Ringed seal feeding ecology determined through local ecological knowledge and stomach content analysis

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Objective

To understand ringed seal feeding ecology using both stomach content analyses and local Inuit knowledge in three Nunavut communities by:

- identifying ringed seal prey consumed in these areas, and
- investigating spatial and temporal variation in prey.

Background

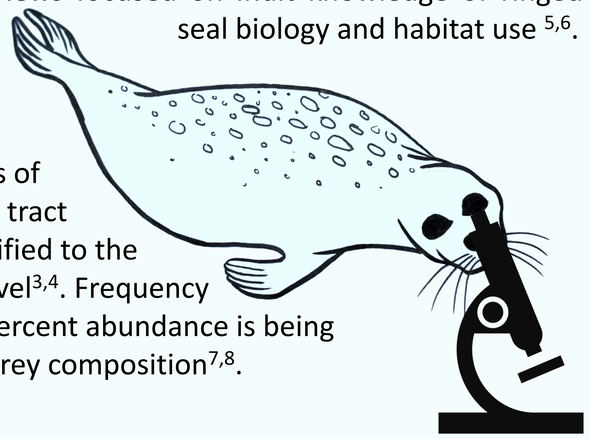
Ringed seals are opportunistic predators but diet studies have shown *Boreogadus saida* and lipid-rich pelagic crustaceans[1] as primary prey types consumed. This has been observed in the high Arctic, but a shift to *Ammodytes sp*. and *Mollotus villosus* has occurred in southern Hudson Bay[2–4].

Methods

This project uses a convergent parallel mixed methods approach to gather and link information on feeding ecology of ringed seals near Arctic Bay and Pond Inlet (North), and Pangnirtung (South).

Local knowledge

Local Inuit Knowledge gathered through semi-directed interviews with hunters. Interviews focused on Inuit knowledge of ringed seal biology and habitat use [5,6].



Stomach Contents

Quantitative analysis of ringed seal digestive tract contents. Prey identified to the lowest taxonomic level[3,4]. Frequency of occurrence and percent abundance is being used to determine prey composition[7,8].

Acknowledgements

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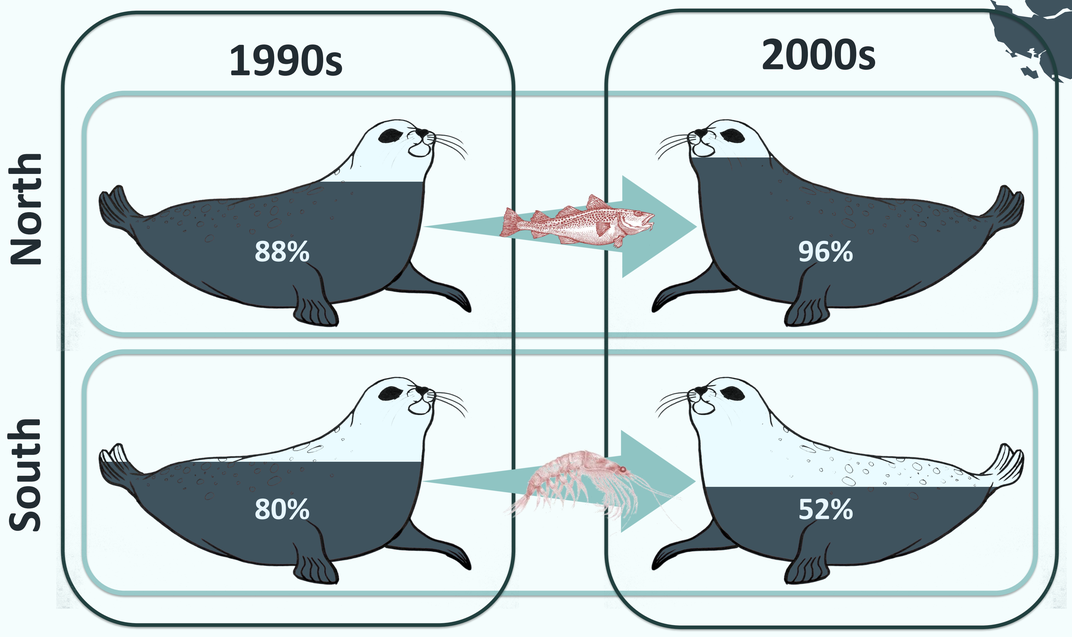
Stomach content results

Fish abundance in the diet



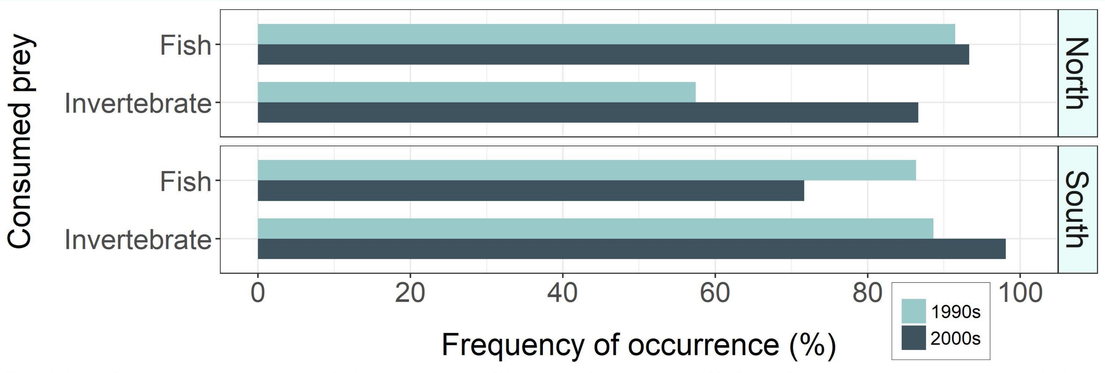


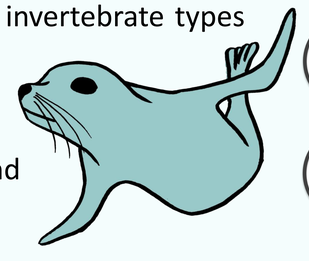
Figure 1: Above: Percent abundance of prey found in ringed seal stomachs (%A = n of prey i/total n of prey*100). Below: Frequency of occurrence of prey found in ringed seal stomachs (%FO = n of prey type i/total stomachs*100). North & 1990s: n=47, North & 2000s: n=15, South & 1990s: n=44, South & 2000s: n=53

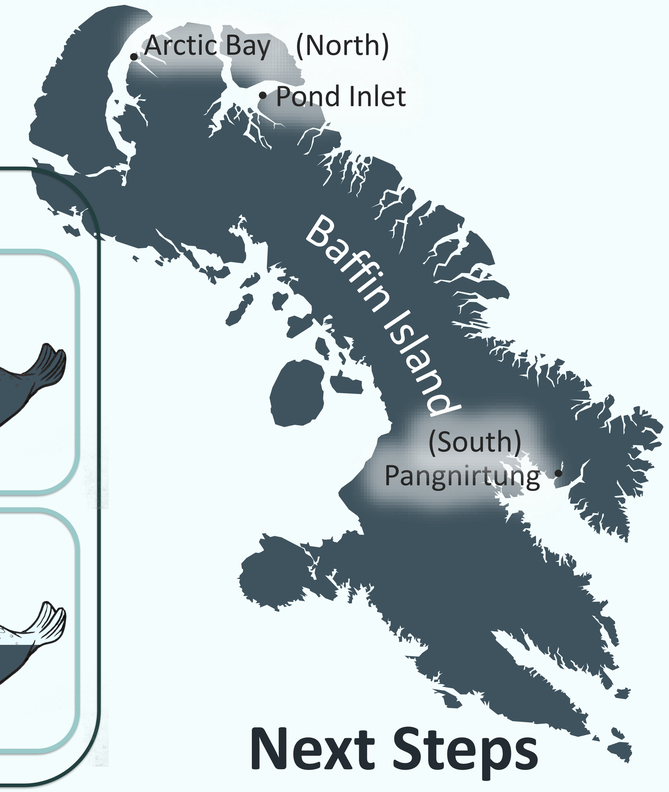
Changes over time:

- In Pangnirtung, a shift from mainly fish to invertebrates. Also, a large decline in the abundance of snailfish in the diet, and an increase in all invertebrate types described.

Distinctions between north and south include:

- Larger proportions of Arctic cod in the diet of northern seals;
- A larger array of invertebrates consumed by southern seals; and
- Presence of Capelin in the diet of southern seals.





Next Steps

Local knowledge

Thematic analysis and intersubjective review of qualitative information.

Integrated Data Interpretation

Qualitative and quantitative datasets will be analysed separately and then, datasets will be interpreted together for a more complete understanding of ringed seal feeding ecology in the Baffin region.

Literature Cited

[1]Hamilton, C. D., Lydersen, C., Ims, R. A. & Kovacs, K. M. (2015); [2]Holst, M., Stirling, I. & Hobson, K. A. (2001); [3]Young, B. G. & Ferguson, S. H. (2013); [4]Chambellant, M., Stirling, I. & Ferguson, S. H. (2013); [5]Huntington, H. P. (2000); [6]NCRI (2008); [7]Campana, S. E. (2004); [8]Härkönen, T. (1986)