The Status, Management and Ecological Role of Harp and Hooded Seals in Canada

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Outline

- Catches
- Status
- Management Approach
- Ecology
Northwest Atlantic Harp Seals

Seasonal migrant

- Summers in Canadian Arctic & W. Greenland
- Winter off Nfld & Gulf of St. Lawrence

Hunted in southern Canada, Greenland and Canadian Arctic
Reported Catches in Southern Canadian Waters (1952 – 2008)

Catches
Quotas Introduced
‘Renewed’ Harvest
EEC Ban

Reported Catches in Southern Canadian Waters (1952 – 2008)
Total Removals of NW Atlantic Harp Seals

- Struck and Lost
- Bycatch
- Reported Landings

Removals over the years from 1952 to 2008.
Northwest Atlantic Hooded Seals

Seasonal Migrants:
- Pup during March off Canada and in the Davis Strait
- Moult during July off Southeast Greenland

Hunted off Greenland and Newfoundland

No hunting allowed in the Gulf of St. Lawrence. Canada does not allow the taking of Bluebacks.
Reported Catches of NW Atlantic Hooded Seals

Norwegian Moulting
Greenland
Canada
Population Trajectories of NW Atlantic Harp Seals

Year

Total Population
0 1,000,000 2,000,000 3,000,000 4,000,000 5,000,000 6,000,000 7,000,000 8,000,000

Mean
95% CI
2008 Harp Seal Survey

Survey was carried out between late February and end of March 2008

2 large and 3 small whelping patches located

Pupping ice appeared to be stable

~23,000 photographs taken

Results will be presented for scientific review in May or June 2009
Total and Mean Ice cover in Gulf of St. Lawrence on 2 April 1969 to 2008
Harp Seal Quota

Quotas have been reduced in recent years to ensure the population remains above a Precautionary Reference level and due to poor ice conditions in many years.

Quotas in the coming years will be driven by the high catches that took place over the past decade.
NW Atlantic Hood Seal Pup Production

Year

Pup production
NW Atlantic Hood Seal Population

Population size

Year

Hooded Seal Quota

- Gulf population remains small and therefore should remain closed to hunting.

- The current PBR for NW Atlantic hooded seals was estimated to be 32,000.

- Adjusting for the different populations, struck and lost and the Greenland harvest, this results in a Canadian Front landed TAC of 8,200.
Management: OBFM

The **Canadian Oceans Act** (1997) requires that fisheries be managed under the Precautionary Principle (1992 Rio Declaration on Environment and Development).

Objective Based Fisheries Management (OBFM) Arose from recommendations by the eminent panel on seal management. They recommended that target, precautionary and reference limits be identified.
## Objective Based Fisheries Management

### Conservation Reference Points

<table>
<thead>
<tr>
<th>Population Level</th>
<th>Value</th>
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<tbody>
<tr>
<td>Maximum</td>
<td>5.82 million</td>
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<tr>
<td>70% Maximum</td>
<td>4.07 million</td>
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<tr>
<td>50% Maximum</td>
<td>2.91 million</td>
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<tr>
<td>30% Maximum</td>
<td>1.75 million</td>
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### Management on Ecosystem and Socio-Economic Considerations

- **Management Strategy to Return Population above N 70**
- **'Significant' Conservation Measures Required**
- **All Removals Stopped**

Legend:
- N Max ('K')
- N 70 (70% Max)
- N Buf (50% Max)
- N Lim (30% Max)
Objective Based Fisheries Management (OBFM)

Uncertainty
OBFM requires that there be a 80% likelihood that the population remains above the Precautionary Reference Level (N70)

This requirement acknowledges that uncertainty increases without current data
Management Challenges: Why so cautious/risk adverse?

- Forecasting is uncertain.
  - Surveys every 4-5 years.
  - Survey pups, harvest beaters,
  - Impact of harvests cannot be evaluated until surviving animals have themselves reproduced 5 years later!
- Recent environmental conditions have been poor and will likely continue to worsen, on average.
- A large stock size is needed to maintain a viable fishery
- Marine mammal populations are slow growing but can decline quickly (e.g. St. Lawrence beluga, Blue whales)
- Failure to consider uncertainty can result in severe harm (e.g. Atlantic cod, Salmon, Abalone)
Movements of Harp and Hooded Seals in the Northwest Atlantic 2004-2006

Hoods

Harps
Harp Seal Diet in Newfoundland (2J3KL) Waters

Nearshore Winter

Offshore Winter

Nearshore Summer

Offshore Summer
Hooded Seal Diet in Newfoundland (2J3KL) Waters

Offshore (n=40)

Nearshore Winter (n=176)

Nearshore Summer (n=141)
Hooded Seal Diet in the Northwest Atlantic
(based on Fatty Acid Signatures)

Pre-breeding

- Female
- Male
- Juvenile

Post-breeding

- Female
- Male

Tucker et al. 2008
Conclusions from Diet Studies:

Seals may consume substantial amounts of commercial fish and therefore are assumed to contribute to the high total mortality observed in recent years.

**But:**

‘Consumption’ is not the same as ‘impact’

Estimating impact requires information on factors affecting population dynamics of the prey population and how both predators and prey interact with other components of their ecosystem.
Modelling Conclusions

- Seals are important predators in NW Atlantic ecosystems.

- Seals are biologically significant species that have a stabilizing role in their ecosystems.

**BUT**

- There are inconsistencies between the data and the models
The Role of Marine Mammals in the Ecosystem in the 21st Century

In 1995, NAFO and ICES sponsored a successful symposium on the ecological role of marine mammals. This follow-up symposium will present new findings on the synthesis of information over ecosystem components, on biological and physical aspects of the environment, and on new research approaches to understanding the role of marine mammals.

Co-conveners

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Scientific Steering Committee: Mike Hamnall (Canada), Phil Hammond (Scotland), Anthony Thompson (NAFO Secretariat)

Four sessions are planned:

- Biological and environmental factors affecting life history traits
- Foraging strategies and energetic requirements
- Theoretical considerations on apex predators and multispecies models
- Marine mammals – fisheries interactions

Contributed oral and poster presentations are welcome. Abstracts should be submitted by 1 May 2008. Final papers should be submitted by 30 November 2008 and will follow a peer review process for publication in the Journal of Northwest Atlantic Fishery Science. Participants who are not giving presentations must register by 1 September 2008.
Atlantic Canada Grey Seal Abundance

Total Population about 300,000