenland an Canada Inuit communities wherein professional hunters realize as far as 2/3 of total catches.

After a brief bounce during the 1960's at more than 10,000 bearded seal/year, the annual commercial catches a much lower level of 5,000 seals during the 1980's and 3,000 during the 1990's and 2000's. In 2012, the total catch reported to FAO was 1,458 seals.



Russia has developed a commercial harvest of bearded seals in the Sea of Okhotsk and the Bering Sea with annual catches estimated to 1,700 to 2,700 animals during the 1950s and 1960s in Chukchi sea and then in Eastern Bering and Okhotsk Seas with average total annual catches exceeding 7,000 seals in the late 1960's and 1970s. Ship-based sealing in the Bering and Okhotsk Seas was suspended from 1970 to 1975 in response to seal populations depletion. In 1975, the first annual total allowable catch (TAC) of 3,000 bearded seals was set for the Russian Bering Sea[21].

Total harvest of bearded seals by Siberian hunters in the Bering and Chukchi Seas during the 1970s was similar to the harvest by Alaska Natives, between 1,600 and 2,300 bearded seals/year. Assuming similar contemporary harvests in eastern Siberia and Alaska, as was the pattern in the 1970s and 1980s, and a comparable struck-loss rate of 25-50%, the total annual take from the entire Bering and Chukchi Seas would range from 16,970 to 20,364 bearded seals.

The TACs for 2010, which are set by the Russian Federal Fisheries Agency, of 1,600, 2,000, 2,500, and 150 bearded seals for the western Bering and Chukchi Seas, Chukotka Peninsula, and eastern Siberia, respectively, indicate potential maximum catches (sum of TACs = 6,250) similar to the reported takes from the eastern Bering and Chukchi Seas. Less than 50% of the total TACs for the Russian Bering and Chukchi Seas is apparently allocated for the subsistence coastal hunt occurring on the Chukotka Peninsula and in eastern Siberia[22].

Varying from 6,800 to 7,700 seals/year between 2002 and 2004, the specific TAC for the Okhotsk Sea was reduced to 2,100 in 2010 and does not include subsistence harvest which is unknown for the region.

Alaskan villages harvested about 1,700 bearded seals annually from 1966 to 1979, with reported takes remaining fairly constant except in 1977 when an estimated range of 4,750-6,308 were taken. More recently in Alaska, under more comprehensive subsistence monitoring, the estimated harvest peaked from 1990 to 1998 at mean levels of 6,788 bearded seals per year. No more accurate estimates are available for the western Bering and Beaufort seas. Assuming 25 to 50% of seals struck are lost, the total annual hunt by Alaska Natives would range from 8,485 to 10,182 bearded seals[22].

In Canada, bearded seal hunting is culturally and nutritionally important in the western Canadian Arctic, with the Inuvialuit utilizing bearded seals similarly to Alaska Native and Siberian communities. Total allowable catches have not been established for bearded seals, nor is there a commercial hunt, with licenses and permits used to control the harvest. There are also no quotas on subsistence hunting. From 1988 to 1997, an average of 24 bearded seals (range = 17-33) were taken annually by Native communities in the Inuvialuit Settlement Area, encompassing the western Beaufort Sea and the protected waters off Banks and Victoria Islands, and the western Queen Elizabeth Islands.

From 1996 to 2001, an yearly average of 735 bearded seals was taken by Native communities in the Nunavut Settlement Area, encompassing the east coast of Baffin Island west to Inuvialuit and south to Belcher Islands in Hudson Bay. The most recent estimate of annual harvests from the Quebec coast, including Ungava Bay, Hudson Strait, and the eastern half of Hudson Bay, from the mid-1970s, is 1,800 bearded seals. An estimated 80 seals were taken annually from 1994 to 2002 off the Labrador and Newfoundland coasts. Applying loss rates of 50% to the range of harvest estimates brings the expected total annual take by Native hunters in the Canadian Arctic to 5,000 to 6,000 bearded seals[46].

As in other parts of the Arctic, bearded seal remains an important source of nutrition, cultural identity, and income in remote communities in the northern and eastern parts of the Greenland. After a possible overexploitation during the 20th century, the hunt decreased following a warming trend that

shifted ice and hunting grounds northward. From 2005 to 2007, between 1,454 and 1,773 bearded seals were taken island-wide.

Historical records of commercial seal harvests in the Barents and White Seas date back to the 1800's, with annual takes during 1884-1904 from Norwegian ships ranging from 2,400 to 8,000 bearded seals. By 1963, harvests in the Barents Sea around the Svalbard Archipelago had seemingly declined as Norwegian ships reportedly took 1,563 seals.

In Svalbard, it is legal for licensed hunters to harvest bearded seals outside of the national parks and nature reserves and outside the breeding season (at which time they are protected) and some 10s are shot annually. As of 2007, only about 40 bearded seals were taken annually.

It is unknown the extent to which commercial hunting has historically extended into the Kara Sea, where breeding and molting aggregations are reported, though Norwegian sealers likely exploited this area, probably at very low rates because of its remoteness. The same is true for Franz Joseph Archipelago, which was designed as Wildlife Refuge in 1994. However, a certain amount of game hunting occurs in the area, but without any estimate or statistics available.

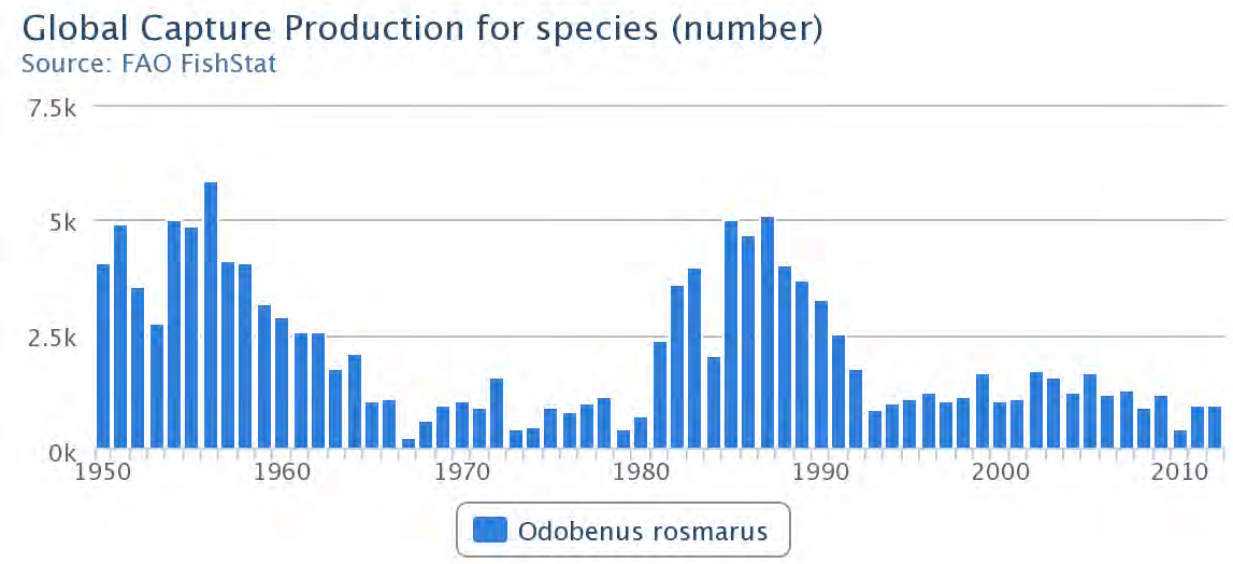
Current harvest levels in coastal Russia and controlled waters can only be inferred from TACs issued by the Russian Government. Since 2003, TACs in the White and Barents Seas had been fairly constant at about 200 and 600 bearded seals, respectively, but were reduced in 2010 to 20 and 150. Also in 2010, a new TAC of 150 seals was established for the Kara Sea. These 3 TACs combined would number no more than 320 seals.

The total combined commercial and subsistence annual harvest for the Arctic Seas is about 34,000-40,000 bearded seals with a possible underestimation due to lack of accurate seals struck are lost measurements and on subsistence takes by some aboriginal communities in Russian administrated regions.

Most of the catches are due to aboriginal take reaching 30,500-38,000 seals/year, mainly for subsistence purposes, as they mostly occur in West Beaufort, Chukchi and Bering Seas by Alaskan and Russian Inuit.

e. Walrus hunting

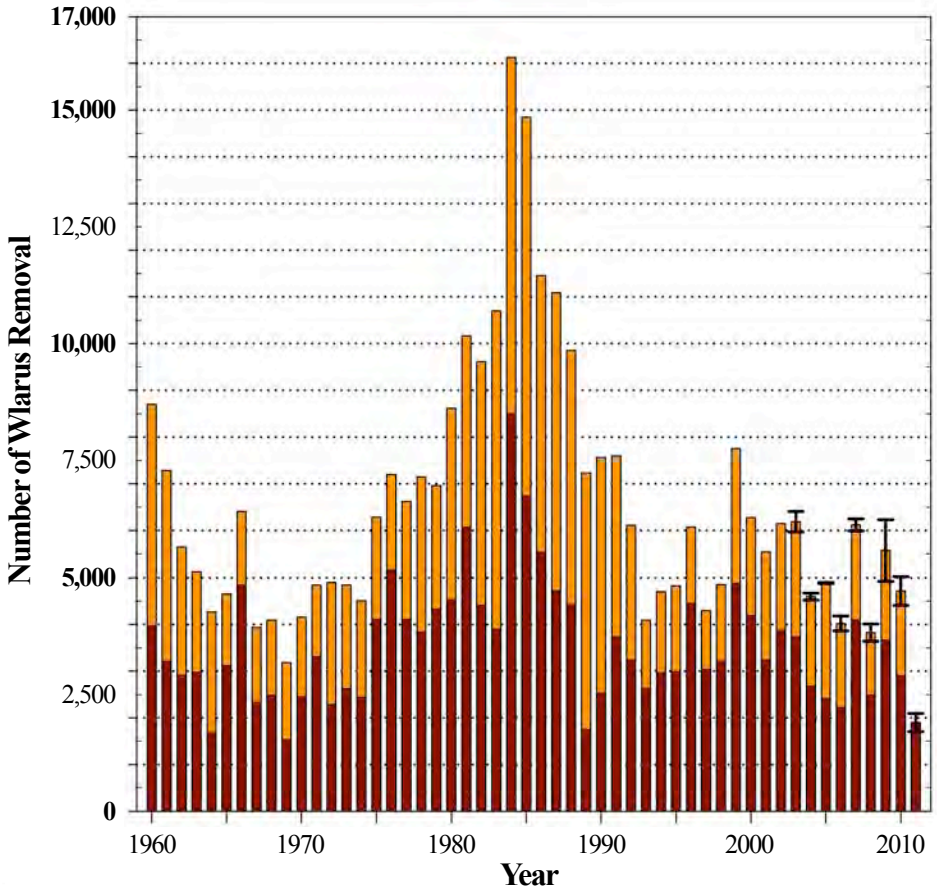
Walruses have been severely exploited by humans, having been hunted for millennia by native peoples who made wide use of the carcass for meat, skins for shelter and kayak coverings, and ivory for tools, weapons, and art. Europeans have taken vast numbers of these animals beginning with Viking traders in the 10th Century. Most populations were decimated in the 19th and early 20th Centuries. Although the Pacific population has recovered dramatically, the Atlantic and Laptev Sea populations are still at low levels. Subsistence catches are still important to northern cultures. These are managed by governments, but poaching continues to be a problem in most areas.



Pacific walrus

For thousands of years walrus hunting has been an important component of the economy and culture of Native communities along the Bering and Chukchi Sea coasts. Today, the Pacific walrus remains a valuable subsistence resource in many coastal communities as a source of food and raw materials for traditional equipment and handicrafts. The Pacific walrus has also been exploited as a commercial resource since the seventeenth century. Based on large sustained harvests in the 18th and 19th centuries, the pre-exploitation population was estimated to a minimum of 200,000 animals. Since that time, population size has fluctuated in response to varying levels of human exploitation.

It is unlikely that walrus hunting had any appreciable effect on the Pacific walrus population prior to the arrival of European explorers in the 17th century, when for the first time, walruses were killed in large numbers for tusks, hides, and oil that could be sold or traded on the world market. The pre-exploitation indigenous harvest is believed to have been nearly 5 to 6 thousands walruses a year, switching to approximately 15 to 20,000 animals during the 18000's due to the American whalers harvest, driving the Pacific walrus populations to a deep decline, totalizing 80,000 walruses by 1880. Since 1950, annual total harvest maintained to 5 to 7,000 animals per year. In 1960, as the population was estimated to 50,000-100,000 animals, the State of Alaska restricted harvest of females walruses to 7 individuals per hunter per year, and 5/hunter/year until 1972, year of the MMPA and its restriction of marine mammals harvest to indigenous peoples alone. At the same time, USSR also implemented harvest restrictions and shooting animals in the water was prohibited[22].



Total Annual Walrus removal: 1960-2011

Include Indigenous subsistence and commercial catches and struck and lost factor estimated at 42%
(American removal in red; Russian removal in orange)

The total annual removals during the 1970's, including both Russian commercial sealing and Indigenous subsistence (Alaska + Chukotka) were 5,747 walruses per year. This removal take in account the struck and loss, which is estimated at 42% of shot animals as dead walrus sink rapidly. During the 1980's, this removal shifted to 10,970 walruses per year, due to the Russian commercial ship-based harvest and an increasing availability to Inuit hunters linked to the walrus populations recovery (about 250,000 walruses). This increased harvest was accompanied by an increase in the proportion of harvested females, which likely had a depleting effect on population, reaching 201,039 walruses in 1990[23].

The 1990's saw much lower total removal levels than the previous decade, with an average of 5,787 walrus per year. Total annual removal levels have continued to drop since that time. The average annual removal estimate for the most recent decade (2000-2008) is 5,285 walruses/year.

Table: Mean (standard error) **harvest of Pacific walruses, 2006-2010.**

Total harvest includes a struck and lost factor of 42%.

Year	Total harvest	United States harvest	Russian harvest
2006	4,022(157)	1,286(91)	1,047
2007	6,119(127)	2,376(74)	1,173
2008	3,828(185)	1,442(107)	778
2009	5,547(654)	2,123(379)	1,110
2010	4,716(308)	1,682(178)	1,053
Five years mean	4,852(346)	1,782(200)	1,032(67)

In recent years, United States subsistance harvest counted for approximatively 60% of the total removal, targeting mostly on adult males (1.55:1 male to female). 84% of american catches (988 walruses) are realized on St Lawrence Island in central northern Bering Sea. Russian catches are more widly distributed, 50-60% bieng located on Chukchi Sea coast and northern Bering Sea coast.

Current harvest practice in both countries primarily involve targeting walruses hauled out on sea ice using small skiffs, but some hunting also occurs on coastal haulouts in fall, mostly iin Chukotka.

The current total annual harvest of Pacific walrus is less than 5,000 animals, all kills being made by Indigenous peoples (Inuit from Alaska and Chukotka).

Atlantic walrus

For thousands of years walrus hunting has been an important component of the economy and culture of Native communities along Greenland and Canadian Arctic archipelago and have been hunted by Norse in Barents and Greenland seas as soon as the 9th century. Commercial sealing begun in Barents, Greenland, Labrador seas and Baffin bay during the mid 1800's until the 1920's or 1950's when Canada (1928), Norway (1952) and Russia (1956) introduced regulations or full protection to stop the overharvesting which has conducted Svalbard, Greenland and eastern Canada coast populations to nearly extinction.

Under the Fisheries Act (1867), Canada established regulations in 1928 banning commercial harvesting of walrus and limiting the killing of walruses to Inuit for their own food and clothing requirements. In addition, exporting raw, unworked ivory was forbidden. In 1931, the regulations for the protection of walruses were revised and limited the number of walrus taken annually to seven per Inuk with dependents and four per Inuk without dependents. Community quotas were enacted under the Walrus Protection Regulations of 1980 (SOR/80-338), as was the limit of four walruses per year per Inuk. In 1993, the Walrus Protect Regulations were replaced by the Marine Mammal Regulations of the Fisheries Act, which stipulate that an Inuk or land claims beneficiary may, without a license, hunt for food, social or ceremonial purposes up to four walrus in a year and established community quota levels for four communities in Nunavut. Non-beneficiaries may also kill walruses but they require a license under the Marine Mammal Regulations or Aboriginal Communal Fishing License Regulation to hunt walruses. Sport hunts are managed by limiting the number of licenses approved annually. Walrus was listed by Canada in 1975 under Appendix III of the CITES in order to monitor international trade levels and an export permit from the Canadian CITES authorities is required to export walrus parts from Canada.

Walrus harvest data in Nunavut are inconsistent and often based on estimates. During the past 25 years, total annual declared catches in Canada is nearly 400 walruses, 90% harvested in Central Arctic Canadian Basin (Fox Basin, Hudson Bay and Davis Strait).

In Greenland, commercial sealing was performed until about 1910, by Scottish whalers who caught walruses in the Baffin Bay region including in West Greenland and the North Water areas. Norwegian sealers and whalers took walruses between ca. 1910 and 1923 offshore in West Greenland, and made large catches around the 1950s presumably in northern Baffin Bay. For all three walrus populations (North Baffin bay - Qaanaaq municipality; West Greenland - central and

southern Baffin bay; East Greenland) great uncertainty exists about the numbers taken by European whalers and sealers[24].

Inuit subsistence harvest has increased since 1930 after the introduction of firearms and motorized vessels operating in the offshore pack ice, accompanied by an increased struck and lost rates as compared with traditional harpooning method principally concerning hauled out walruses on land, shifting from 10% to 20-30%. Various regulations have been settled and amended since the beginning of the 20th century up until the 1990s mainly by local decrees in northern Greenland, since 1949 in West Greenland, through hunting season limitations, boats size and hunter licensing, and since 1938 in East Greenland for Danish hunters and trappers (but nor Norwegians) and full protection north of 74°24'N in 1951. The creation in 1974 of the North and Northeast Greenland national park prohibited all kinds of hunting inside its limits, except form residents of Ittoqqortoormiit - Scoresby Sound with a hunting license whom are allowed to conduct traditional hunting inside the national park and it is not explicitly stated that walruses cannot be taken during such hunting activity.

Quotas for the take of walruses were introduced in 2006. Prior to the introduction of quotas for all three stocks/units that are exploited in Greenland, the average annual reported landed catch during 1993-2006 was 126 for Baffin Bay (Northwest Greenland), 170 in West Greenland-Southeast Baffin Island and 18 in East Greenland. Annual quotas issued for the Greenland catch of walruses for the years 2010-2012 were 64 (Baffin Bay), 61 (West Greenland-Southeast Baffin Island), and 18 (East Greenland) or a total of 143 walruses per year. This represents a reduction in the exploitation of walruses in Greenland of ca. 55% since 2006. Female shooting is forbidden except in Northwest Greenland, and land hauled out walruses are completely protected by anticipation of sea ice reduction due to climate change.

In 1604 the first recorded hunt of Atlantic walrus occurred in Svalbard, marking the beginning of the onslaught on the walrus population in this archipelago. By the middle of the 19th Century the stock showed clear signs of decrease. The centuries of walrus hunting brought the reportedly large herds to the verge of extinction, until they finally were given total protection in 1952 by Norwegian government.

The Norwegian-Russian Sealing Agreement of 1958, which applies to northeast Atlantic waters east of Kap Farvel, Greenland, also includes a provision that the catching of walrus is forbidden throughout the year. The Agreement thus confirmed both the Soviet total prohibition of walrus hunting in the western Soviet Arctic since 1956 and the ship-based hunting since 1934, and the Norwegian total prohibition since 1952.

Walrus hunting in Franz Josef Land first became a significant mortality factor around 1900. From then until the late 1920s Norwegian sealers harvested a considerable number of walruses in Franz Josef Land: the total registered catch in the period 1880 to 1950 was estimated to about 5,900.

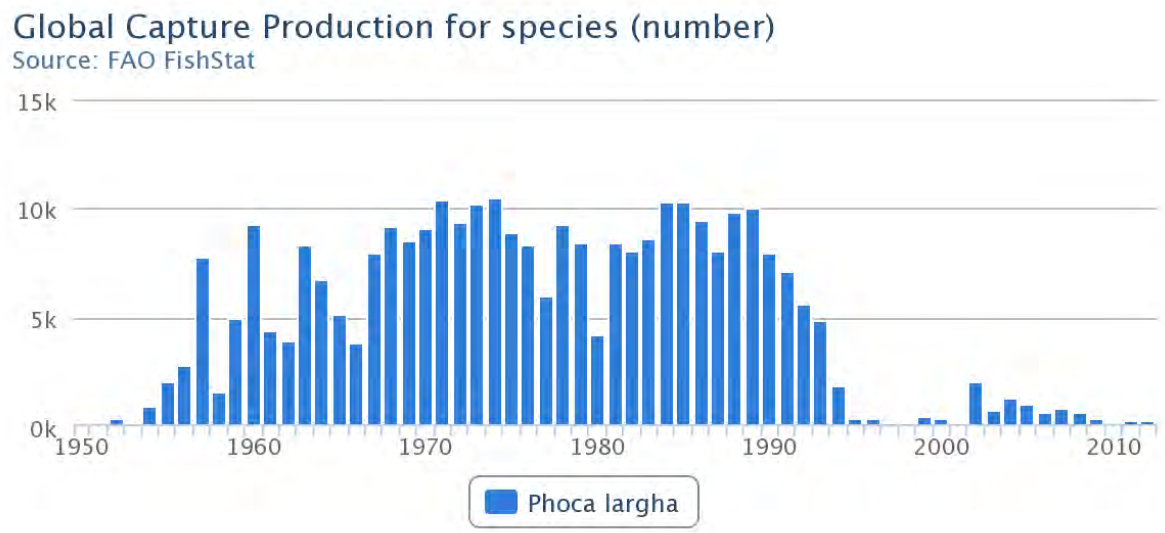
In the USSR, harvesting of Atlantic walruses was first limited in 1921. In 1935 the state harvest from sealing vessels ceased and in 1949 the killing of walruses by any fishing or sealing industry was prohibited. The hunting of walruses was prohibited for any Soviet citizens in 1956, except for a subsistence harvest by some native people and expeditions. The Novaya Zemlya population of walrus was included in the list of Rare Animals of the USSR in 1971. In 1975 regulations for protecting and harvesting of marine mammals prohibited sport hunting of walrus as well as any landing on or the littering of shore haul-outs at any time. It also prohibited

possession, manufacture, buying, selling, storage, and transportation of hides and tusks from walruses.

The current total annual harvest of Atlantic walrus is less than 500 animals, all killed by Inuit people in Canada and Greenland.

e. Spotted seal hunting

Small commercial and subsistence harvests of spotted seals have been active throughout this century, and continue to this day. Most of the commercial sealing on spotted seal was done by Russian operators and declined drastically with the USSR dissolution in 1991. Current Global captures reported to FAO was 271 seals in 2012.



Spotted seals are an important resource to Alaska Native subsistence hunters in the coastal regions of the Bering and Chukchi Seas (Lowry 1985, Burns 2002) and have been for many generations. Between about 1966 and 1976, annual harvests in Alaska were reported to range between 850 and 3,600 spotted seals with an average of about 2,400 per year. The best current estimate available is about 5,265 spotted seals harvested for subsistence use in Alaska per year[25].

Russian Natives have hunted spotted seals for many centuries, primarily to fulfill their basic subsistence needs for meat, hides, and oil, and more recently, to also feed their fur-bearing animals on collective farms. prior to the 1950s, the subsistence harvest from the Sea of Okhotsk ranged between 3,750 and 5,250 spotted seals per year. Spotted seals were taken in insignificant numbers by Russian Natives along the Bering and Chukchi coasts, who preferred to harvest ringed and bearded seals instead.

Soviet sealers began commercially harvesting spotted seals in the Sea of Okhotsk during the early 1930s. Over two-thirds of the commercial harvest came during the summer-fall hunting season from beach rookeries in the western Sea of Okhotsk and Tatar Strait where about 500-1,000 spotted

seals were caught annually, completed by a ship-based commercial sealing, which developed during the 1950's. Until regulation settled in 1969 with TACs, total annual harvest in Okhotsk Sea was between 1,790 and 9,264 seals.

Ship-based commercial sealing began in the Bering Sea in 1961 and also was unregulated until 1969. During this time, approximately 2,000 spotted seals (2,600 accounting for losses) were harvested each year in the Bering Sea. Between the mid-1950s and mid-1970s, the combined annual catch from ship and shore-based harvests in the Sea of Okhotsk and Bering Sea did not exceed 10,000-15,000 spotted seals per year.

Hunting regulations were established in 1969-1970 to protect all seal species in Russian waters, and annual catch limits for the ship-based harvest were set at 5,000 spotted seals in the Sea of Okhotsk and 6,000 in the Bering Sea, while coastal harvest quotas were set at 2,000 spotted seals per year in each sea. The annual ship-based harvest increased to about 3,000 spotted seals (4,800 accounting for losses) in the Bering Sea during 1969-1985, while slightly decreasing in the Sea of Okhotsk to an average of 4,282 seals during 1969-1980. The annual shore-based harvest in the Bering Sea ranged between 14 and 707 spotted seals, with average of 347 per year during 1969-1983, and the maximum shore-based harvest in the Chukchi Sea was 325 spotted seals in 1979.

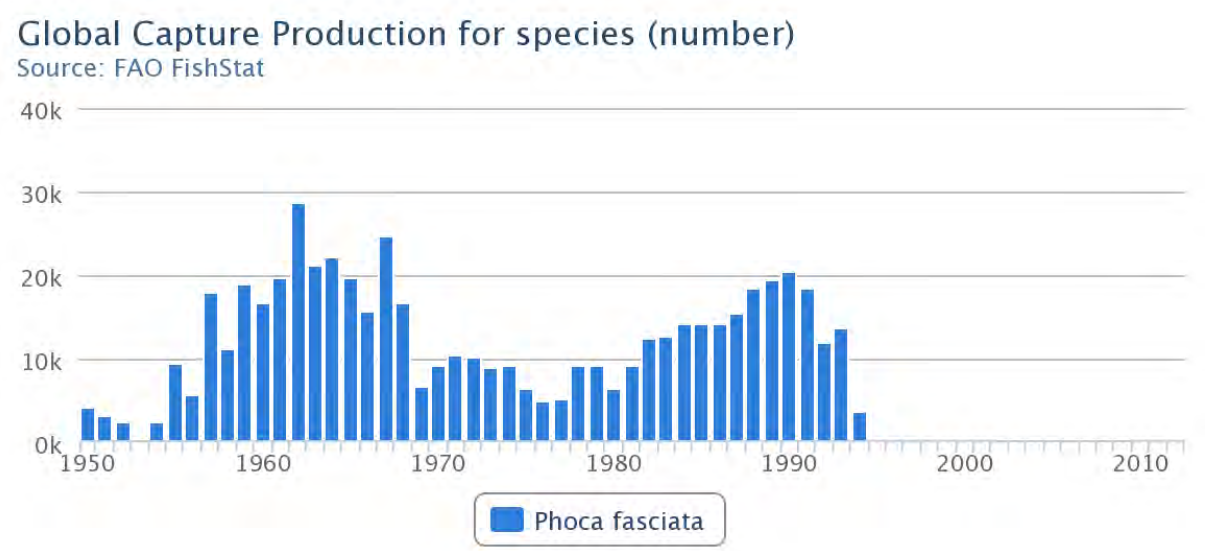
Following the collapse of Soviet Union, Large-scale, ship-based harvests ended in the Bering Sea in 1991 and in the Sea of Okhotsk in 1994. The Russian Federation set high allowable catches ranging between 11,300 and 14,800 spotted seals per year during 2002-2005; however, the actual harvest levels were only a small fraction of these figures. In 2008, the allowable catches were set at 1,700 in the Bering Sea, 2,800 in the Sea of Okhotsk, and 1,700 in the East Siberian and Chukchi Seas, and in 2009 no allowable catch figures were listed for spotted seals.

Commercial harvesting of spotted seals still occurs in several areas of the Russian Far East, but it is believed to be relatively limited, with a maximum take of perhaps a couple thousand individuals annually. In addition, a similar number may be taken illegally each year by Russian Natives for their own local use.

The current total annual catch for spotted seals is nearly 9,200, the most part concerning aboriginal subsistence harvest with 5,200 by Alaskan natives and about 2,000 by Inuit in Russian Far East.

f. Ribbon seal hunting

Only very small numbers of ribbon seals have ever been taken in commercial or subsistence harvests, the latter carried out by native peoples since prehistoric times. No capture was declared to FAO since 1994.



Commercial harvesting of ribbon seals began in Russia in 1932, when ships were first used to access the seals in far offshore ice, only in Okhotsk Sea since 1961, harvesting expanded to the Bering Sea in 1961, and unrestricted hunting continued in both seas, ranging between 11,300 and 27,100 ribbon seals per year[26]. An average of 15-20% of the ribbon seals that were shot escaped into the water or sank before they could be collected, and the total harvest reached 13,000-32,000 seal a year.

Quotas were imposed on the Soviet sealing fleet beginning in 1969, with limits set at 7,000 ribbon seals per year in the Sea of Okhotsk and 3,000 ribbon seals per year in the Bering Sea. An analysis of Soviet sealing logs during the same period indicated that harvest levels were actually even higher during 1982-1989, ranging between about 9,000 and 15,000 ribbon seals per year in the Sea of Okhotsk and commercial harvest levels in the Bering Sea apparently remained relatively low, 3,000-4,000 ribbon seals per year during the same period.

The commercial harvest of ribbon seals from large ice-reinforced ships ended in the Bering Sea in 1991 and in the Sea of Okhotsk in 1994, and despite high quotas settled at 16,700 and 21,000 individuals per year during 2002-2005, current harvest levels remain very low, likely ranging in the tens to few hundreds of ribbon seals per year.

Numbers of ribbon seals harvested for subsistence use by indigenous hunters in Russia and Alaska are considered insignificant by most researchers, primarily due to the difficulty of accessing the seals in far offshore ice. The current subsistence harvest in Russia is reportedly very low.

In Alaska, ribbon seals are harvested in low numbers by Alaska Native subsistence hunters from St. Lawrence and Little Diomede Islands, and to a lesser extent, from villages along the Chukchi Sea coast. The highest recorded annual subsistence harvest in Alaska was estimated to be 1,100 ribbon seals in 1967, a year characterized by unusually warm winter temperatures, storms, and prevailing south winds which fragmented the Bering Sea ice field and forced the ice edge and ribbon seals much farther north than normal, near the vicinity of St. Lawrence and Little Diomede Islands, where ribbon seals were hunted in much higher numbers than normal. In absence of comprehensive effort to quantify Alaskan Inuit harvest, the average subsistence harvest in Alaska was estimated to be 193 ribbon seals per year.

The total annual catch of ribbon seal for aboriginal subsistence can be estimated to around 600 seals/year.

In conclusion

Most part of the nearly 420,000 Arctic seals harvested in the Arctic Seas since 2010 are mainly hunted by aboriginal Peoples living on bordering lands, on a land-based hunt using sea ice as hunting platforms or small motorized boats.

The aboriginal catch represents about 297,000 seals per year, mostly harp and ringed seals, the most abundant and widespread species living in close association with sea ice.

The very most part of that aboriginal catch is realized by Inuit Peoples from Greenland, Canada, Alaska and Russian Far East Siberia (Chukotka).

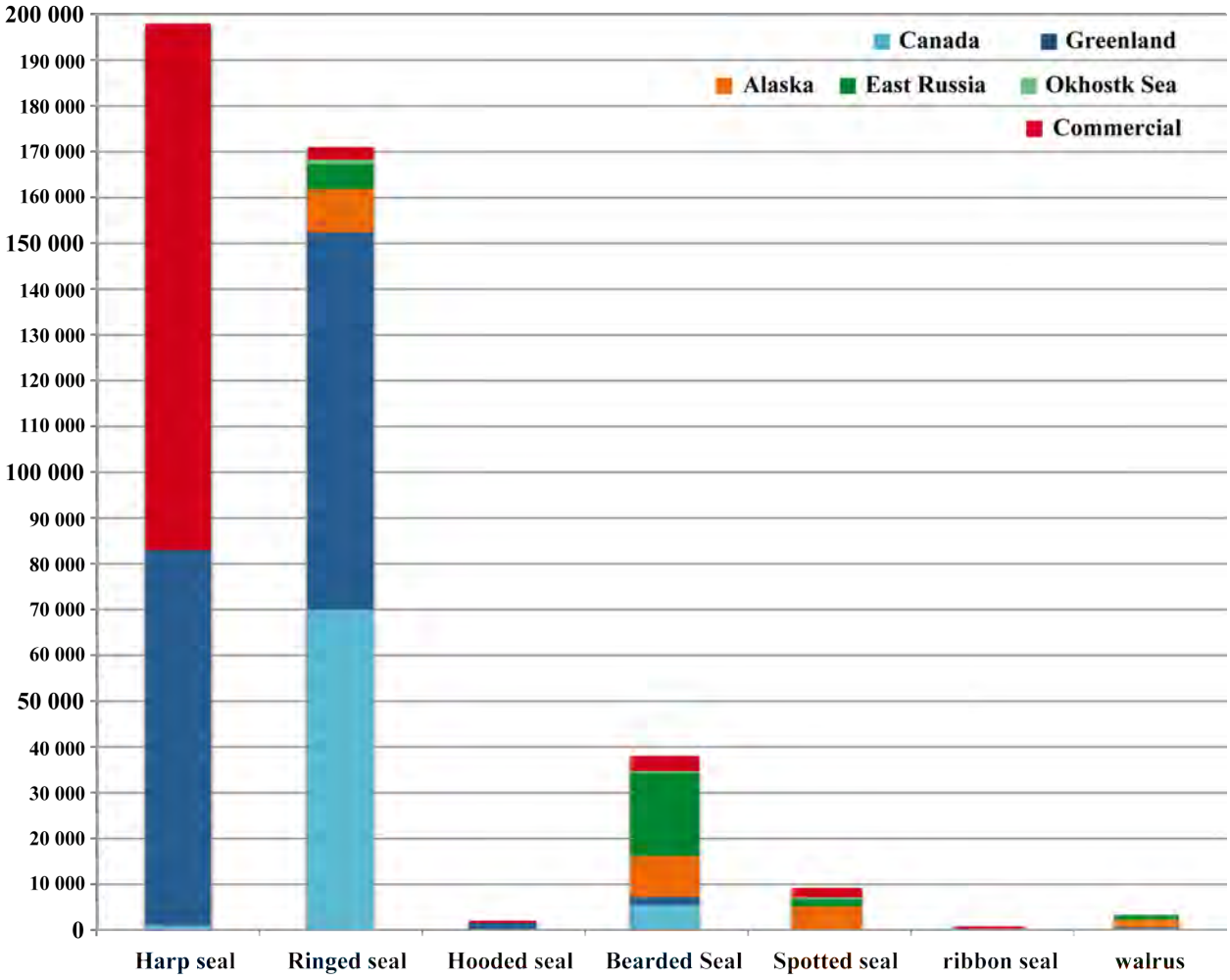
The main targeted species are the ringed (47% of total aboriginal catch) and harp (40%) seals in the Atlantic Arctic Basin where Inuit and this two seals species are the more numerous and live in higher densities.

If Russian and Alaskan (USA) aboriginal peoples have nearly no commercial use of their catches excepted at a local or national scale, Canada and Greenland Inuit hunters are allowed to get commercial outcome from their hunt. Thus, 80% of Greenland seals catch result of 2,100 professional hunters activities, the 5,500 leisure-time hunters catching less than 20% of total seals catch.

It is important to note that after having been by far the main actor in seals harvesting during the 19th and 20th centuries, current commercial sealing in the Arctic represent 24% of total catches, focusing on one single species, the harp seal. Although it is restricted to Labrador Sea and Saint Laurent Gulf, two regions situated outside the Arctic Seas, it impacts directly the western Atlantic Arctic Basin populations and Canadian commercial harvest on harp seals have to be taken in account for any Arctic seals management and regulations (see Harp seal distribution in Annexe 1: Seals species).

Norwegian commercial sealing in the Arctic also focus on harp seal and represent 4% of total Arctic sealing.

Both Canadian and Norwegian commercial sealing represent nearly 60% of the total harp seal commercial catches.



Total current annual aboriginal subsistence seal harvest and total annual commercial harvest estimates for the six Arctic seal species.

	Harp seal	Ringed seal	Hooded seal	Bearded seal	Spotted seal	Ribbon seal	walrus
Canadian Natives	1,000	70,000	0	5500	0	0	400
Greenland	82,000	82,400	2,000	1,750	0	0	150
Alaska Natives	0	9,500	0	9,000	5,200	193	1,682
Western Russian Natives	0	5,400	0	18,000	1,500	200	1,053
Okhotsk Sea	0	1,000	0	500	500	200	0
Commercial harvest	115,000	2,700	23	3,250	2,000	200	0
Total harvest	198,000	171,000	2,023	38,000	9,200	793	3,285

Since the closure of beaters hunt by the Russian Federation in 2009 and the no catch advices given for the hooded seal by the Joint ICES/NAFO Working Group on Harp and Hooded Seals in 2007, and walrus ban in 1956, Russian commercial sealing in the Greenland Sea and most of sealing conducted in Chukchi, Bering and Okhotsk Seas stopped.

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ACCESS
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Scientific and ethical evaluation of the impact of indigenous seal hunting

ANNEX 3

Climate change impact on Arctic seals

LE CERCLE POLAIRE

LCP, participant no. 26

SEVENTH FRAMEWORK PROGRAMME

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1. The shift to a seasonal Antarctic-like sea ice in the Arctic

If the major impact of Global Change in the Arctic, a summer ice-free Arctic Ocean, is certitude, when and where stay open questions.

Depending on scenarios and climate models, projections on dates of the first year of a totally open waters Ocean in the arctic are highly variable, extending from 5 years to 30 to 40 years, and the onset of a regular seasonal Antarctic-like sea ice regime, with a nearly total summer melting, is thought to be at the 2040-2100 horizon according to the various models and scenarios (Fig. 1).

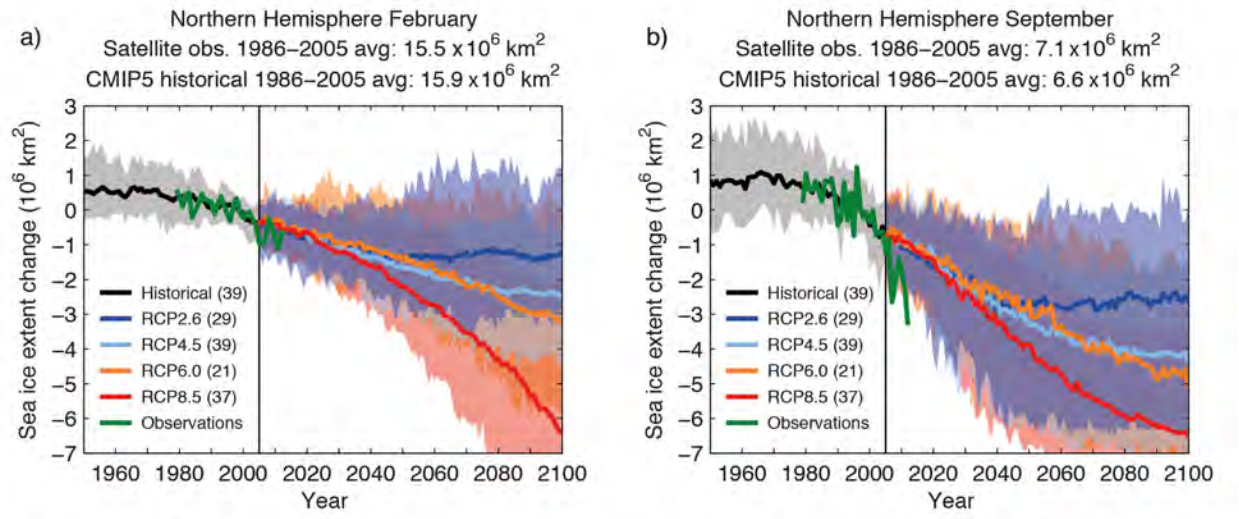

Figure 1 - **Changes in sea ice extent as simulated by CMIP5 models over the second half of the 20th century and the whole 21st century under RCP2.6, RCP4.5, RCP6.0 and RCP8.5 for (a) Northern Hemisphere February, (b) Northern Hemisphere September. The solid curves show the multi-model means and the shading denotes the 5 to 95% range of the ensemble. The vertical line marks the end of CMIP5 historical climate change simulations. (WG1AR5_Chapter 12, 2014)**

The timing of summer sea ice retreat previsions depend directly on the CO^2 emission levels in the various scenarios, which are now though to be most probably between a 4.5 to 8.5 watt/m^2 solar radiation augmentation, meaning a mean world temperature augmented by 3.7 to 7.8°C in 2100. In the first case, modeling prevision is that winter Arctic sea ice concentration and extent won't change, but summer sea ice would be reduced to a thinner and lowered surface occupying the northern part of Greenland and Canadian Arctic archipelago to North Pole region (Fig. 2).

In the second, winter sea ice is predicted to be thinner with an ice-free Arctic Ocean in summer.

As the current observed summer sea ice conditions are largely below the predicted ones by the models, it is likely that reality will be worse than predicted and summer ice free Arctic Ocean will occur sooner than calculated by the models.

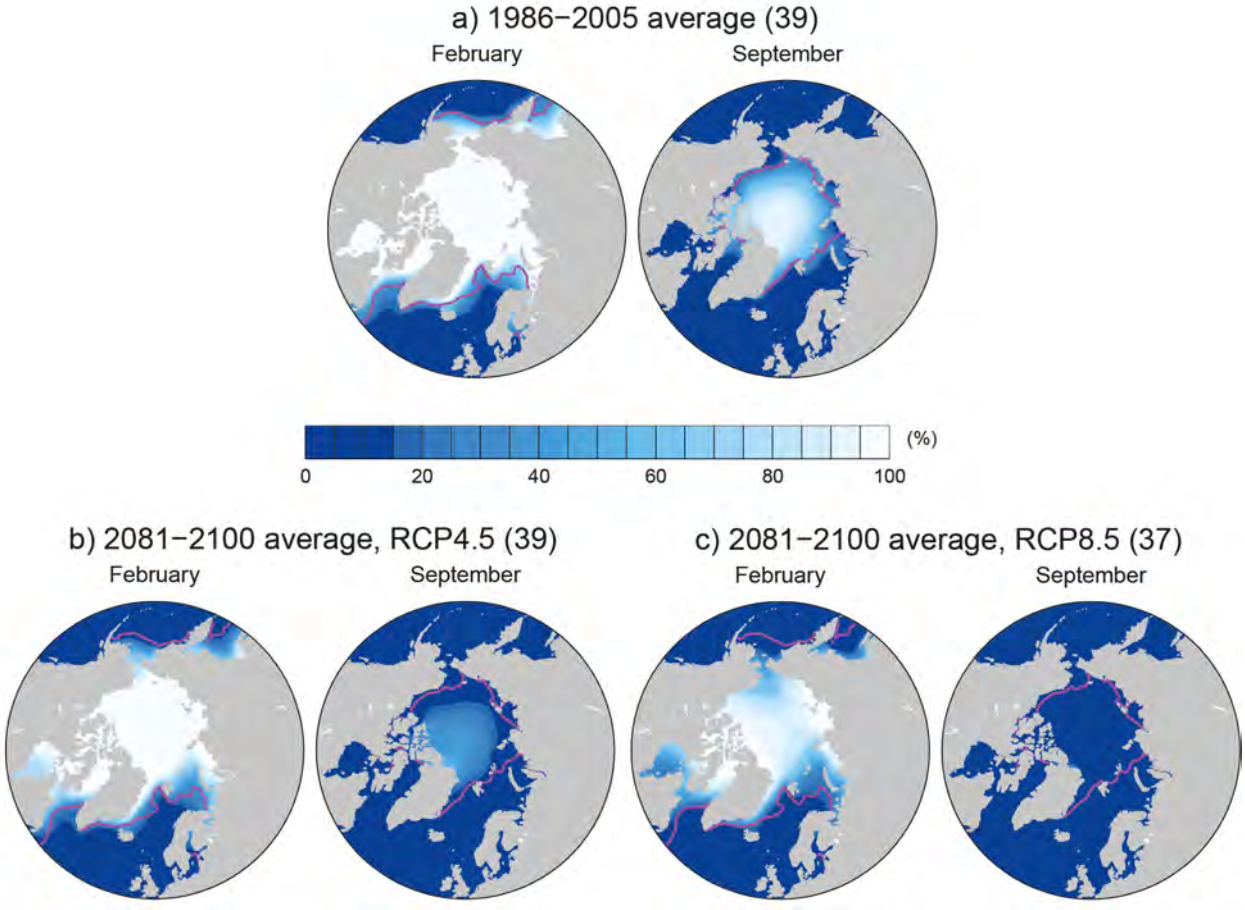

Figure 2 - **February and September CMIP5 multi-model mean sea ice concentrations (%) in the Northern Hemisphere for the periods (a) 1986–2005, (b) 2081–2100 under RCP4.5, a low CO2 emission scenario (with mitigation efforts), and (c) 2081–2100 under RCP8.5, with a high emission level (without mitigation). (WG1AR5_Chapter12, 2014)**

More important for Arctic seals and all marine ecosystems of the Arctic seas is the length of melting season, as most of them depend on the sea ice presence above the shallow waters of the continental shelves, the most productive regions of Arctic seas, for whelping and rearing their pups in spring. As the melt season onset reached a rate of 40 days sooner per decade in some key regions (southern Hudson Bay, Northern Barents Sea…) and the freeze season onset can be delayed on the same rhythm (40 days later per decade), the melt season can be 90 days longer than in the mid 1990's in some regions (Beaufort and Chukchi seas, eastern Greenland coast…).

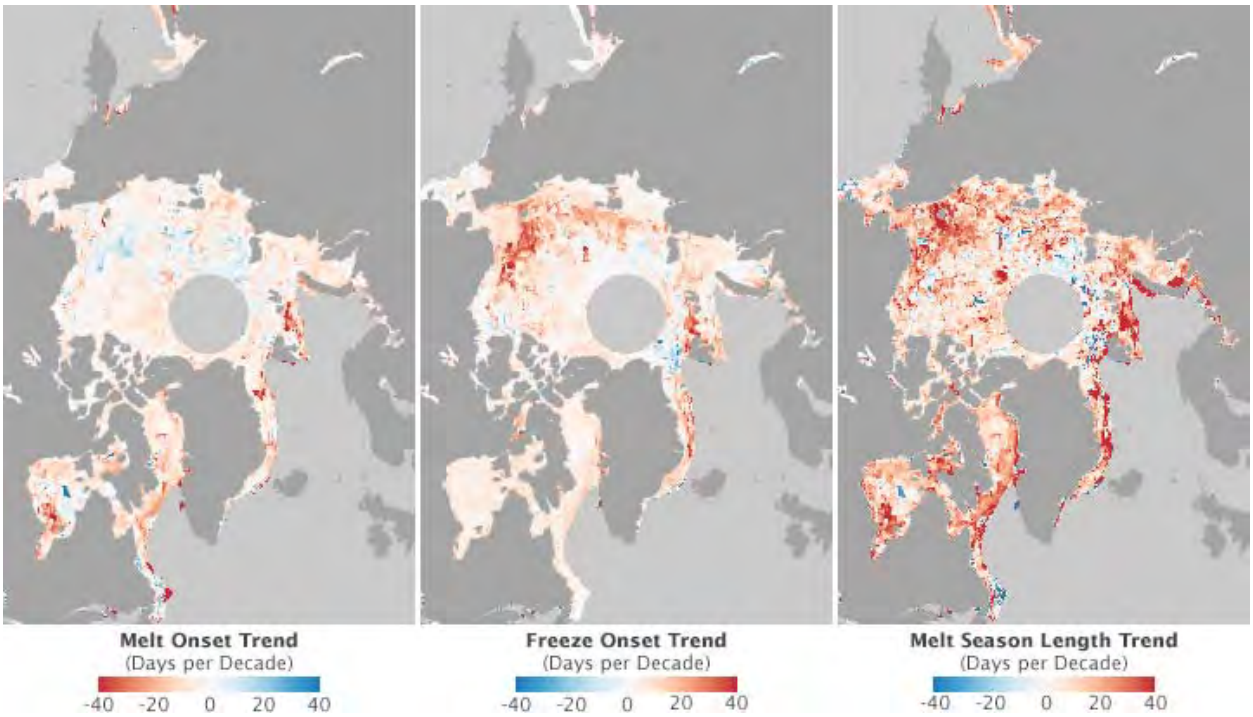

Figure 3 - **Arctic melt season anomalies expressed in days per decade.**

Considering the melt season length, the regions actually impacted by that trend of longer "summer-no-ice condition" correspond to the coastal and ice shelves waters (Fig. 3), both key regions where primary production is concentrated. Extended melt season, a trend very likely to be more important in future, impact directly ringed seal as well as harp and bearded seals, three species using ice as critical platforms for whelping, hauling out and catch their preys, mainly fishes, near the ice edge or below drifting seasonal pack ice. More over, for bottom dwelling feeders, like hooded and bearded seals or walrus, the absence of sea ice platform above shallow waters of the continental shelves during extended periods of time increase greatly travel energetic cost between hauling out sites on drifting sea ice or land and feeding grounds (Fig. 1).

As expected, those regions where extended melt season can already be observed are the same than sites where unusual open ice-free waters occurs (i.e. Beaufort, Chukchi, Laptev, Kara, northern Barents and Greenland seas, as well as Davis Strait, Hudson Bay and Canadian Arctic Archipelago waters). 2100 projections for Arctic sea ice retreat (Fig. 2) all predict a summer mostly open water Arctic Ocean, with a small summer melting resistant sea ice, if any, located between the northern most coast of Ellesmer Land in Canadian Arctic Archipelago and north-west Greenland coast. This critical retreat will be accompanied by a thinner winter sea ice surface with little effect on winter sea ice extent excepted for the southern most regions (southern Hudson Bay and northern Labrador sea, Bering and Okhotsk seas).

If the onset of such a seasonal Antarctic-like sea ice variability in the Arctic, with a sea ice covered Ocean in winter and ice-free Ocean in summer, can't be predicted with certainty (5 to 70 years depending of the models and scenarios), we can be sure that Arctic seals as well as the all Arctic marine biodiversity will be faced to that seasonal sea ice shift before the end of the century. The shifting between the normal Arctic system (a huge winter arctic sea ice extent covering all the Arctic seas and northern most parts of subarctic seas and a permanent summer melting resistant sea ice covering half of winter extent) to an Antarctic-like system has already begun, impacting coastal and continental shelves waters of Arctic seas, the most productive parts of the Arctic ocean where arctic seals live.

2. Impact of Climate Change on Arctic marine ecosystems

Climate change is by far the most serious threat to Arctic biodiversity and exacerbates all other threats. Since 1980, the rate of increase of atmospheric temperatures in the Arctic has been twice that of the rest of the planet, and projections show that the Arctic will experience the largest future temperature changes on the planet[1]. This is the result of 'polar amplification' caused by a combination of feedback mechanisms such as snow and ice melt leading to lowered albedo (which leads to further snow and ice melt and so on) and increased heat transport from lower latitudes.

The ten year period 2001-2010 had the highest global mean temperature recorded for a 10-year period since records began in 1850[2], and there are indications that summer temperatures in the Arctic during recent decades have been warmer than at any time in the past 2000 years[3].

Within this century, temperatures in the Arctic are projected to continue to increase at a greater rate than the global average, with the most pronounced increase in autumn and winter and an annual increase of between 2.8 and 7.8 °C[44]. June snow cover in the northern hemisphere (almost entirely within the Arctic) has already decreased by more than 45% since records began in 1979 (Derksen & Brown 2012)[4]. Similarly, Arctic summer sea ice cover – and particularly the amount of multi-year ice. – is decreasing at an accelerating rate, so that total ice cover at the summer minimum reached an all time low in September 2012 with only half the extend as compared with the 1979-2000 average. Current projections suggest that the Arctic Ocean will become largely ice-free in summer within the next 30-40 years[5]. Similarly, negative mass balance of Arctic ice caps and glaciers are projected to contribute to an expected global sea level rise of 0.7-1.6 m at the end of the 21st century[6].

The impacts of climate change include a long list of changes in the physical environment, which will have profound effects on Arctic biodiversity. The conditions will vary spatially, but aside from temperature increases, the most pronounced changes are likely to include[7]:

- accelerating loss of sea ice cover, especially multi-year ice, and
- earlier and more variable sea ice and snow melt
- later onset of autumn sea ice formation and snow precipitations
- disappearance of coastal ice shelves
- more frequent and severe extreme events (icing, erosion, storms, flooding, fire)
- ocean acidification.
- increased precipitation with more winter snow
- increased freshwater discharge into the Arctic Ocean
- increased periods of summer drought but with more severe rains
- flooding of low coasts
- coastal erosion
- increased frequency of winter thaw-freeze events including rain-on-snow resulting in ice crust formation
- earlier drying of ponds
- disappearance of perennial snowbeds
- thawing permafrost and thermokarst development with drainage of peatlands and ponds or establishment of new ponds

The extent to which these effects are expected to develop varies between projections, but the overall direction is clear, and several of them are already evident now.

Because of the rapidity of change, the dominant response of many Arctic species to climate change is more likely to be by phenotypic adaptation rather than genotypic adaptation[8]. This may involve northward displacement of whole habitats resulting in a reduction in the area occupied by

Arctic ecosystems – particularly those characteristic of the high Arctic – because of the reduction in the available surface area when moving north towards the pole.

In the marine environment, the northward expansion of sub-Arctic species takes place via dispersion and transport of planktonic larvae or adult animals. This northward expansion will modify the whole arctic food web composition and possibly may have dramatic effects on arctic seals targeted fish species.

3. Climate Change impact on Arctic Seals

Climate change predictions for the coming decades may change the prognosis for some seal species significantly. In a warmer Arctic, endemic seals will face extreme levels of habitat change, the most dramatic being the reduction in sea ice extension as well as a sooner melting in spring.

Impacts of sea ice loss depend on the use of the different kinds of icy habitats by the seal's species for their reproduction, molting and hauling-out behaviors and by where they catch their preys. As detailed knowledge about the way each species is linked to sea ice is lacking, there is a significant difference of opinion regarding seal species that is most vulnerable to climate change. Most likely all ice-associated species will face great challenges.

Of the Arctic seals, the hooded seal is generally considered as the most sensitive as it has very specific feeding requirements and use sea ice for whelping and molting. There was a moderate increase in hooded seal pup production and population size in the North West Atlantic between the mid-1980s and 2005. In contrast, the North East Atlantic population of hooded seals has declined by 85-90 % over the last 40-60 years[9]. The cause of the decline is unknown, but it is likely related to changing ice conditions and perhaps also overharvesting. As hunting has recently been prohibited, it has been suggested that the population may now be reaching a stable lower level[10].

Considering sea ice conditions requirements for denning and whelping, ringed seal appear to be more at risk than any other seals with a direct impact on pup survival which is strictly linked to shore-fast ice and snow cover conditions. Declines in reproduction and survival of ringed seals have been linked to variations in their sea ice habitat including responses to early or late ice break-up in spring, and relatively heavy or light ice conditions[11]. Years with low snow cover[12] and unusually warm weather or rain events in the spring[13] have also resulted in reduced survival, probably due to destruction of lairs or land-fast ice dislocation.

A population model was used to examine changes in the size of the NW Atlantic harp seal population between 1952 and 2010 and resulted in an estimated exponential population growth to a total population in 2008 of 8.0 million animals[14]. There are concerns that both female fecundity and neonatal survival have been reduced in recent decades in the Canadian harp seal subpopulations both in the Gulf and on the Front due to declines in sea ice stability and thickness[15].

Harp seal pup production estimates in the White Sea stock have experienced significant declines since 2004, dropping from over 300,000 pups to approximately 150,000 pups. The reasons for the declines are not known, but changes in sea ice cover, industrial activity and hunting have been suggested[16]. Recent model runs by ICES (2008) have confirmed that the population of harp seals in Eastern Greenland may have increased in size from its earlier depleted state since ca. 1970, and it has been predicted that the population could continue to increase under the current harvest regime, which involves very small annual removals.

A recent study[17] revealed negative correlations between both ice cover and the NAO (North-Atlantic Oscillation) index and harp seal mortality in the Gulf of St. Lawrence, indicating that lighter ice cover and lower NAO values result in higher mortality. They also assessed the long-term negative trends in sea ice cover in the breeding regions of harp seals across the entire North Atlantic during

1979 through 2011 and found that sea ice cover in all harp seal breeding regions has been declining by as much as 6% per decade.

The same is probably true for the bearded, spotted and ribbon seals despite a lack of data for estimating trends of their populations.

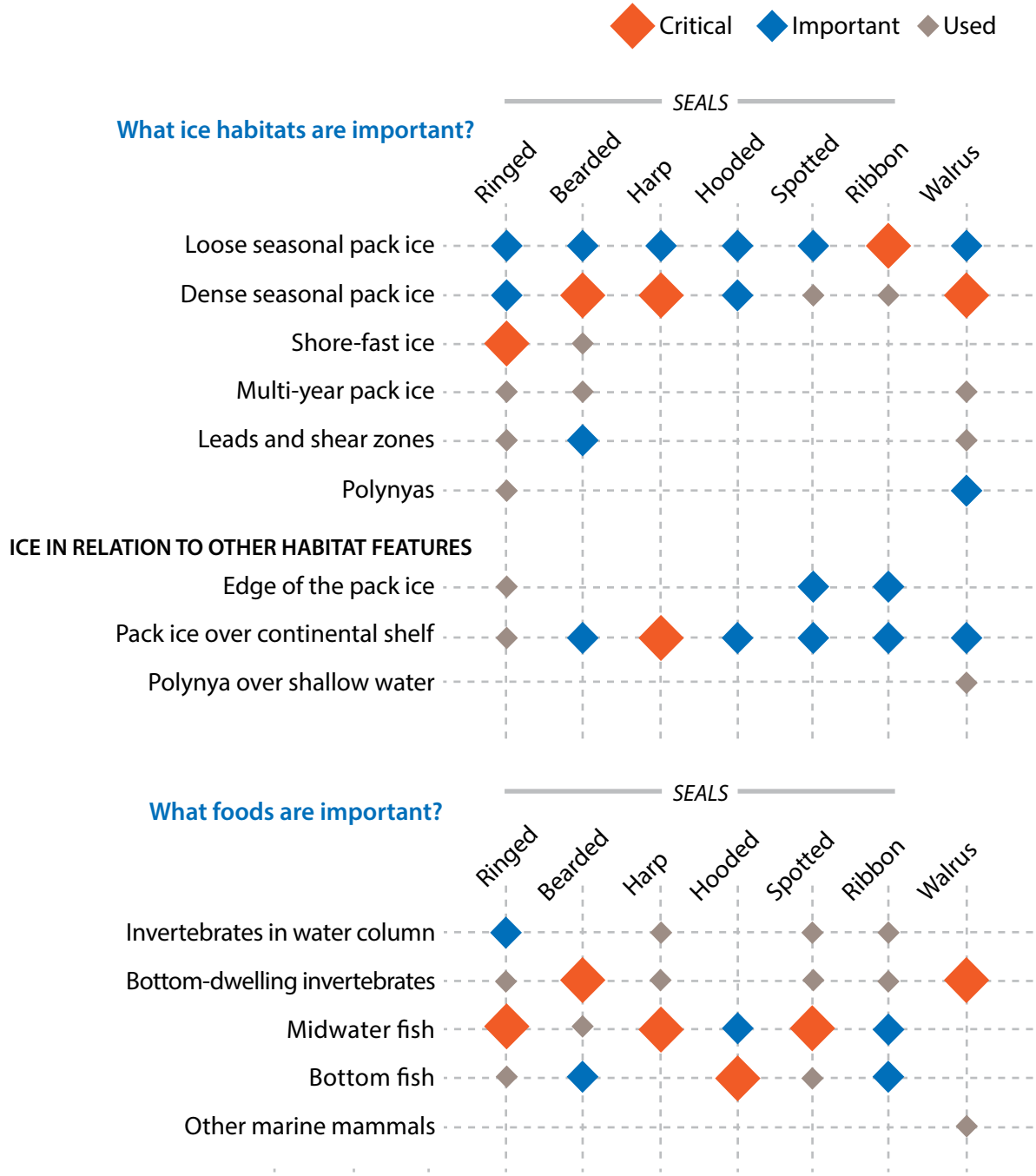

Figure A - **Importance of the different sea ice habitats for Arctic seals species**

Recent observations of Pacific walrus population responses to summer ice condition in Chukchi and Bering seas suggest that rates of calf-mortality and poor body condition of adults are inversely related to the persistence of sea-ice over offshore feeding areas and the length of time that

animals occupy coastal haul outs[18]. Because of their highly specialized alimentation on shelled seafood (mussels) living exclusively on continental selves, walrus is particularly sensitive to any change in benthic shellfish distribution and population densities. A visual comparison of areas of high benthic production and areas that have supported large terrestrial haul outs of walruses indicates that walruses have historically selected sites near areas of very high benthic productivity. Benthic productivity along part of the western shore of Alaska is low because of the nutrient-poor waters of the Alaska Coastal Current. Consequently, the number of sites with adequate food resources to support large aggregations of walruses is likely limited.

As most of Arctic seals avoid multi-year sea ice, too thick and far from productive continental shelves, this icy habitat has the less impact on seals survival. The paradox is that it is given as the very last habitat to resist to summer sea ice melts in some models at the end of the 21st century, reduced to a thin surface located along the northern coasts of Canadian Arctic Archipelago and Greenland, a reluctant habitat not suitable for seals.

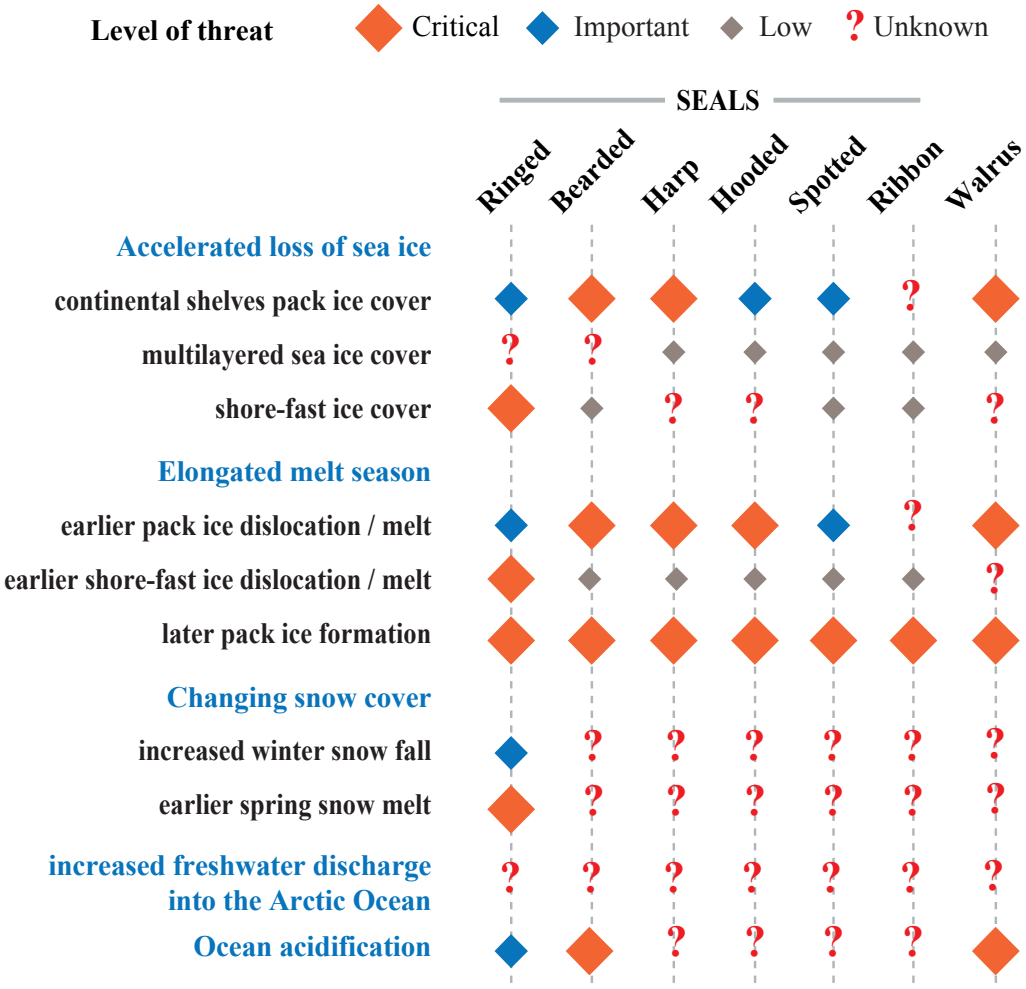

Figure B - **Expected Climate Change impact on the Arctic seals and walrus**

Less ice, together with increased water and air temperatures, will impact seals' mobility and the density and distribution of their prey.

Indirect impact due to increased discharge of freshwater (rivers) into the Arctic Ocean may alter currents and participate to accelerating shore-fast ice and pack ice above continental shelves

dislocation and melting in spring, two of the most important icy habitats of Arctic seals. But it also affects primary production and is expected by some specialists to increase spring and summer phytoplankton blooms, and therefore invertebrate and fish productions. For others, this phytoplankton increase may not balance the sea ice algal production loss, which flourish at the bottom face of huge areas of coastal and continental shelves pack ice during spring, and expect no primary production increasing if not a reduction of it.

Moreover, uncertainties about the coastal and continental shelves waters primary productivity trends in response to the advanced onset of melt season and their consequences on the all Arctic Ocean marine ecosystem productivity, which could decline drastically after a short-time increasing responding to the increasing rivers flux alimenting the open water primary production (phytoplankton) with more alluviums, is another limiting factor affecting the prey availability for seals.

Additionally, the impact of ocean acidification due to larger CO^2 capture may impact directly preferred walrus and bearded seal preys population production as calcification process of shell production by bivalves could be negatively impacted[19]. The same is true for all Arctic seal species whose preys, mainly fishes, depend on calcified zooplankton and or shellfishes for their proper alimentation.

Regarding natural evolutionary adaptation abilities of mammalian species, 5 to 70 years is very short, a lap of time covering less than one generation in the worse hypothesis to 3 generations in the better case, a lap of time drastically too short for any kind of genetic adaptation process.

With seals species which behaviors are much more less plastic than primates or cetaceans ones, most scientist think very unlikely they can develop efficient behavioral adaptations to sea ice retreat and elongation of melting season, specially in changing their whelping grounds as melting sets sooner and sooner. The possibility that Arctic seals can change their whelping sites by shifting them northward as the spring sea ice conditions of their current sites is degraded seems to be poor. Most sea ice seals systematically return to their birth site to reproduce despite the poor sea ice cover[9].

The future of subarctic species, the harbor and grey, seals seem to be quite different.

For the harbor seal, during spring low ice years in Greenland and Alaska, pup production and adult local abundance are lower than in normal years[20].

Some authors suggest a northward expansion of harbor and grey seals populations during the summer, when and where sea ice retreat provide wider open ice free waters (Guy Fortier, Arctic.net, pers. comm.) with an impact on Arctic species through competition for resources and, on a long term perspective, a possible replacement of Arctic seals species populations if they finally disappear.

At the same time, open water predators, killer whales in particular, are awaited to exploit a large part of the increasing sea ice free Arctic waters with the sea ice retreat. In the Canadian high Arctic, killer whales have been reported to be expanding their range northward during the ice-free period[21]. Thus, killer whales could become a new predator for the northern most Arctic seals species, such as harp, ringed, bearded and hooded seals.

Further more, the reduction of suitable icy habitat may result in a population fragmentation and a reduction of genetic flow through Arctic seals populations as some populations may become geographically isolated by the patchily distributed adequate icy habitats in the Arctic Basin. Such genetic flow reduction could accelerate the reduction of seal's reproduction capacity, at least for the most sensitive species (ringed, harp and hooded seals).

Less ice, together with increased water and air temperatures, will increase the risk of disease, and possibly increase the risks from contaminants. Seals will also be affected by an increase in human activities like shipping and exploitation of natural resources in areas previously inaccessible due to ice.

To summarize, we will say that the most significant impact of climate change on Arctic seals is expected to be the loss of ice habitat, crucial habitat for reproduction and alimentation of most seals species, although other less direct impacts have also been predicted: food availability reduction, increase of disease and increase of human presence with its activity induced disturbance and pollution.

Seasonal pack ice, specially when it extend over continental shelves, the most productive regions of Arctic seas, is used by most Arctic seals, being of critical importance for their feeding, most of their preys living in close relation with ice covered continental shelves.

Harp and ringed seals, the main target of Inuit hunters (respectively 40 and 47% of total Aboriginal catch, see Annex 2), are critically linked to seasonal pack ice for all aspects of their life, the second depending nearly exclusively on shore-fast ice for its reproduction.

As Climate Change impacts principally shore-fast ice and dense seasonal pack ice, harp and ringed seals are expected to be highly threatened by the earlier melting season onset. Those changes would greatly reduce reproductive success, sooner dislocation and melting of ice reducing pup survival, as well as adult will be faced to expanded energetic costs for their molting (thermoregulation cost much higher in water than above ice in air) and for feeding as sea ice will be located farer of their feeding grounds above continental and coastal waters. Seal pup survival in ringed seal will also be reduced by the changing regime of snow fall, the reduction of snow on shore fast ice reducing the availability of whelping dens for the mothers or inducing higher mortality rates in pups due to insufficient protection against the atmospheric cold and predation by polar bears and Inuit hunters.

Considering the lack of reliable knowledge about the future reaction of Arctic seals population to Climate Change, specially for harp and ringed seals, the precaution principle should be applied to seals harvest, both commercial and subsistence, and quotas (see V.2. section for quotas calculation) should be strictly linked to reliable report of all catches, including lost animals, a principle also applied to Inuit hunters, to maintain an efficient sustainable management of seals as long as it will be possible in the changing Arctic Ocean.

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ACCESS
Arctic Climate Change
Economy and Society

WP5 - Deliverable 5.51

Scientific and ethical evaluation of the impact of indigenous seal hunting

ANNEX 4

Indigenous seal hunting and Animal Welfare legislations

LE CERCLE POLAIRE

LCP, participant no. 26

SEVENTH FRAMEWORK PROGRAMME

www.access-eu.org

1 What does « animal welfare » mean ?

In addition to the various religious, ethical and philosophical bases for animal welfare, there is increasing recognition of the ties between animal welfare indicators and animal health. In countries around the world, animal welfare concerns garner more attention as consumers recognize the links between animal health and animal welfare, and animal welfare and human well-being. The challenge is to increase food animal production while simultaneously ensuring good animal welfare and protecting food security.

What we mean by « Animal welfare » depends in part of values that differ between cultures and individuals. These differences can be summarized under three broad headings (Fraser, 2008):

1- physical health and biological functioning of animals

2- « affective states » of animals

3- ability to live in a reasonably « natural » manner

As pointed out by a recent FAO legislative study[1], because the earliest animal welfare legislation was developed in countries where industrialized production is the norm, these legislative instruments tend to focus on farm animals housed, transported and slaughtered in high technology environments designed to intensify production. However, animal welfare legislation need not be limited to industrialized production. Well drafted legislation can and should apply to other types of production such as subsistence farming and small-scale commercial production. Different scales of production raise different concerns, but the basic animal welfare principles are common to all.

Animal welfare often stimulates strong emotions and it is important that, while addressing ethical aspects of new technologies whenever appropriate, developments in the field of animal welfare are based on a firm scientific background

2 International context

2.1 The World organization for Animal Health

The World Organization for Animal Health (OIE) is the intergovernmental organization in charge of improving animal health worldwide. It has a total of 178 members Countries (notably the 8 Arctic countries) and maintains permanent relations with 45 other international and regional organizations (European Commission – DG Health and Consumers, World Trade Organization, Canadian cooperative Wildlife Health, Health Risk in Wild Animal translocations...). The OIE was created in 1924 and it then predates UN. It has increased in prominence and influence in recent years, especially since it was identified in the World Trade Organization (WTO) Agreement on the Application of Sanitary and Phytosanitary Measures (STS Agreement) as the source of international standards for animal health.

The Terrestrial Animal Health Code

The OIE has devised a variety of guidelines to address the treatment of animals used for scientific research or kept for companionship, and has elaborated health standards for intensive farming. These standards are found in the OIE Terrestrial Animal Health Code (the Code). The Code aims to ensure the health of terrestrial animals and the safety of animal products in international trade. It establishes detailed measures to be implemented by the veterinary authorities of both importing and exporting countries to prevent the transfer of pathogens without creating unjustified barriers to trade.

Welfare as a OIE priority

The OIE recently identified animal welfare as a priority mission. In its 2001-2005 Strategic Plan the OIE has recognized that "*animal welfare is a complex, multi-faceted public policy issue that includes important scientific, ethical, economic and political dimension*s". The main achievements of the OIE in the field of animal welfare are:

- 2001: Animal welfare identified as high priority for 2001-2005 OIE Strategic Plan
- 2002: First Permanent OIE animal welfare working group established
- 2003: Detailed work program advanced by specific OIE ad-hoc groups
- 2004: First OIE Global Conference on Animal Welfare organized in Paris and OIE Guiding Principles on Animal Welfare adopted
- 2005: OIE Animal Welfare Standards adopted on the issues of land transport, sea transport, killing for disease control and slaughter for human consumption. Specific animal welfare edition of OIE Revue Scientifique et Technique published
- 2008: Second OIE Global Conference on Animal Welfare held in Cairo.

The most significant outcomes from the Cairo Conference were that the OIE member countries and its partners:

- recognized that *"animal welfare must be addressed in parallel with economic and social development, and as a result, a progressive implementation of OIE standards, adapted to the economic situation and capacities of [OIE] members is appropriate";*
- recognized OIE as *"the unique reference organization globally for the elaboration of international animal welfare standards";*
- expressed concern that *"some private standards for animal welfare are not consistent with the OIE standards";*
- requested that OIE members *"create or update, where necessary, legislation that prevents cruelty to animals as well as legislation that establishes a legal basis for complying with OIE standards for animal welfare";*
- requested that *"OIE members promote the adoption by the United Nations of a declaration addressing animal welfare"*[2].

In November 2012 (Kuaka-Lumpur, Malaysia, 6-8 November 2012), the third OIE global conference on animal welfare will focuses on implementing the OIE standard. A significative financial contribution by the EU is expected and a special session will be dedicated to "European Commission perspective".

These policy statements indicate that the OIE and its member states are committed to the harmonization and implementation of the animal welfare standards contained in the Code, while taking into consideration economic and social development needs. The need to balance animal welfare concerns with economic capacities will be particularly important in the large majority of OIE member states that are not fully industrialized.

2.2 The World Trade Organization

The World Trade Organization (WTO) international trading system is designed to eradicate barriers to international trade through the creation and enforcement of market access rules. As noted earlier, the SPS Agreement identifies the OIE as the source of binding international standards on animal health. However, it is an open question whether "sanitary and phytosanitary measures" would include animal welfare and whether, therefore, a country's imposition of a trade restriction based on animal welfare considerations would be found justified under the WTO.

The cornerstone of WTO rules is the principle of non-discrimination in international trade, which is characterized by three concepts:

- *like products or like goods*: goods are grouped according to their end properties, not according to process and production methods;
- *national treatment*: imported and locally produced goods should be treated equally, at least after foreign goods have entered a domestic market;
- *most favored nation* (MFN): like products from all WTO members must be given the same treatment as the most advantageous treatment given to any state's products.

Article XX of the General Agreement on Tariffs and Trade (GATT)[3] lists trade-restricting measures that can be exempted from WTO rules (WTO, 2008), including measures "*necessary to protect public morals" (para. (a)) and measures "necessary to protect human, animal or plant health*" (para. (b)). Legal arguments have been framed to justify an exemption for animal welfare trade restrictions under both paragraphs, although it is generally agreed that animal welfare issues can more easily be justified as protecting human or animal health than public morals. Yet, because the WTO has not yet directly addressed the issue, the arguments themselves and the likelihood that they might succeed are all speculation.

EU Animal Welfare regulations have negative trade effects

At the second special session of the WTO Committee on Agriculture (CoA) in June 2000, the European Union submitted a proposal on animal welfare and trade in agriculture, arguing that the WTO should directly address animal welfare standards[4].The EU has more stringent animal welfare regulations, and therefore higher production costs in certain cases than some of its trading partners. In its submission to the CoA, the EU expressed concern that its animal welfare standards could be undermined and that it could suffer negative trade effects, since agricultural products produced to meet high EU animal welfare standards would run the risk of being edged out of the market by cheaper imports produced under lower standards. The EU agreed in its proposal that animal welfare provisions must not be used for protectionist purposes but argued that greater international efforts are needed to win recognition for EU animal welfare standards and to ensure that they are not undermined by WTO trade obligations.

How to address animal welfare standards within the WTO ?

The EU proposal set out several potential ways to address animal welfare standards within the WTO. The first suggestion was the creation of a new multilateral agreement on animal welfare. Whether the agreement in question was meant to be part of the WTO framework (like the Agreement on Technical Barriers to Trade) or to remain outside it is unclear. The second was to establish a labeling regime pertaining to animal welfare standards for imported foods, enabling consumers to make informed choices. Third, the EU proposed a compensation scheme to enable producers to meet the additional costs of producing food to meet EU animal welfare standards.

Developing countries can't afford animal welfare standards

The proposal did not receive widespread support among other WTO members. A number of countries, including Bolivia, India, Pakistan, Thailand and Uruguay, indicated that although they were not indifferent to animal welfare, the priority for their resources was the alleviation of human poverty and suffering. Argentina and India stressed that countries should be left to set their own standards. Colombia and again India rejected the labeling proposal as simply a disguised barrier to trade. The debate over these issues continues along with the ongoing Doha Round negotiations, the latest round of negotiations among the WTO membership to achieve major reforms of the international trading system.

The EU bans of seal products and the Article XX(a) of GATT

Another way that the WTO could address animal welfare is through a complaint filed before its Dispute Settlement Body (DSB). In November 2009, Canada and Norway formally requested WTO consultations based on their complaints challenging import **bans of seal products** (based on animal welfare concerns) passed by Belgium, the Netherlands and the EU (ICTSD, 2009). This dispute will likely force the WTO to directly address whether animal welfare is a justified exception under Article XX(a) (public morals), although not precisely in the context of farm animal welfare.

Animal welfare-based restrictions are not compatible with WTO trade regime

Despite the EU proposal and the pending complaint before the DSB, the common consensus is that for the time being animal welfare-based restrictions are not permitted under the WTO trade regime (Thiermann and Babcock, 2005).

2.3 Universal Declaration on Animal Welfare

"A world where animal welfare matters and cruelty ends"

The World Society for the Protection of Animals (WSPA) is the world's largest alliance of animal welfare organizations. Through partnership with hundreds of member societies it strives to "*create a world where animal welfare matters and animal cruelty ends*". WSPA brings about change at both grassroots and governmental levels, to benefit animals. They support and develop high profile campaigns, scientifically-backed projects and innovative education initiatives, and focus on four core areas: Farm animals; Animals in disaster zones; Companion animals and working equines; and Wildlife.

In recent years, a number of NGOs under the leadership of the WSPA have advocated that the United Nations elaborate and adopt a Universal Declaration on Animal Welfare (UDAW). A global petition launched to support the UDAW initiative had acquired over 2.2 million signatures by September 2010 (www.udaw.org). According to established principles of international law, the UDAW would not be binding although it would represent a consensus among states regarding animal welfare and would therefore be considered customary international law.

It is important to bear in mind that customary international law derives from practices which a group of states recognize as legally binding, and generally creates an expectation that those binding practices will be observed in the future. A practice will only become a general rule of international law if a large number of states consider it to be binding on them, and if the international community does not protest the practice's extension to international relations.

In 2003, the Government of the Philippines hosted an intergovernmental conference which produced a draft declaration agreeing on four principles that could form the basis for a UDAW. The draft declaration was agreed upon by 21 delegations (19 countries, one commonwealth in political union with the United States (Saipan) and the European Commission. The four UDAW principles agreed upon in the Manila meeting are as follows:

- The welfare of animals shall be a common objective for all states.
- The standards of animal welfare attained by each state shall be promoted, recognized and observed by improved measures, nationally and internationally.
- All appropriate steps shall be taken by states to prevent cruelty to animals and to reduce their suffering.
- Appropriate standards on animal welfare shall be developed and elaborated on such topics as the use and management of farm animals, companion animals, animals in scientific research, draught animals, wild animals and animals used for recreation[5].

In 2007, the International Committee of the OIE decided to support the development of a UDAW that would call on countries to acknowledge the importance of animal welfare and that would, at the same time, recognize the OIE as the principal international animal welfare standard-setting body. The International Committee considered that a UDAW would "*complement and promote the work of the OIE, and facilitate global acceptance of OIE standards and their application at a national, regional and global level*".

2.4 Animal welfare and NGO's

"Compassion in World Farming"

Compassion in World Farming is the leading non-governmental organization working internationally to advance the welfare of farm animals and to achieve a vibrant rural economy based on humane and environmentally sustainable farming methods. Founded by a farmer in 1967, Compassion's headquarters are in the UK from where it co-ordinates a European Coalition of like-minded societies. Compassion also has offices and representatives in four continents, including in China. Compassion has a strong track record in lobbying, research and education and played a key role in achieving UK and European Union (EU) phase-outs of some of the most damaging livestock production systems such as the keeping of calves in narrow crates for veal, the confinement of breeding sows in narrow crates throughout their pregnancies and the keeping of laying hens in barren battery cages. Compassion initiated and led the EU-wide campaign to have animals recognized as "sentient beings" – a campaign which achieved success with the adoption of the Protocol on the protection and welfare of animals in the Amsterdam Treaty in 1997.

Compassion engages positively with farmers and the food industry, rewarding good practice, and has developed innovative resources on Good Agricultural Practice in Animal Welfare (available in English and Chinese). Compassion believes that rural livelihoods must be protected alongside the local environment, the global climate and the welfare of farm animals. Compassion in World Farming has established the European Farmers Network (EFN) in collaboration with the Food Animal Initiative. The EFN is a network of farmers who meet good welfare and sustainability criteria and are keen to promote their ideas and practices within the European market. The long-term aim is to establish an International Farmers Network. This could possibly be done in collaboration with FAO extension services.

Humane Society International

Humane Society International (HSI) is the international arm of The Humane Society of the United States (HSUS), a charitable nonprofit organization founded in 1954 with a constituency of more than ten million people, and incorporates both policy and on-the-ground programs in countries around the world. HSI oversees and coordinates the work of The HSUS around the world, addressing animal issues that cross many borders and impact the lives of billions globally. Working with national and jurisdictional governments, multilateral entities, corporations, academic institutions, humane organizations, and individual animal protectionists, HSI finds practical, culturally sensitive, and long-term solutions to common animal issues, and advocates an ethic of respect and compassion for all life.

Among its many efforts include the development of trade capacity building programs; providing assistance in humane control of companion animal populations; advocating for higher welfare of farm animals and recommending improved practices and systems based on scientific research; stemming the illegal trade in wildlife; protecting endangered species and marine mammals, as well as their habitats; providing educational materials and trainings for organizations, industry, governmental, and international agencies; influencing international laws and policies to effect global change; and conducting international campaigns to reduce the suffering of animals. HSI also works closely with policymakers, conducting briefings and helping to draft legislation, regulations, policy

statements, international treaties, free trade agreements, and resolutions affecting animals, and has category 1 consultative status with ECOSOC.

International Fund for Animal Welfare

The International Fund for Animal Welfare (IFAW) works to improve the welfare of wild and domestic animals throughout the world by reducing commercial exploitation of animals, protecting wildlife habitats, and assisting animals in distress. IFAW seeks to motivate the public to prevent cruelty to animals and to promote animal welfare and conservation policies that advance the well-being of both animals and people.

- Protecting Marine Mammals IFAW campaigns globally to stop commercial whaling and end the cruel and unnecessary seal hunt in Canada. IFAW also works to protect marine mammals from the threats of ocean noise, entanglement, and ship strike.
- Safeguarding Wildlife IFAW works on seven continents to protect vulnerable wildlife populations that are threatened by extinction, including protecting more than eight million acres of vital habitat and migration corridors for elephants, tigers, bears, rhinos and other wildlife. IFAW campaigns worldwide to prevent resumption of the international ivory trade that could easily wipe out what remains of once mighty herds of African and Asian elephants.

- Caring for Cats and Dogs From the townships of South Africa to the Navajo Nation in the United States, IFAW provides crucial veterinary care for dogs and cats in impoverished communities worldwide.
- Providing Hands-On Help IFAW emergency relief teams are deployed where needed most to assist animals in distress, including oiled wildlife, stranded marine mammals, and animals caught in natural disasters. IFAW is leading the way in rehabilitating rescued wildlife and returning them to the wild.

Royal Society for the Prevention of Cruelty to Animals

Founded in 1824, the Royal Society for the Prevention of Cruelty to Animals (RSPCA) works in England and Wales to prevent cruelty, promote kindness to and alleviate suffering of all animals. As the oldest animal charity in the world, it has over 80 animal shelters, centers and veterinary clinics, 330 inspectors that enforce the animal legislation. The RSPCA plays an active part in disease contingency planning in Wales and England, and works with the government to counter outbreaks of diseases such as the Foot-and-Mouth Disease and Avian Influenza. The RSPCA has programs in more than 50 countries globally and works primarily in East Asia and Europe though it has recently started programs in Malawi and Zambia that straddle human development/animal welfare issues.

The RSPCA is the only organization to collect statistics on all aspects of animal welfare in the UK, which are published annually (www.rspca.org.uk). These are collected on 29 indicators for farm and pet animals, wildlife and animals used in research. The RSPCA writes the standards for the only animal welfare assurance scheme in the UK, Freedom Food. Standards are now agreed for 11 species and are used in countries such as the USA, Argentina and Thailand as the basis for domestic standards for national assurance schemes. Freedom Food farms now have over 24% of all pigs in the UK, 35% of all laying hens and of 19% of ducks.

World Veterinary Association

The World Veterinary Association is a federation of over 80 national veterinary medical associations throughout the World. It also has regional, specialist, and observer veterinary association members. The WVA is the internationally recognized representative of global veterinary medicine. It was founded in 1863 in Hamburg, Germany, but was completely reorganized in 1997. The WVA has

collaborative agreements with: the OIE, FAO and WHO. The three main issues of WVA are, in the One World-One health concept, animal health, animal welfare and public health.

People for the Ethical Treatment of Animals

Founded in 1980 in USA, People for the Ethical Treatment of Animals (PETA) is the largest animal rights organization in the world, with more than 3 million members and supporters.

PETA focuses its attention on the four areas in which the largest numbers of animals suffer the most intensely for the longest periods of time: on factory farms, in the clothing trade, in laboratories, and in the entertainment industry. They also work on a variety of other issues, including the cruel killing of beavers, birds, and other "pests" as well as cruelty to domesticated animals.

It also realizes regular campaigns denounciating the Canadian commercial sealing.

Greenpeace

Founded in 1971, Greenpeace international is an independent global campaigning organisation that acts to change attitudes and behaviour, to protect and conserve the environment and to promote peace by:

- Catalysing an energy revolution to address the number one threat facing our planet: climate change.
- Defending our oceans by challenging wasteful and destructive fishing, and creating a global network of marine reserves.
- Protecting the world's ancient forests and the animals, plants and people that depend on them.
- Working for disarmament and peace by tackling the causes of conflict and calling for the elimination of all nuclear weapons.
- Creating a toxic free future with safer alternatives to hazardous chemicals in today's products and manufacturing.
- Campaigning for sustainable agriculture by rejecting genetically engineered organisms, protecting biodiversity and encouraging socially responsible farming.

Despite it is not directly invested in Animal welfare concerns, Greenpeace was a key participant to the commercial sealing ban actions since the 1970'. Greenpeace expressed an official apology to the Inuit communities for the damages Greenpeace have caused with its anti-sealskin campaigns.

Most of national and international NGOs with Animal welfare concern had never targeted Inuit seal hunting, but their actions against commercial sealing killing methods resulted in brutal collapses of sealskin market damaging Inuit ability to sell their own products. During the 2008 EU seal ban stakholders consultation process, participating NGOs asked for the Inuit exemption, a measure unsufficient to minimize sealskin market collapse.

3 EU agreements

3.1 Council of Europe

Animal Welfare COE Conventions

The Council of Europe (COE), an international organization whose membership consists of the governments of nearly all the countries on the European continent, has been one of the leading fora for the promotion of animal welfare since the 1960s. Seeking to recognize the importance of animal welfare and the contributions animals make to human health and the quality of life, over time the COE has adopted six conventions on animal welfare. These have facilitated regional harmonization of animal welfare standards in the COE's member states. The three COE conventions of principal interest for animal welfare are:

- The European convention for the protection of animals kept for farming purposes (ETS No. 87) of 1976, revised in 1992 (ETS No. 145). ETS No. 87
- -The European convention for the protection of animals during international transport (ETS No. 65) of 1968, revised in 2003 (ETS No. 193).
- The European convention for the protection of animals for slaughter (ETS No.102) of 1979. ETS No. 102

These COE conventions are based on the principle that "*for his own well being, man may, and sometimes must, make use of animals, but . . . he has a moral obligation to ensure, within reasonable limits, that the animal's health and welfare is in each case not unnecessarily put at risk*"[6]. Most COE member states have signed these conventions, thereby expressing their support, and many have become parties, agreeing to be legally bound.

Seals hunting and related adopted texts

In line with the COE conventions on animal welfare, the Parliamentary Assembly of the Council of Europe (PACE) has adopted various texts (Recommendations or Resolutions) which lead to the seal hunting recommendation:

- Recommendation 825 (1978), on the protection of wildlife and on seal hunting[7]
- Resolution 1012 (1993), on marine mammals[8]
- Recommendation 1689 (2004), Hunting and Europe's environmental balance[9]
- Recommendation 1776 (2006), Seal Hunting[10]

3.2. EU legislation on the protection and welfare of animals

Recent years have witnessed important advances in the Community's animal protection and welfare policies and in line with this, gradually increasing resources have been allocated to this issue. European regional legislation began with EU directives, which impose a duty on member states to take steps to fulfill the directives' requirements. Later, the EU developed more detailed regulations, which, by virtue of the principles of immediate applicability and direct effect, are a part of member states' national legislation from the time of their publication.

The first animal welfare legislation by the then-European Economic Community (EEC) dates to 1974 when Council Directive 74/577/EEC on the stunning of animals before slaughter included in its preamble the following language: "*Whereas the Community should also take action to avoid in general all forms of cruelty to animals; whereas it appears desirable, as a first step, that this action should consist in laying down conditions such as to avoid all unnecessary suffering on the part of animals when being slaughtered*"

Implementation of the COE conventions in the EEC/EC

At first, EEC legislation on animal welfare mainly involved adopting or incorporating the COE conventions into the laws of the EEC, and after 1992, into the regulations of the European Community (EC) common agricultural policy and internal market. ETS No. 87 (on animals kept for farming purposes) was adopted by Council Decision 78/923/EEC and then Council Directive 98/58/EC.13 ETS No. 102 (on animals kept for slaughter) was approved by Council Decision 88/306/EEC, later updated by Council Directive 93/119/EC.14 ETS No. 65 (on transport) was ratified by individual EC member states and used as basis for the later Council Regulation (EC) No. 1/2005.15

The need for a legal basis in the EEC/EC

Despite the implementation of the COE conventions in the EEC/EC, there was no specific legal basis in the EEC/EC treaties for the regulation of animal welfare in internal production within member countries. This is because the original treaty framework for the EEC/EC made it difficult to justify any action other than regulating trade of agricultural products among EEC/EC member states.

1992: Animal welfare Declaration annexed in the Maastricht Treaty

Since the Maastricht Treaty in 1992, however, the legal basis for animal welfare in EC treaties has been progressively strengthened. The first clear reference to animal welfare was the non-binding Declaration on the Welfare of Animals annexed to the Maastricht Treaty on the European Union, approved in 1992, which called upon EC institutions to "pay full regard to the welfare of animals" when drafting and implementing legislation.

1997: Protocol on Protection and Welfare of Animals in Amsterdam Treaty

Next, the Amsterdam Treaty of 1997 included a Protocol on Protection and Welfare of Animals, which recognizes animals as "sentient beings", a status distinct from property or agricultural products. It introduces for the first time legal obligations to consider animal welfare in the formulation and implementation of EC agriculture, transport, internal market and research policies.

The protocol specifies that "*the Community and the Member States shall pay full regard to the welfare requirements of animals, while respecting the legislative or administrative provisions and customs of the Member States relating in particular to religious rites, cultural traditions and regional heritage*".

The last clause is a subject of debate among animal welfare advocates, who feel that it leaves too large a loophole for EC member states. Others, however, acknowledge that no animal welfare provision might have been included at all without such a compromise allowing member states flexibility with respect to issues of culture or religion and animal welfare.

2004: Lisbon Treaty provides a constitutional basis for animal welfare

The Lisbon Treaty of 2004, which came into effect on 1 December 2009 and establishes a Constitution for Europe, reiterated the language of the protocol. Therefore, the treaty provides for the first time a clear constitutional basis for animal welfare in the EU. With slight variations, Article III-121 crystallizes and makes legally binding the language of the Amsterdam Treaty protocol, as follows:

In formulating and implementing the [European] Union's agriculture, fisheries, transport, internal market, research and technological development and space policies, the Union and the Member States shall, since animals are **sentient beings**, pay full regard to the requirements of **animal welfare**, while respecting the legislative or administrative provisions and customs of Member States relating in particular to religious rites, **cultural traditions** and **regional heritage**.

Three significant documents address future objectives and strategies on animal welfare in the EU:

Community Action Plan on the Protection and Welfare of Animals 2006-2010[11]

For the first time in 2006, the Community Action Plan on the Protection and Welfare of Animals 2006-2010, adopted by the Commission, grouped the various aspects of EU policy on animal welfare governing the keeping of billions of animals for economic purposes in the EU. It identifies five key actions to be undertaken in EU members States:

1. upgrading existing minimum standards for animal protection and welfare;
2. giving a high priority to promoting policy-oriented future research on animal protection and welfare;
3. introducing standardized animal welfare indicators;
4. ensuring that animal keepers/handlers and the general public are more involved in animal welfare issues and informed about current standards of animal protection and welfare and fully appreciate their role in promoting these values;
5. continuing to support and launching further international initiatives to raise awareness and create a greater consensus on animal welfare.

With respect to the third action area, the plan emphasized that the EU would strive to introduce standardized animal welfare indicators both across the EU and internationally with its trade partners. For the fifth action area, the plan specified that the EU would attempt to engage with developing countries by providing trade opportunities to those that establish "welfare friendly production systems" (COM (2006) 13).

Animal Health Strategy for the EU 2007-2013

The second document is the Communication Animal Health Strategy for the European Union 2007-2013 (COM 539 (2007)), which explicitly lists as one of its objectives the promotion of "farming practices and animal welfare which prevent animal health related threats and minimize environmental impacts in support of the EU Sustainable Development Strategy (ESDS)". One specific goal in the ESDS is the inclusion of animal welfare status in the EU-wide labeling system called "TRACES" (TRAde Control and Expert System).

The EU does not currently impose general import restrictions on food products based on animal welfare standards, but has proposed legislation on protection of animals during international (non-EU) transport. In addition, the EU has included animal welfare standards in the terms of at least one bilateral free trade agreement (FTA) with Chile. Animal welfare standards have also been included in ongoing FTA negotiations with the Association of Southeast Asian Nations (ASEAN) and the Mercado Común del Sur (MERCOSUR).

European Union Strategy for the Protection and Welfare of Animals 2012-2015[12]

The third document is the Communication from the Commission on the European Union Strategy for the Protection and Welfare of Animals 2012-2015. In February 2012, the Commission proposed lines of EU Action for the next four years taking advantage of the scientific and technological advances made to reconcile animal welfare with economic realities in implementing legal provisions. On of the objective is to consider the feasibility of introducing a simplified EU legislative framework with animal welfare principles for all animals kept in the context of an economic activities.

III.3.2. EU legislation on the protection and Welfare of wild animals

In the context of these important advances in the Community's farm animal protection and welfare policies, the EU has also made strong commitments to promote wild animal protection and

welfare. The Council of the European Union adopted several texts, Regulations and Directives, directly related to wild animal:

- Council Regulation (EEC) No 3254/91 of 4 November 1991 prohibiting the use of leghold traps in the Community and the introduction into the Community of pelts and manufactured goods of certain wild animal species originating in countries which catch them by means of leghold traps or trapping methods which do not meet international humane trapping standards Official Journal L 308, 09/11/1991 p. 0001– 0004.
- Council Regulation (EC) No 338/97 of 9 December 1996 on the protection of species of wild fauna and flora by regulating trade therein Official Journal L 061, 03/03/1997 p. 0001 – 0069.
- Council Directive 83/129/EEC of 28 March 1983 concerning the importation into Member States of skins of certain **seal pups and products derived** there from Official Journal L 091, 09/04/1983 p. 0030 – 0031.
- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora Official Journal L 206, 22/07/1992 p. 0007 – 0050.
- Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds Official Journal L 103, 25/04/1979 p. 0001 – 0018.

The European Community is a Contracting party to the Bern Convention adopted in 1979, entered into force in 1982. The Convention on the Conservation of European Wildlife and Natural Habitats[13] is a binding international instrument in the field of nature conservation which covers most of the natural heritage of the European continent and extends to some States of Africa.

The Convention aims to "*conserve wild flora and fauna and their natural habitats, especially those species and habitats whose conservation requires the co-operation of several States, and to promote such co-operation. Particular emphasis is given to endangered and vulnerable species, including endangered and vulnerable migratory species*". The Convention's four Appendices list protected species:

I – strictly protected flora species;

II – strictly protected fauna species;

III – protected fauna species; and

IV – prohibited means and methods of killing, capture and other forms of capture.

In its Recommendation 1776 (2006), the Assembly (PACE) invite member and observer states practicing seal hunting:

13.3. invite in particular the **Russian Federation and Canada**, as well as all member states that have not already done so, to sign and **ratify the Convention** on the Conservation of European Wildlife and Natural Habitats (Bern Convention, ETS No. 104) and call on all Parties to this convention to ensure that its provisions are transposed into national legislation and enforced;

13.4. instruct the Working Group on the Drafting of a European Hunting and Biodiversity Charter of the Bern Convention **to include seals** and other marine mammals, and in particular game tourism, in its work.

Appendix 3 of the Bern Convention[14] lists protected Fauna species, including the six species of seals and the walrus living in Atlantic Arctic Basin and North Atlantic Ocean: hooded seal, bearded seal, harp seal, harbor seal, ringed seal, and grey seal. However, Norway, which is the unique country to have a walrus population in its jurisdiction, has not listed it under the convention.

[1] Legislative and regulatory options for animal welafre, FAO Legislative Study, 104, Jessica Vapnek and Megan Chapman, *FAO, Rome 2010.*

[2] The full set of recommendations is available at <www.oie.int>

[3] The GATT is an international trade agreement adopted in 1948 which led to the creation of an international organization also known as the GATT, which was the first and only international trade organization before the establishment of the WTO in 1995. The WTO incorporated the agreements negotiated during the "GATT years", including the GATT agreement referred to here, which remains binding on GATT signatories.

[4] WTO Document No. G/AG/NG/W/19, European Communities Proposal: Animal Welfare and Trade in Agriculture, 28 June 2000, available at <docsonline.wto.org>.

[5] Full text avilable at <www.animalsmatter.org>

[6] Council of Europe, Human rights and legal affairs, Biological safety use of animals by

humans, available at <www.coe.int>.

[7] http://assembly.coe.int/Main.asp?link=/Documents/AdoptedText/ta78/EREC825.htm

[8] http://assembly.coe.int/Main.asp?link=/Documents/AdoptedText/ta93/ERES1012.htm

[9] http://assembly.coe.int/Main.asp?link=/Documents/AdoptedText/ta04/EREC1689.htm

[10] http://assembly.coe.int/main.asp?Link=/documents/adoptedtext/ta06/erec1776.htm

[11] COM(2006)13 final of 23. 1.2006

[12] COM(2012) 6 final of 15.02.2012

[13] http://europa.eu/legislation_summaries/environment/nature_and_biodiversity/l28050_en.htm

[14] http://conventions.coe.int/treaty/fr/Treaties/Html/104-3.htm

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