

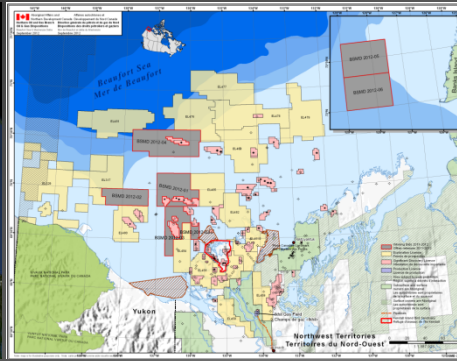
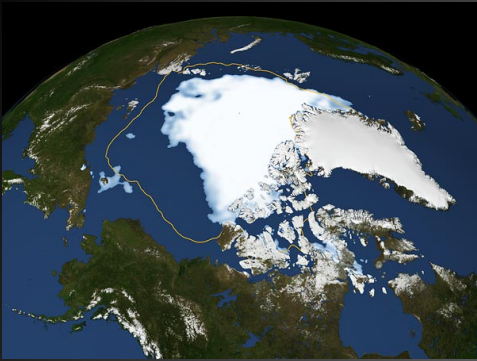
Co-management Perspectives from Canada: A beluga tale...



Lisa L. Loseto

May 26th, 2015

DFO: Ecosystem Impacts Group



Ecosystem Stressors

Ecosystem structure and function, ecosystem health



Ecosystem stressors, drivers and resulting impacts

Understanding the ecosystem signals and its responses to Stressors

Regional

- Climate Change
- Contaminants



Local

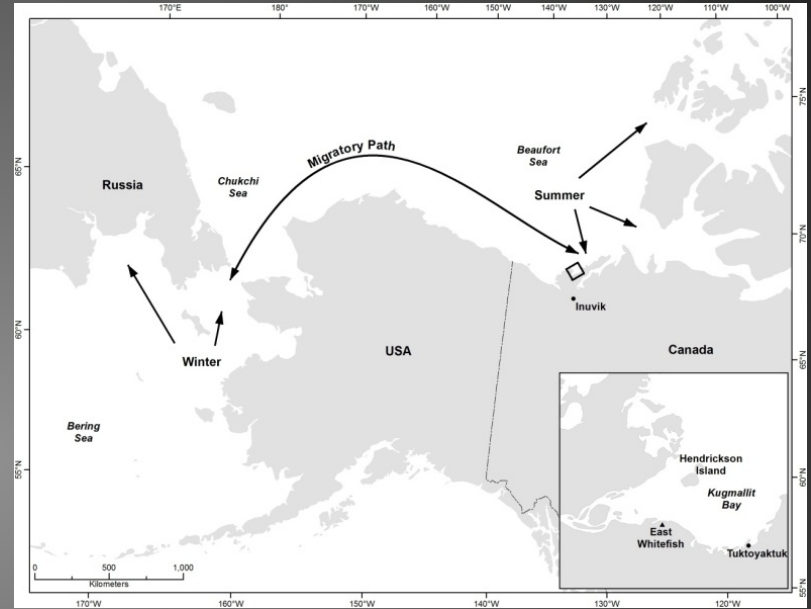
- Oil and gas, mines
- commercial fisheries



Advise for Management and Decision making to fulfil our fiduciary responsibility to protect fisheries resources

Beaufort Sea Beluga

- Estimated at 40,000
- Largest home range
- Shared with Alaska and Russia (IIBWC)
- Aggregate by the 1000's in the Mackenzie Estuary/Delta (for reasons not fully understood)
- Joint management, monitoring and research



Importance of Beluga Whales to the Culture and Well-Being of Inuvialuit



B.W. Brown/NWT Archives
Atungaksaq (skin)



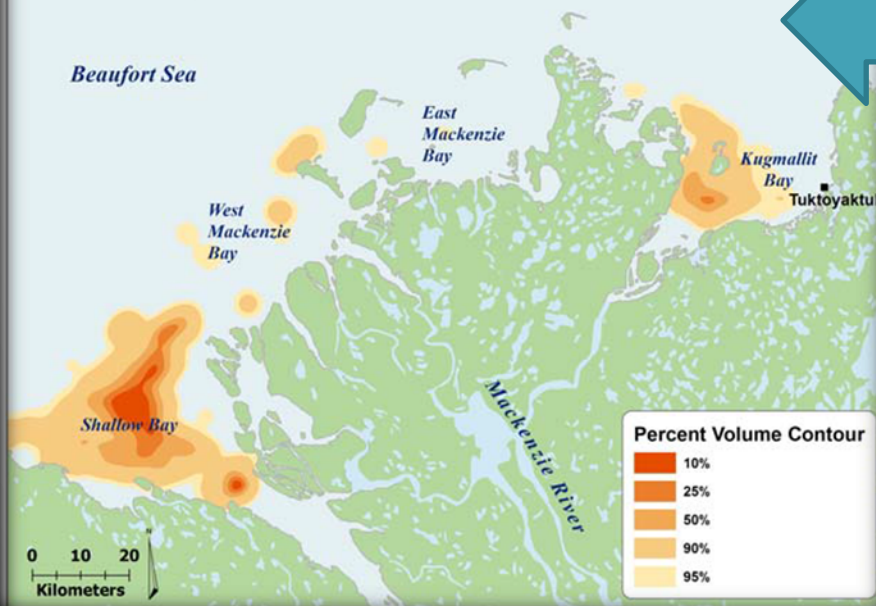
N. Pokiak, S. Pokiak
Photo by F. Pokiak 2004

Research & Resource Management

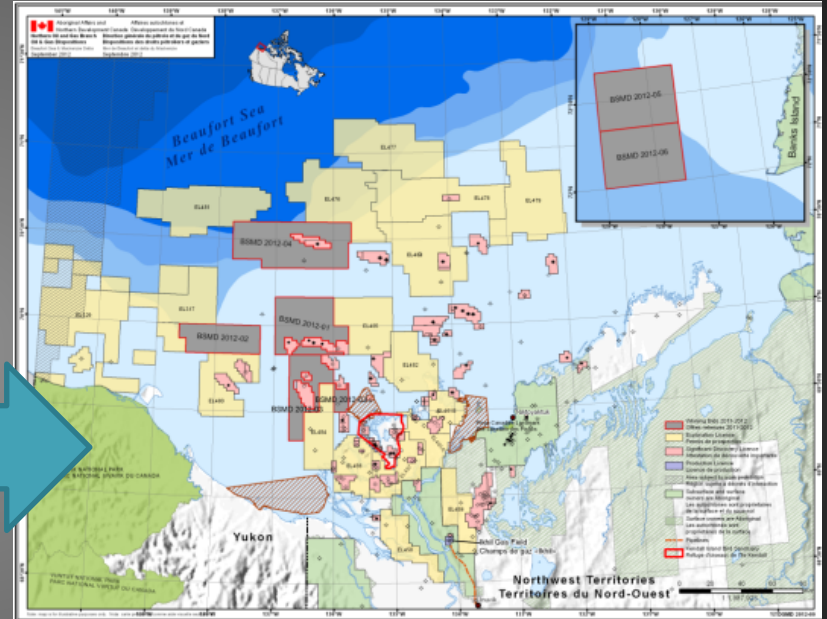
Subsistence Resources



June 26 - July 9

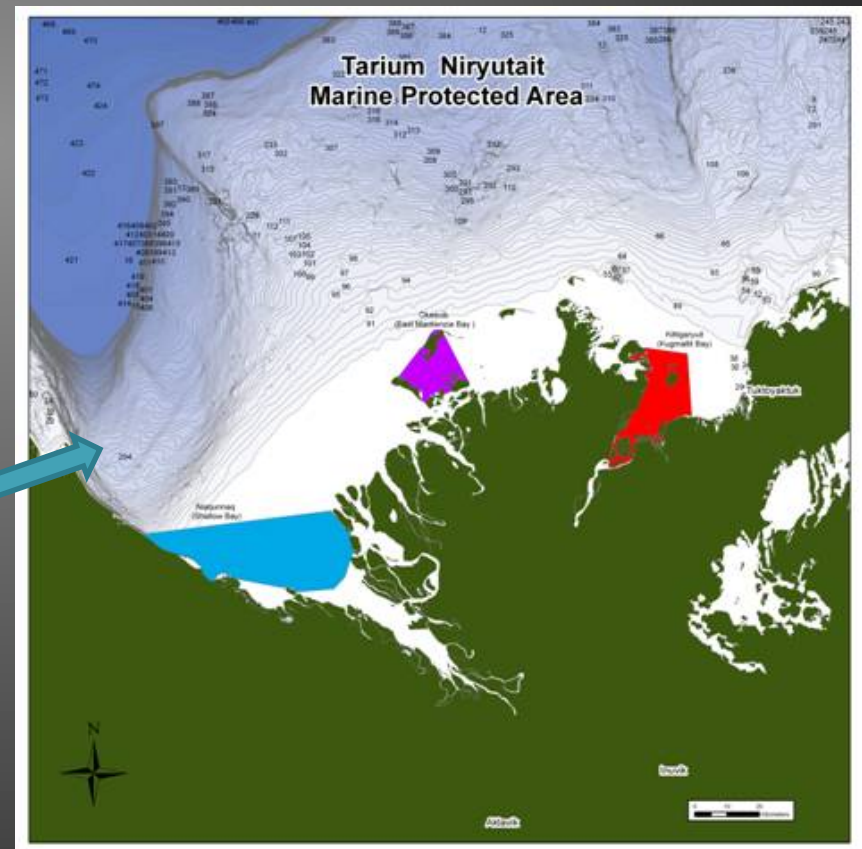


Non-Renewable Resources



Marine Conservation: Marine Protected Areas

- First MPA in the Arctic: Tarium Niryutait Marine Protected Area (2010)
- Conservation Objective: *To conserve and protect Beluga whales and other marine species (anadromous fishes, waterfowl and seabirds), their habitats and their supporting ecosystem*



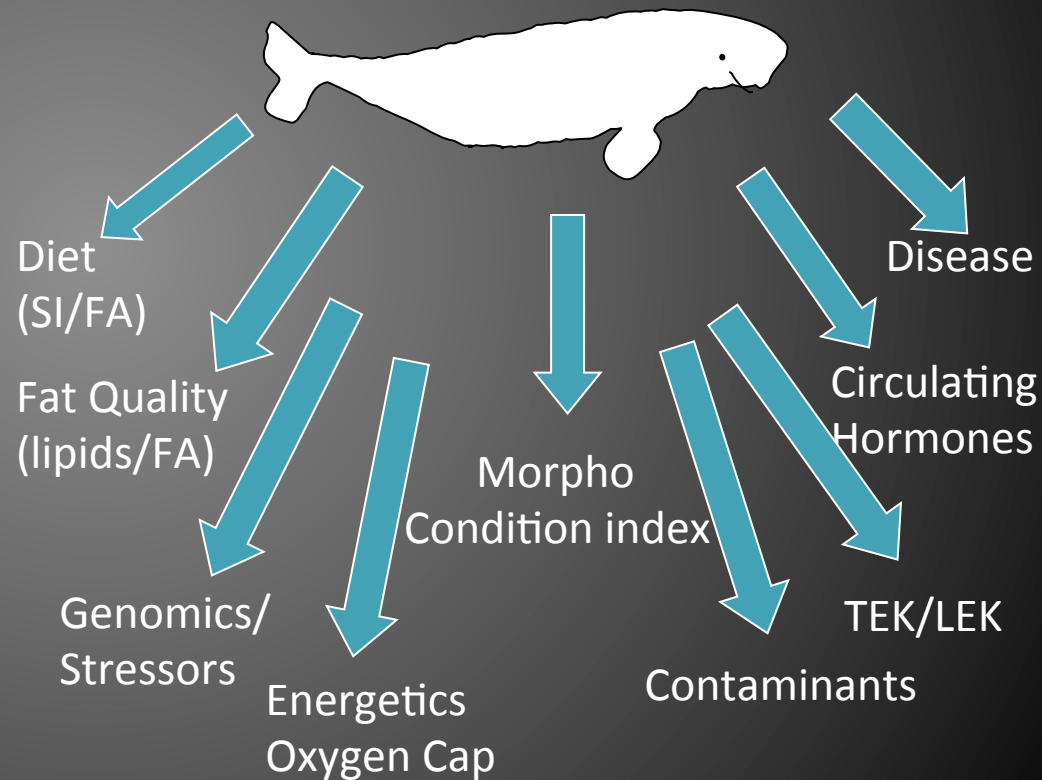
Monitoring Beluga in the MPA

- Indicator approach to beluga and supporting ecosystem
 - Both CBM and other
- Harvest monitoring partnered with communities
- At over 4 decades of monitoring the beluga data set is the longest for an Arctic cetacean
- Linked with 'ecosystem' indicators
- Supporting ecosystem model



Holistic Approach: Beluga Health

Partnered Harvest Monitoring



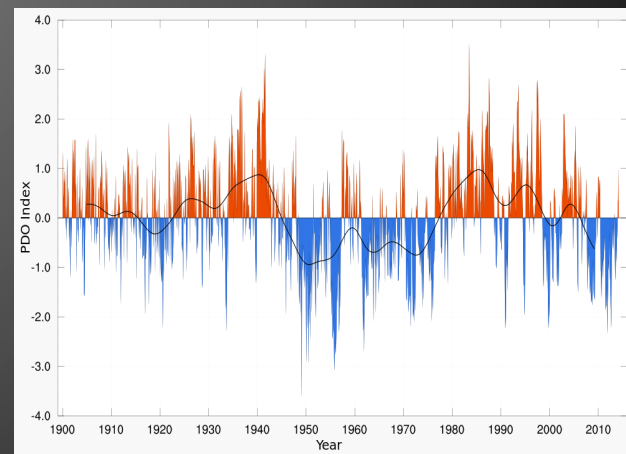
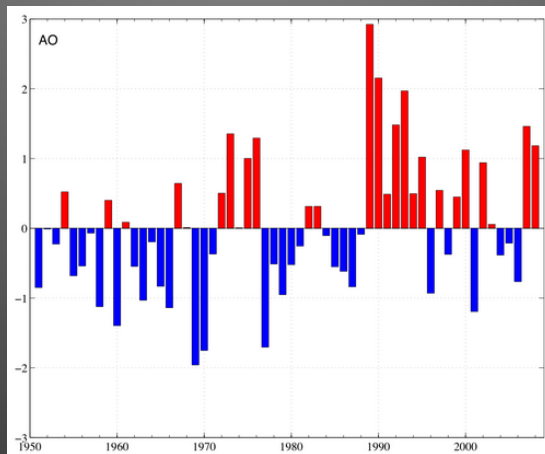
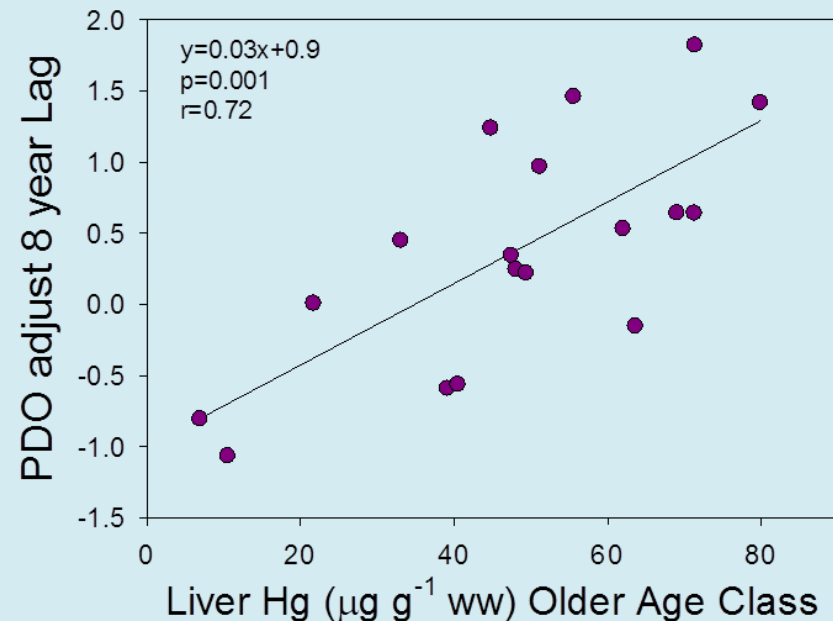
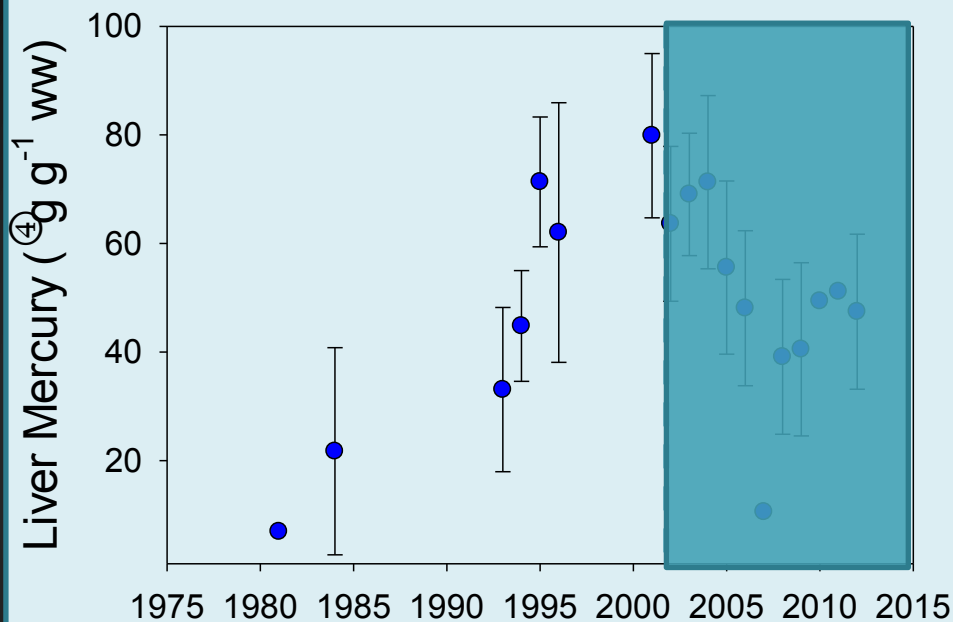
The Growth of a Community: Hendrickson Island Beluga Team

- Monitors
- Scientists
- Students (graduate/
undergraduate)
- Youth
- Hunters
- Elders
- Co-management Boards
- Non-Hunters
- Schools/teachers

- Built a community and
foundation for knowledge
exchange...

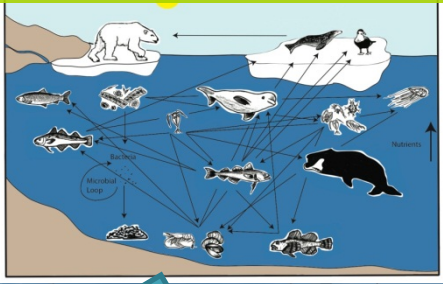


Long term Mercury Temporal Trends



Linking Coastal and Offshore Ecosystems

Beaufort Sea Ecosystem Model



Off Shore Fish



Opportunistic Beluga and cod



Beluga Habitat Use, Habitat Characterization



Diet Biomarker



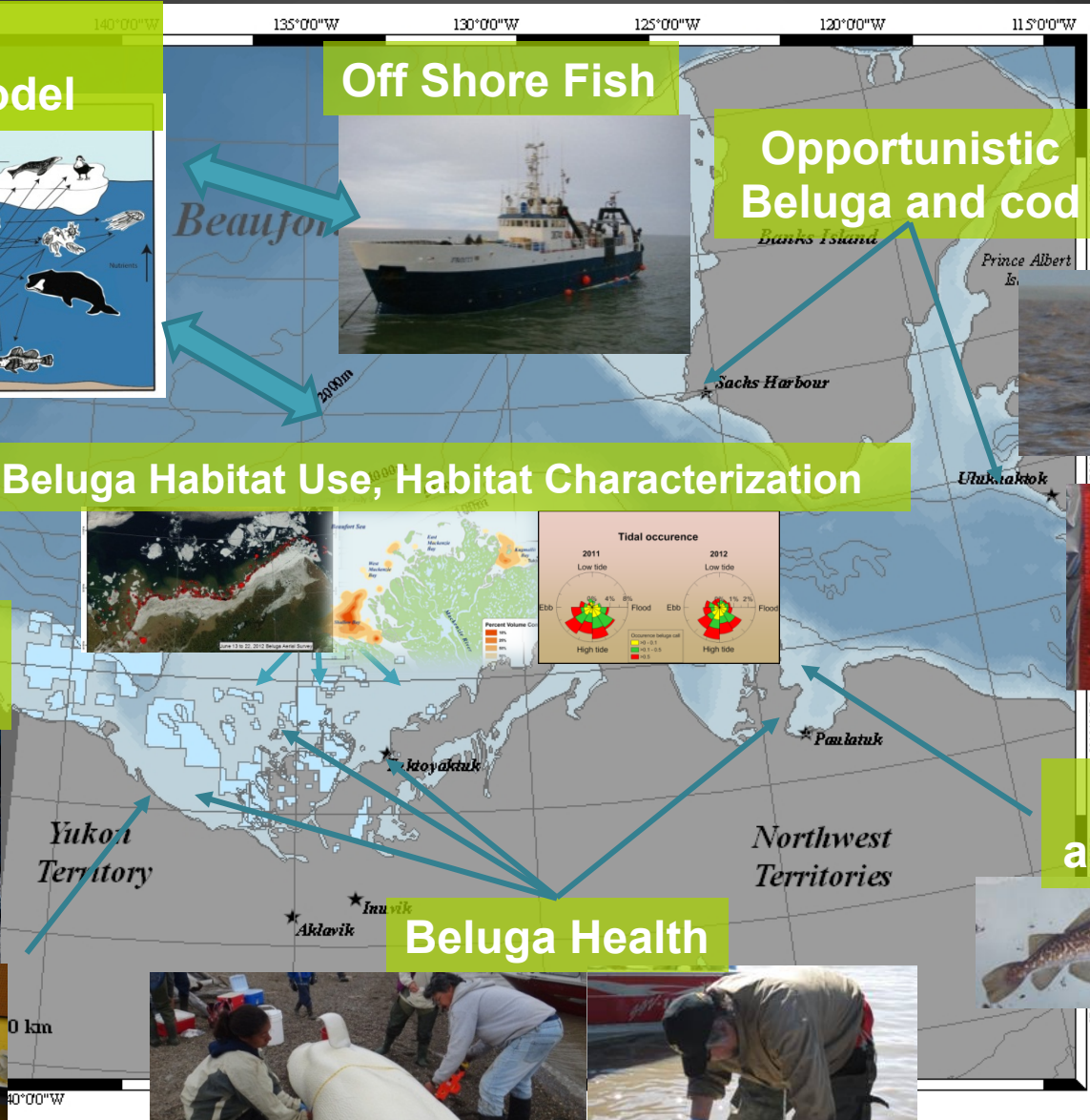
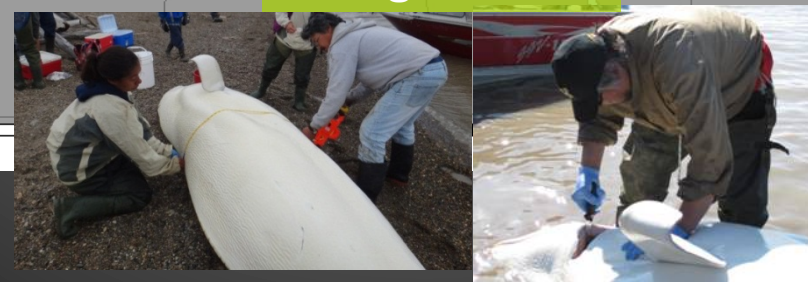
Estuarine Fish and Ecosystem



Marine Fish and Ecosystem



Beluga Health

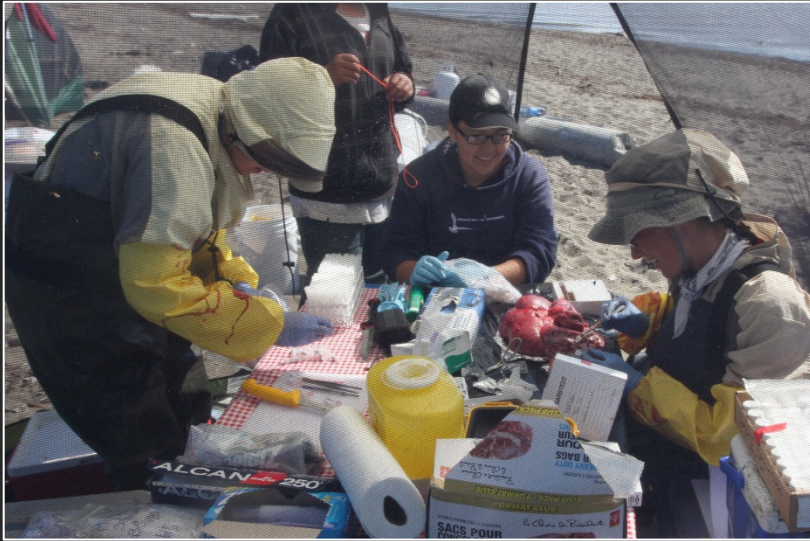


Western + TEK = Rapid Knowledge Growth

- Learning the more we share the more we learned
- Knowledge exchange between western science and TEK/LEK resulting in cumulative growth
- **NEEDED** to enhance and communicate more...



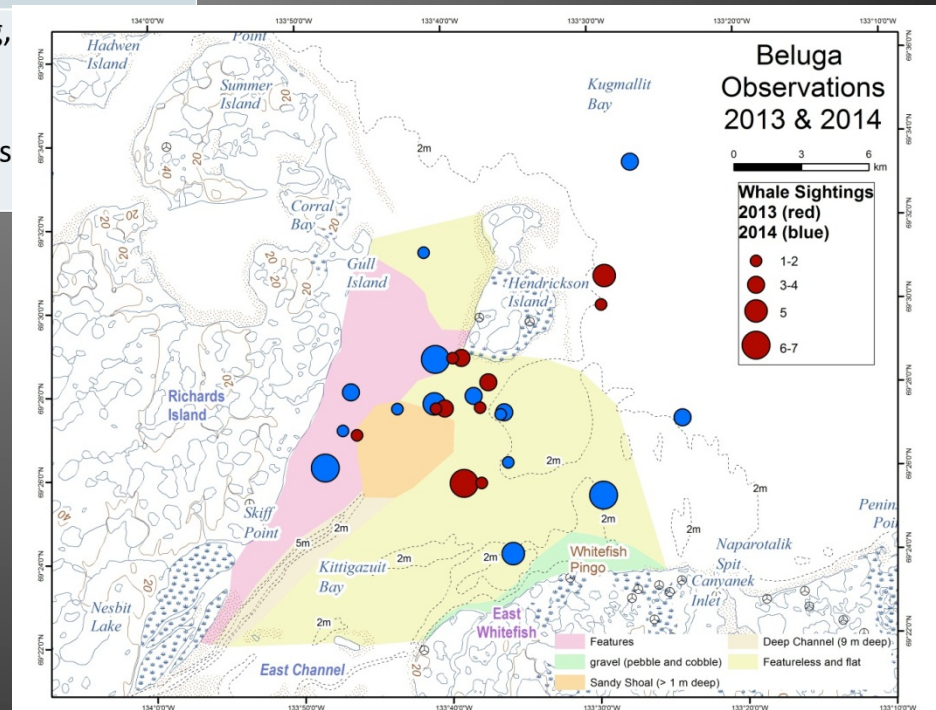
Sharing Knowledge and Communication



Local Observational Indicators

Category	Indicator
Health	<ul style="list-style-type: none"> Condition of muktuk and meat Presence of lesions, sores, scars or signs of illness Health status of whales (i.e. healthy or unhealthy)
Diet	<ul style="list-style-type: none"> Stomach contents Colour of blubber Presence of lateral folds (i.e. 'love handles') Feeding activity observed
Group composition	<ul style="list-style-type: none"> Presence of calves Size and colour of whales
Habitat use	<ul style="list-style-type: none"> Activity observed (e.g. spouting, rolling, spyhopping, feeding) Location Ice, weather and tide characteristics associated with beluga observations

- Boat Based observations
- Harvest and food prep observations

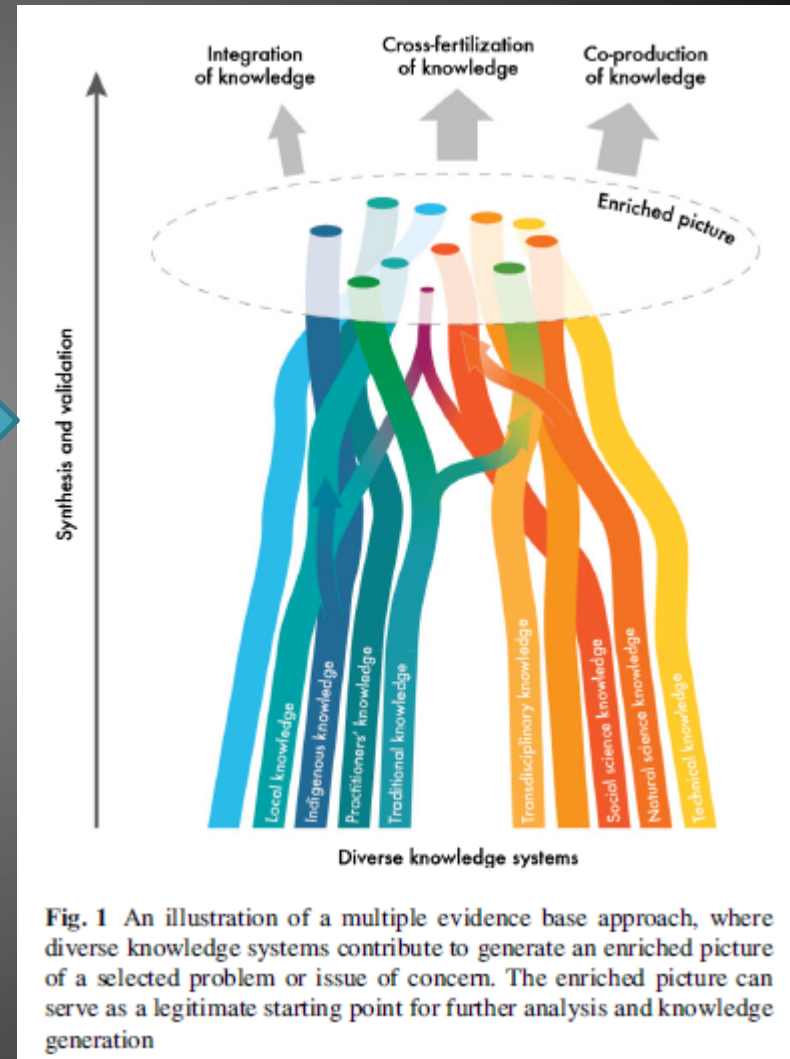


Capacity Building and Community led Research & Monitoring

- Capacity in 5 of the 6 communities
- Paulatuk Hunters and Trappers Committee
- Nunavut communities



Future Directions: Bridging Knowledge groups to enhance EBM



Thank You

S. Ostertag, C. Hoover, E. Choy, C. Hornby, J. Brewster, K. Snow, K. Hansen-Craik
F. Pokiak, D. Swainson, K. Hynes, G. Stern, D. Ruben, N. Pokiak, V. Pokiak, B. Joe, L.
Inlangasuk, B. Green, S. Pokiak, O. Nielsen, L. Harwood, S. Raverty, P. Ross, G. Tomy R.
Macdonald, J. Reist, S. Pokiak, J. McLeod, D. Arey, D. Whalen, B. Green, K. Felix, R. Pokiak, B.
Rosenberg, K. Pleskach, D. Neumann, T. Loewen, W. Walkuzc, E. Sudlovenick, P. Lennie, M.
Rogers, J. Rogers, D. Rogers, J. Day, K. Taylor, E. Wall, L. Dow, K. Tingmiak, J. Noksana, R.
Walker C. Pokiak



Activity and Stressors in the Beaufort Sea

1970

← Oil and Gas (shallow)

1980

← Oil and Gas (deeper)

← Contaminants

1990

← Climate Change

2000

← Renewed Oil and Gas

2010

Cumulative Impacts



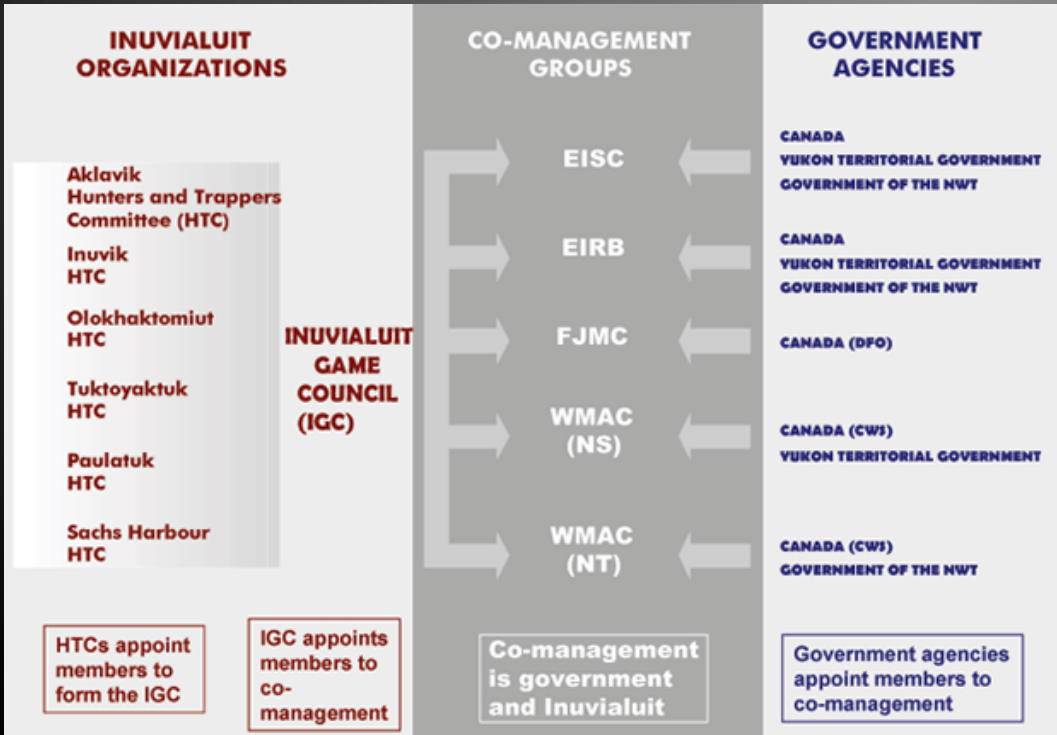
Sharing knowledge to Guide on Beluga Indicators (Local Ecological Indicators)



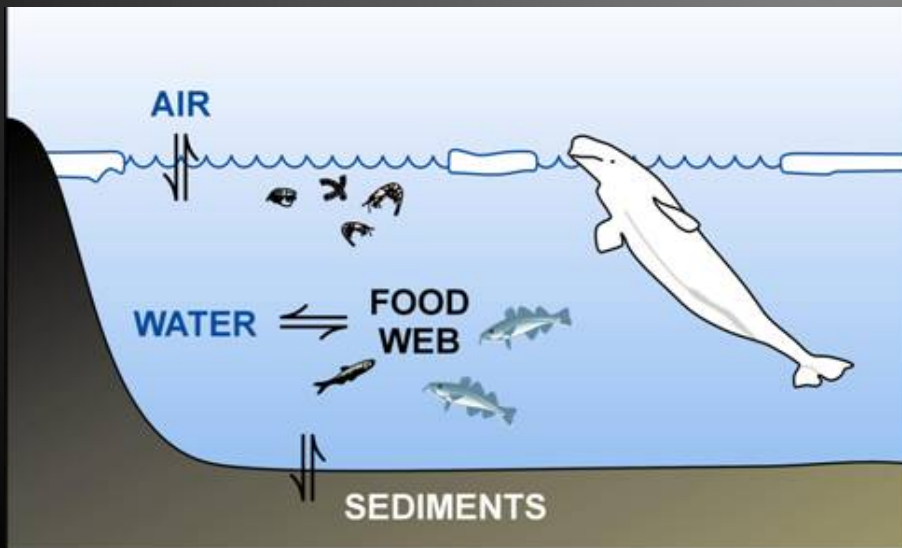
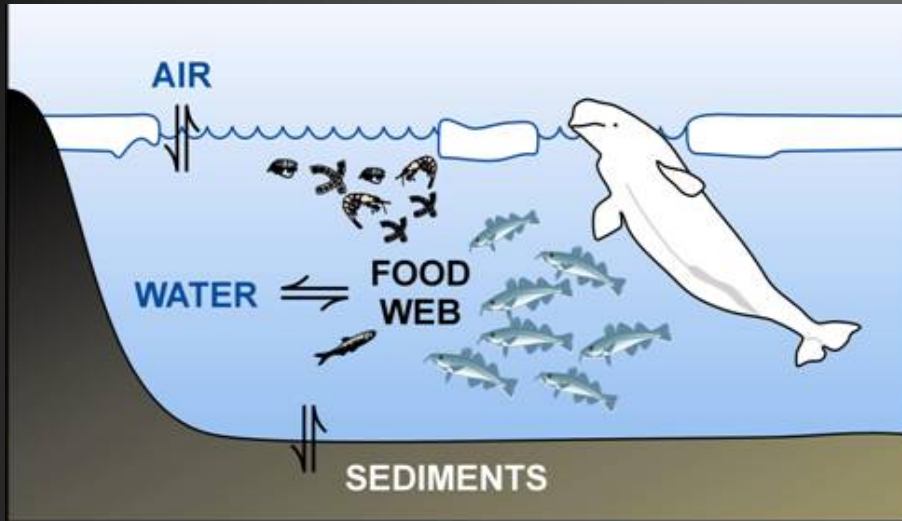
Co-Management of Resources



Inuvialuit Final Agreement



Climate change, diet, contaminants, Health



- Climate change may impact the ecosystem via multiple means
- Changing habitat
- Changing prey availability
- Changing prey quality and contaminant levels...