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SKAGEN
DENMARK

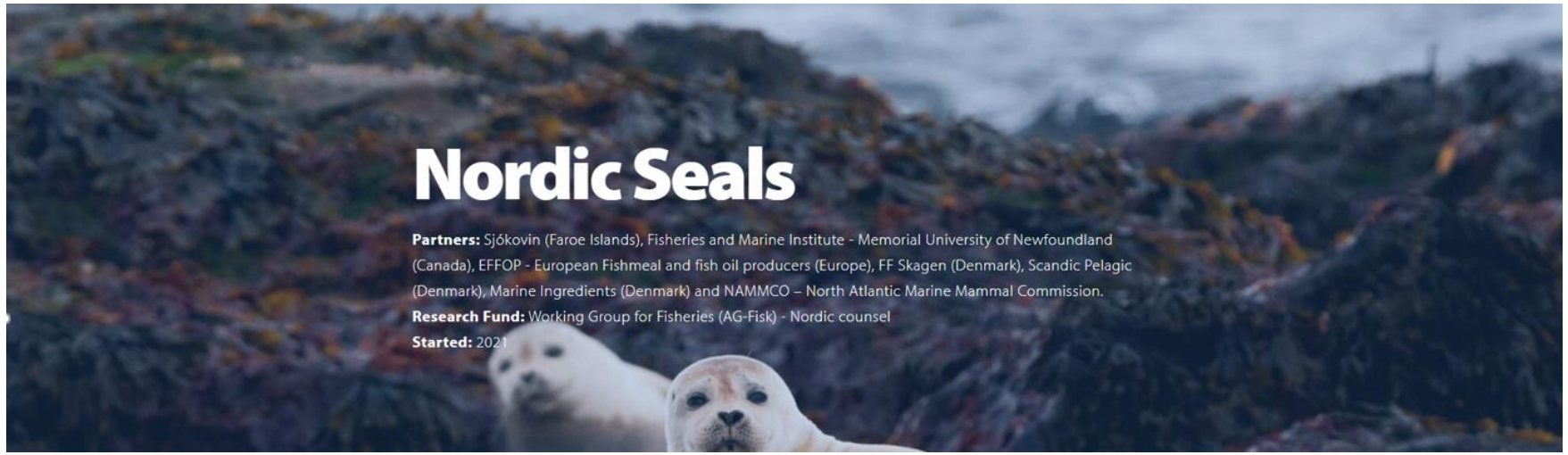
Jónas R Viðarsson

Director of Division of value creation, Matís OHF

Status of the Seals' Population in the North Atlantic and Arctic Ocean

The Nordic Seals project

Project presentation at EFFOP conference in Skagen 2 June 2022



Jonas R. Viðarsson
Director of division of value creation at Matís

Introducing Jónas R. Viðarsson

Jónas R. Vidarsson
Director of Division of Value Creation at Matís

Education:

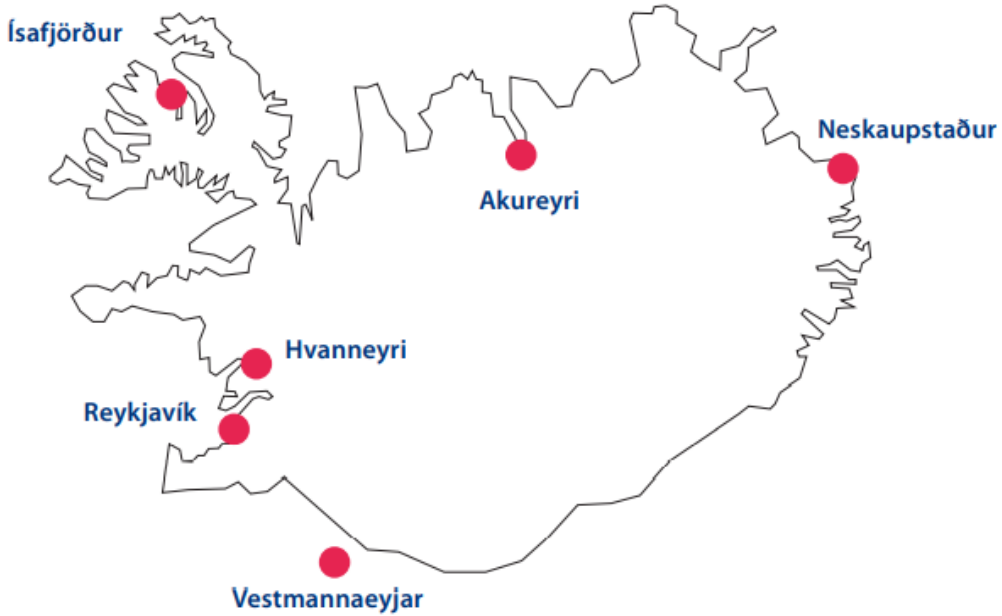
- Fisheries Science,
- Environmental Science
- Resource Management

Experience:

- At Matís for 15 years working on improving quality and value of food & feed.
- Fisherman on Icelandic trawlers for 13
- Fish processing plants, net making & other service to the seafood industry

Matís

- Matís is a governmentally owned Ltd. Non-profit food & biotech R&D company
- Matís has obligations to safeguard **food safety**, contribute to improved **public health** and increased **value creation** in the Icelandic food & biotech sectors
- 93 employees in 6 locations
  - 23% PhD, 54% MSc



The Nordic Seals project

- Research & Networking project funded by Nordic Counsel of Ministers Working Group for Fisheries (AG-Fisk)

- Project objective: To identify, discuss and analyse the opportunities and challenges associated with the moratorium on seal hunting, and explore alternatives for how to utilise and manage seal populations in the future.
    - present the results in an easily understandable form (for laymen) in a report and a workshop.

- The specific objectives of the project are:
    - gather facts about seal populations and distribution in the N-Atlantic,
    - analyse the effects of the seal populations on the Nordic seafood industry,
    - explore utilization alternatives, including:
        - turism
        - sustainable harvesting, potential products and markets,
        - consider barriers such as animal welfare, policy & political correctness,
        - food safety & toxins

The team

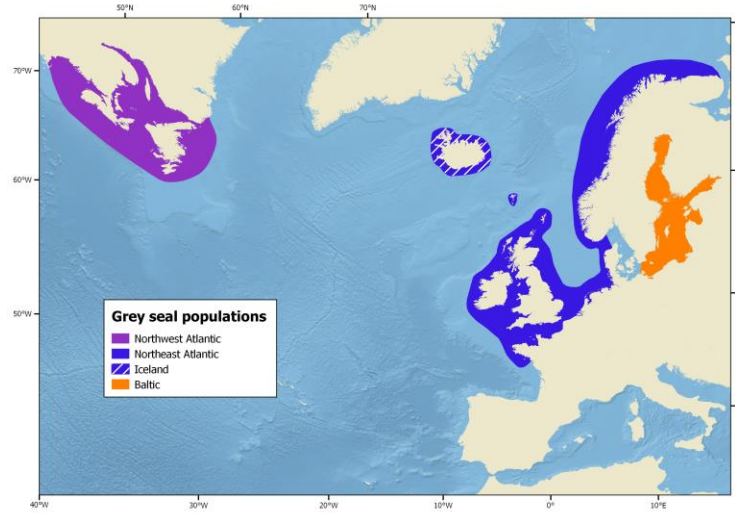
Nordic Co-operation

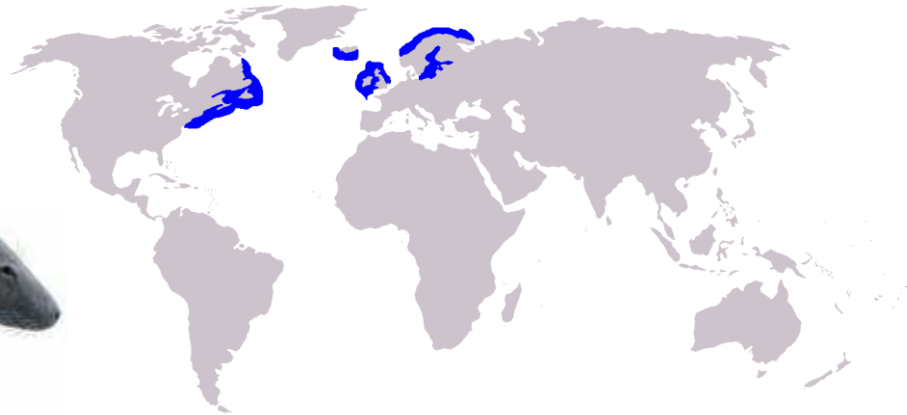
- Matís – Iceland
- Marine & Freshwater Institute – Iceland
    - Icelandic Seal Center
- Sjokovin – Faroe Island
- Fisheries and Marine Institute of Memorial University of Newfoundland – Canada
- FF Skagen – Denmark
- Marine Ingredients – Denmark
- EFFOP

- Associated partner: NAMMCO

Seal populations and distribution

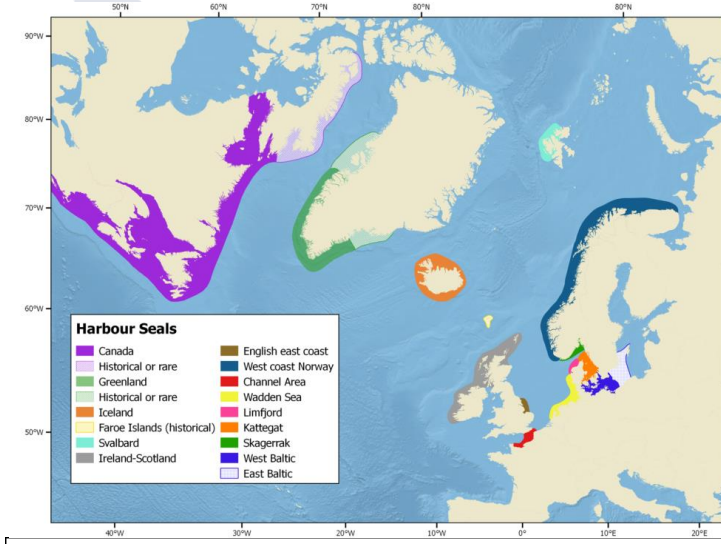
- **Grey Seals**
  - Three stocks/subspecies NW-Atlantic, NE-Atlantic & Baltic
  - Population 650,000+ and growing (NW-Atlantic 450,000, NE-Atlantic 160,000 & Baltic 40,000 seals)
  - IUCN: Least concern
  - Stock size varies depending on spatial distribution e.g. Icelandic grey seal population is classified as vulnerable
  - Grey seal lifespan is 25-35 years and weight of adult seal is 200-400 kg
  - 650,000 seals at average weight of 300 kg is 195,000 ton
  - Grey seals eat 4-6% of their body weight each day
    - 195,000 * 5% * 365 = 3.6 million ton/year
  - Grey seals distribution overlaps commercial fishing grounds
    - Grey seals and fishermen are competitors





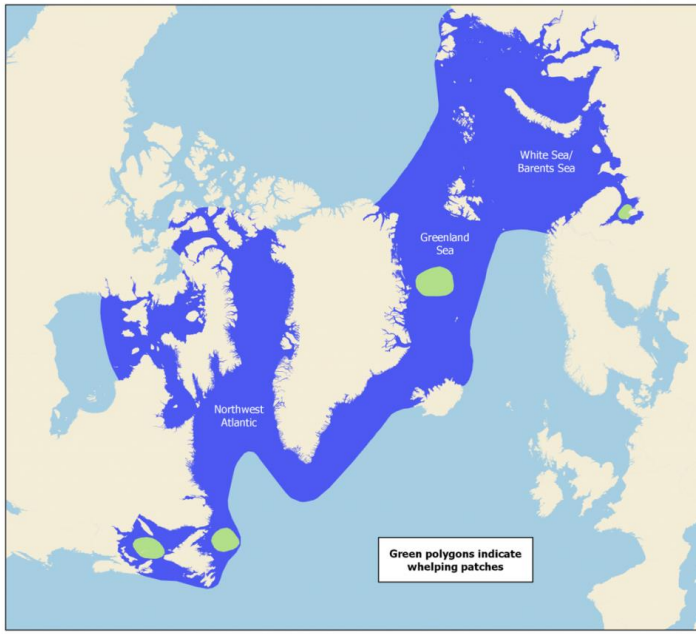
Seal populations and distribution

- **Harbour Seals**
  - 17 stocks in N-Atlantic
  - Population 200,000+ and growing
  - IUCN: Least concern globally (critically endangered in Greenland, Iceland and Svalbard)
  - Harbour seal lifespan is 25-30 years and weight of adult seal is 70-130 kg
  - 200,000 seals at average weight of 100 kg is 20,000 ton
  - Harbour seals eat 5-6% of their body weight each day
    - 20,000 * 5% * 365 = 365 thousand ton/year
  - Harbour seals distribution overlaps commercial fishing grounds
    - Grey seals and fishermen are competitors



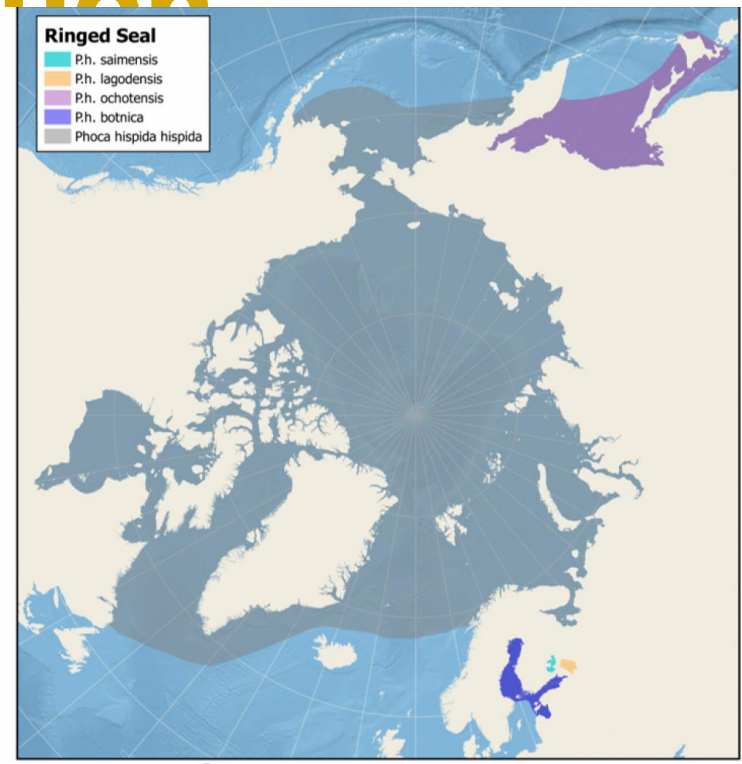
Seal populations and distribution

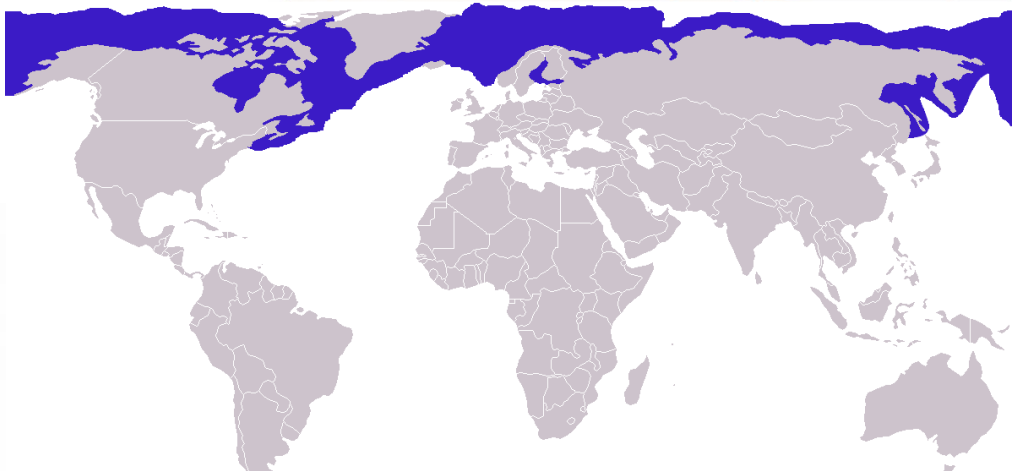
- **Harp Seals**
  - Considered one stock, but there are four whelping patches in N-Atlantic
  - Population 7,400,000+ and growing
  - IUCN: Least concern globally
  - Harp seal lifespan is 25-35 years and weight of adult seal is around 130 kg
  - 7.4 million seals at average weight of 130 kg is 962,000 ton
  - Harp seals eat 4-6% of their body weight each day
    - 962,000 * 5% * 365 = 17.5 million ton/year
    - Krill, amphipods, shrimp, polar cod, cod, capelin, Greenland halibut etc.
    - Cod accounts for 3% of the diet = 520,000 t
  - Harp seals distribution does not significantly overlap commercial fishing grounds
    - Harp seals and fishermen are rarely competing



Seal populations and distribution

- **Ringed Seals**
  - Population 5,000,000
  - IUCN: Least concern globally
  - Ringed seal lifespan is 15-20 years and weight of adult seal is 80 – 95 kg
  - 5.0 million seals at average weight of 90 kg is 450,000 ton
  - Ring seals eat 4-6% of their body weight each day
    - 450,000 * 5% * 365 = 8.2 million ton/year
    - Krill, amphipods, scrimp, polar cod etc.
  - Ringed seals distribution does not significantly overlap commercial fishing grounds
    - Ringed seals and fishermen are in some areas competing
      - N-Norway, Barents Sea, Baltic



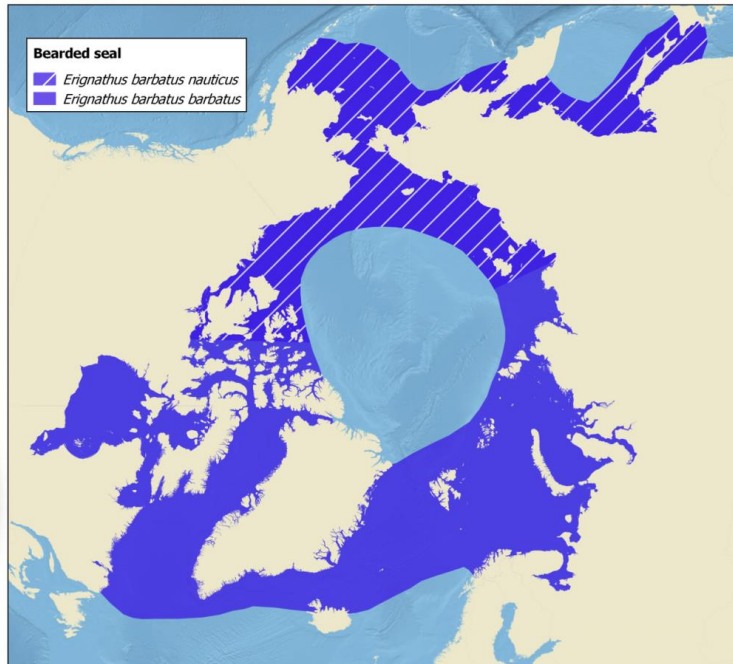


Seal populations and distribution

- **Hooded Seal**
  - Population 600,000
  - IUCN: Vulnerable
  - Hooded seal lifespan is 25-30 years and weight of adult seal is 160 – 300 kg
  - 600,000 seals at average weight of 200 kg is 120,000 ton
  - Hooded seals eat 4-6% of their body weight each day
    - 120,000 * 5% * 365 = 2.2 million ton/year
    - Mainly pelagic fish (capelin) and squid, but also cod, polar cod, redfish, Greenland halibut, sand eel
  - Hooded seals distribution overlap some commercial fishing grounds
    - Hooded seals and fishermen are in some areas competing, but do for the most parts avoid each other.
    - By-catches of hooded seals is very uncommon

Seal populations and distribution

- **Bearded Seal**
  - Population 500,000 – 1,000,000
  - IUCN: Least concern
  - Bearded seal lifespan is 25-30 years and weight of adult seal is 200 – 430 kg
  - 700,000 seals at average weight of 300 kg is 210,000 ton
  - Bearded seals eat 4-6% of their body weight each day
    - 210,000 * 5% * 365 = 3.8 million ton/year
    - Whelk, shrimp, arctic cod, capelin, cephalopods, sea cucumbers etc.
  - Bearded seals distribution does not significantly overlap commercial fishing grounds
    - Bearded seals do mostly stick to the arctic on/close to Icy waters



Seal populations and distribution

Species	Population	Biomass (t)	IUCN	Feeding (t)	Effect on fisheries
Grey Seals	650.000	195.000	Least concern	3.558.750	Considerable
Harbour Seals	200.000	20.000	Least concern	365.000	Considerable
Harp Seals	7.400.000	962.000	Least concern	17.556.500	Little
Ringed Seals	5.000.000	450.000	Least concern	8.212.500	Some
Hooded Seal	600.000	120.000	Vulnerable	2.190.000	Little
Bearded Seal	700.000	210.000	Least concern	3.832.500	Little
Total	**14.550.000**	**1.957.000**		**35.715.250**	

Seal populations effect on Nordic seafood industry

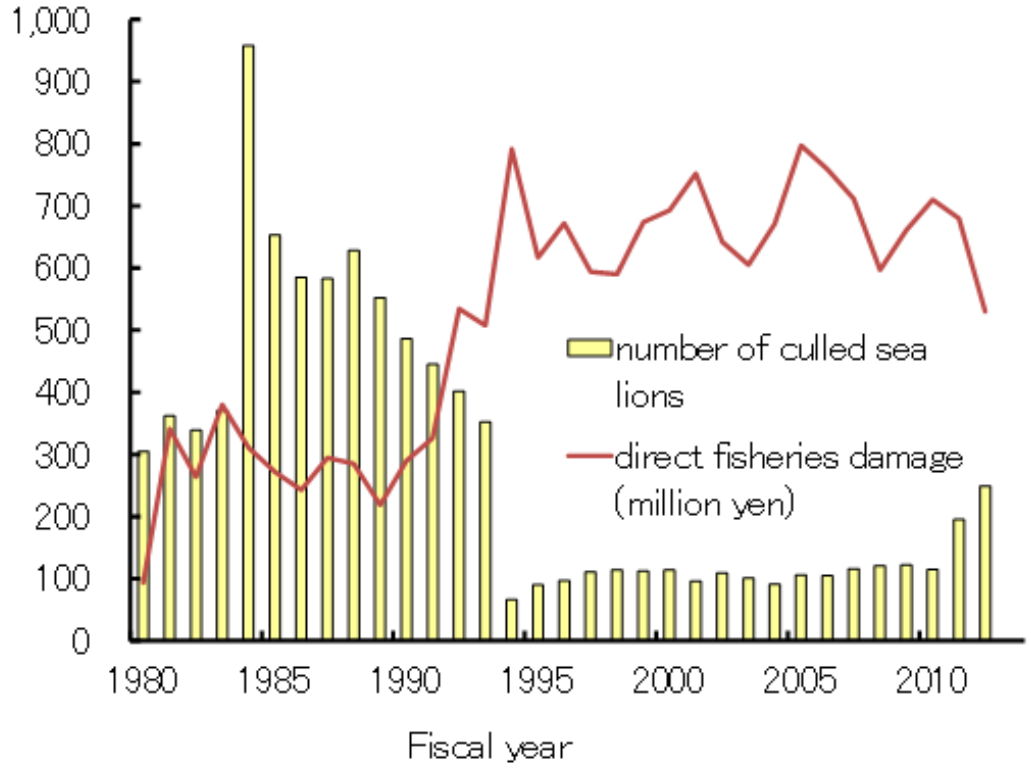
- **Interaction between seals and fishermen/seafood industry**
  - Competition for commercial fish
  - Seals compete for feed with commercial fish species
  - What is the role of seals in the ecosystem/foodweb?
  - Seals often eat catches from stationary fishing gear (line, nets and traps)
  - Damage to fishing gear
  - By-catches of seals can cause market restrictions
  - Nematodes (ringworms)

Seal populations effect on Nordic seafood industry

- **Coastal fisheries in some places are severally effected by seal predation as seals eat catches from the fishing gear and cause damages to the gear.**
  - Skagerrak & Kattegat for example
- **Some areas are so heavily infected by nematodes that fish buyers refuse to source from those areas**
  - Húnaflói in Iceland for example
- **Some fisheries face import restrictions and loss of MSC certifications because of seal by-catches**
  - Lumpfish fisheries for example
- **Damage to fishing gear & cost of avoiding seal by-catches**
  - Damage to fishing gear has not been quantified in N-Atlantic, but Matsuda *et. al* 2015 quantified the cost of "direct fisheries damage" of Steller sea lions in the Hokkiado Prefecture (Japan) and linked with sea lion management efforts

Seal populations effect on Nordic seafood industry

- **Until 1993 an average of around 400 Steller sea linos were culled in the waters around Hokkaido each year.**
- **From 1994 the culling was reduced down to around 100 sea lions a year.**
- **Direct fisheries damage more than doubled in the same time from around 300 million Yen to 700 million Yen**
    - 2.2 M EUR -> 5.2 M EUR
    - 16.5 M DKK -> 38.5 M DKK



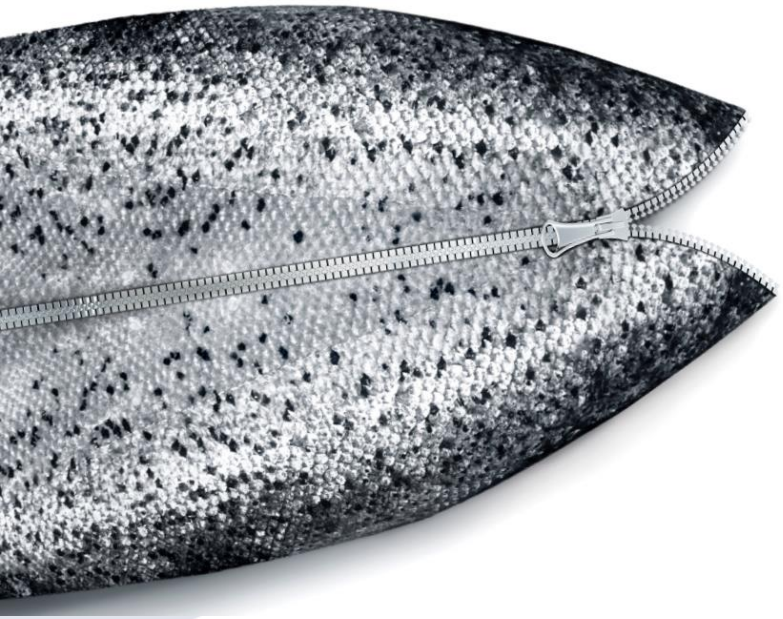
Utilization / commercialization of seals

- EU sealskin ban in 1983 and EU ban on seal products in 2009 changed the economy and incentives for commercial utilisation.
- Seal watching and truism has become an important part of the economy in some areas
- Little commercial hunting of seals ongoing
    - Minor seal hunting currently taking place in NW-Atlantic (Nova Scotia, Gulf of St. Lawrence & Greenland)
    - Mostly subsistence hunting for indigenous people (and their dogs)
    - Grey seal commercial hunting of 60,000 seals/year in NW-Atlantic (Canada)
    - Harp seal commercial hunting of 60,000 seals/year in NW-Atlantic (Canada)
- Commercial products include Omega-3 oil, fur & leather, meat for human consumption, meat & intestines for pet food (treats)
    - Difficult markets for fur & leather
    - Meat is high in contaminants e.g. heavy metals like mercury and selenium.
    - Persistent organic contaminants like PCBs, DDT & CHL are also found in seal meat.
    - Regulations for use in feed is very strict

Utilization / commercialization of seals

- **Other barriers to utilization**
  - Animal welfare: Practices have changed in recent years, and the Canadian seal hunting is now for example approved/supported by environmental NGOs such as WWF, Jacues Cousteau and CITES.
  - Sustainability: Almost all seal species are classified as “least concern” by IUCN, but some sub-stocks are vulnerable or endangered.
  - Policy: EU has a ban on imports of seal products and many countries outside EU have followed. There seems to be a wide scale consensus among policy makers that commercial sealing is not acceptable (Political correctness). Changes could however be on the horizon, due to seal population increase and impact on the ecosystem.
    - Food security issues could also become an issue, now that concerns of how to feed 10 Billion people is imminent.

Thank you – Takk fyrir



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