Multi-sector biodiversity surveys: integrating federal, territorial and community-based surveys

Kevin J. Hedges

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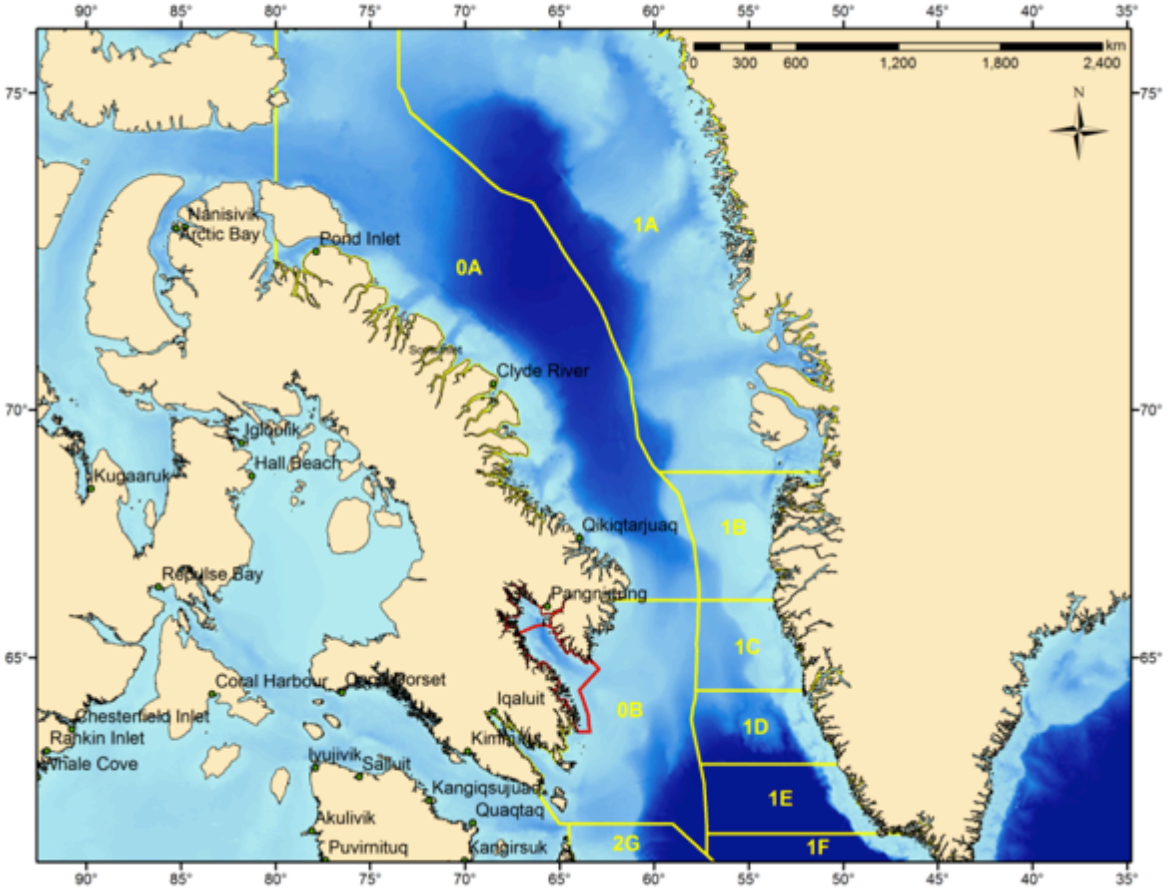
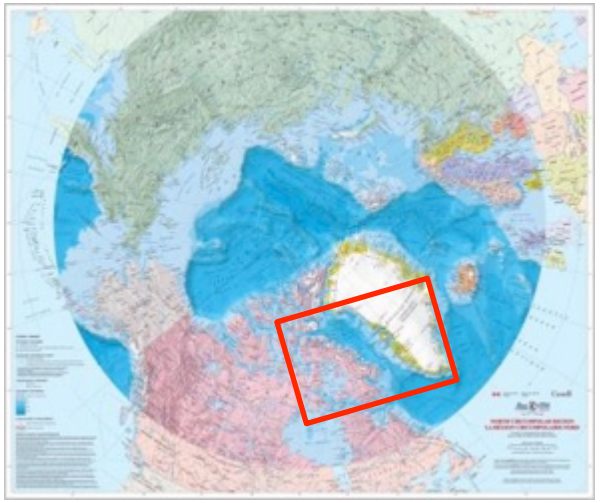
Outline

- Study area
- Research/stakeholder groups
- Recent integration

Eastern Canadian Arctic





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Research/Stakeholder Groups

- Federal government
- Territorial government
- Communities
- Academia
- Resource development companies
  - Consulting companies

Research/Stakeholder Groups

Group	Drivers
Federal gov. (DFO)	• Resource management (conservation, development) • Biodiversity • Sovereignty
Territorial gov. (Nunavut)	• Conservation • Development
Communities	• Conservation • Development
Academia	• Knowledge • Application
Consultants	• Development

Research/Stakeholder Groups

Group	Research
Federal gov. (DFO)	• Surveys: fishes, marine mammals, productivity, oceanography • Species ecology, stock assessment
Territorial gov. (Nunavut)	• Harvest studies • Traditional ecological knowledge compilations
Communities	• Local resources
Academia	• Diverse species groups • Ecology
Consultants	• Ecological community surveys • Impact assessments

Research/Stakeholder Groups

Group	Resources		
	Personnel	Materiel	Financial
Federal gov. (DFO)	X	X	X
Territorial gov. (Nunavut)		X	X
Communities	X	O	
Academia	X		X
Consultants	X	X	X

Interactions

- Annual pre-fieldwork discussions
- Joint field teams
- Post-fieldwork reporting

Interactions

- Inclusive planning meetings
  - Help identify research priorities
  - Increase awareness of activities
  - Identify multiple stressors/impacts (cumulative effects)

Case Studies

- Marine mammal survey
- Fishery development

2014
High Arctic
Cetacean Survey

Canada

High Arctic Cetacean Survey

- Largest scale marine mammal survey in the Canadian Arctic
  - Narwhal
  - Bowhead whales
  - Population assessments (new baseline)
- 3 planes over 4 weeks in August 2014
  - Science crew
    - DFO and Inuit

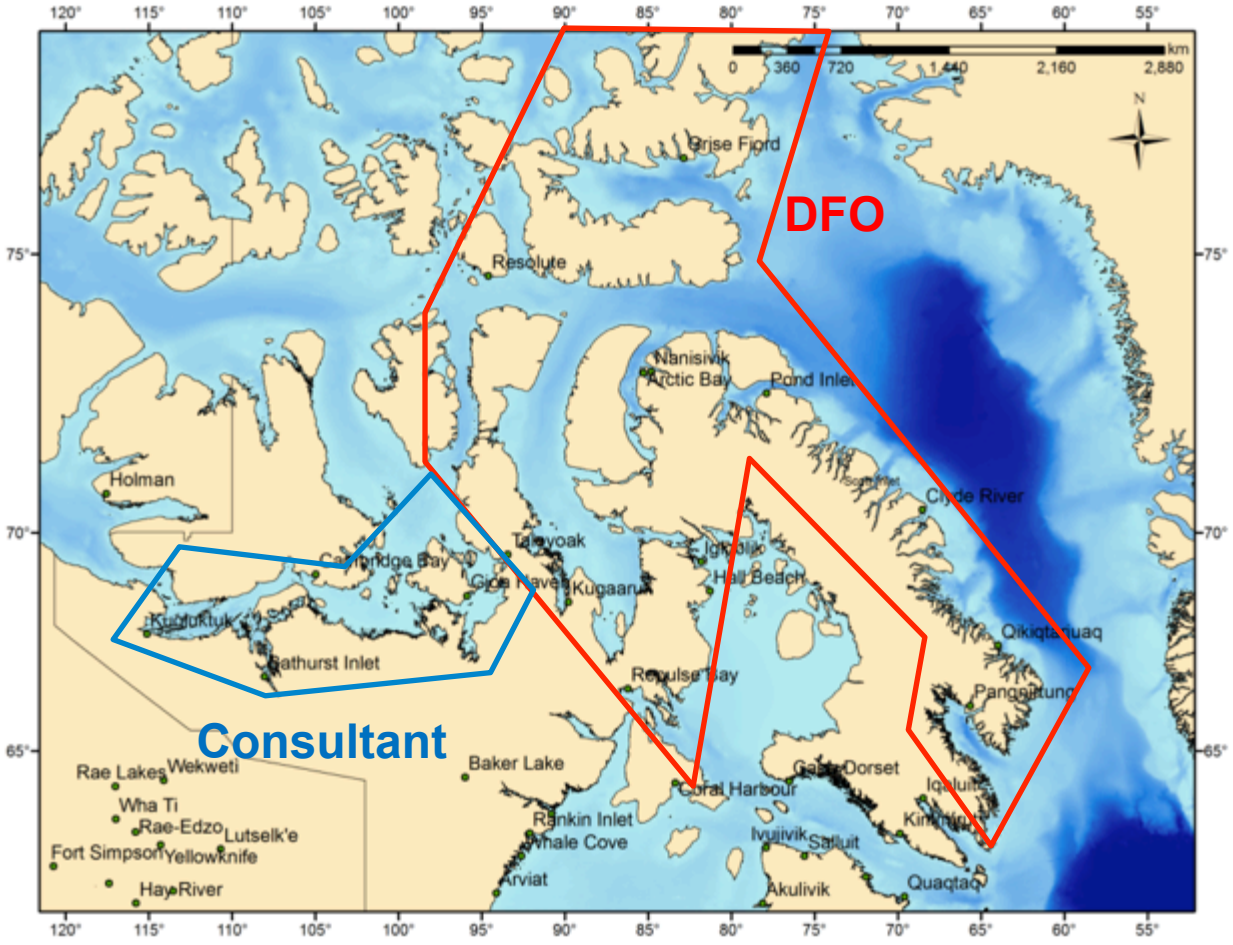
High Arctic Cetacean Survey

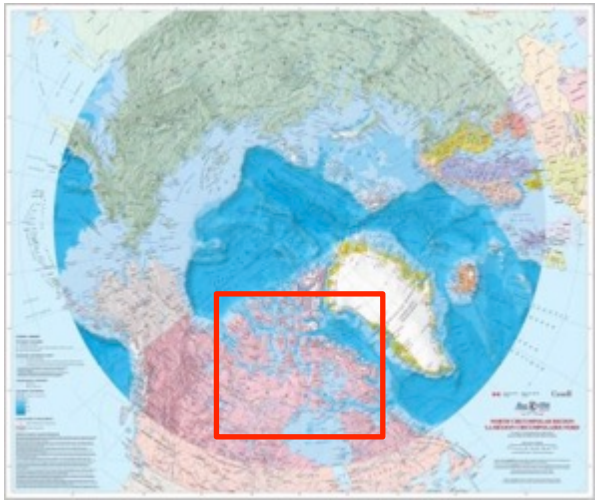
- Planning workshop
  - DFO
  - Government of Nunavut
  - Nunavut Tunngavik Inc.
  - Regional Wildlife Boards
  - Academia
  - Industry

Coordinated Cetacean Survey

- Consulting company
- Adjacent survey area
- Coordinated techniques
  - Double platform
  - Photographic record

High Arctic Cetacean Survey





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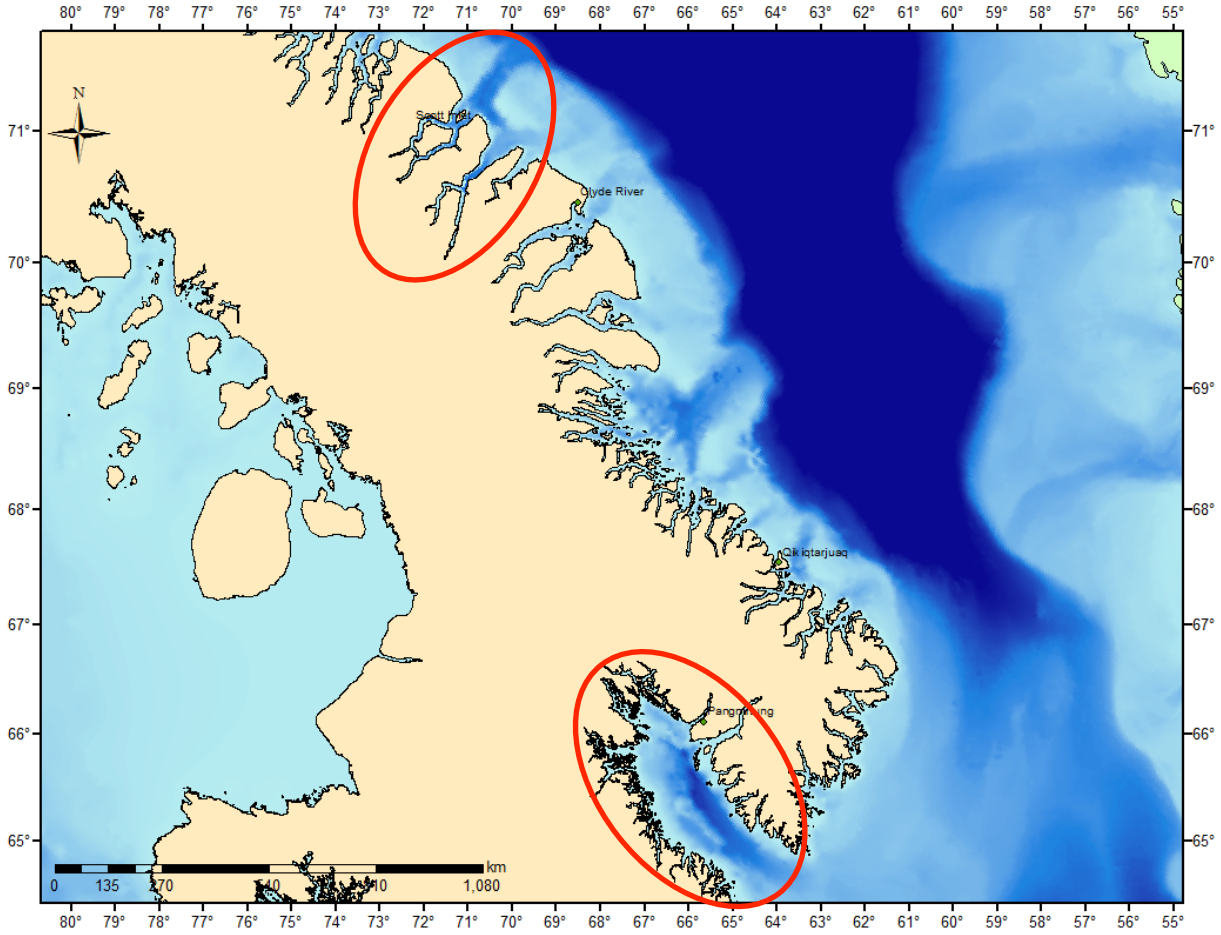
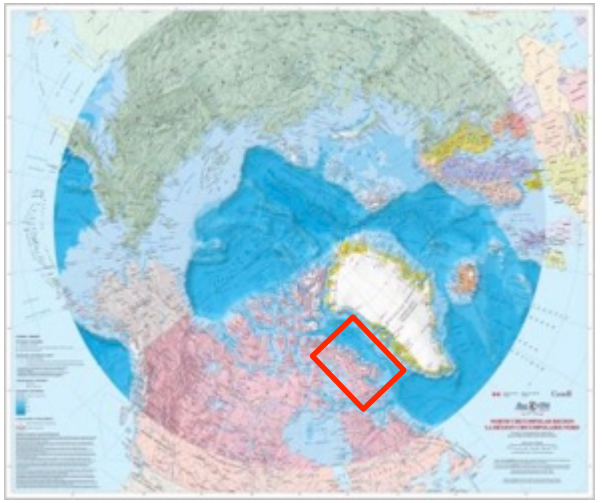
High Arctic Cetacean Survey

- Inclusive planning meeting
- Coordinated DFO and industry surveys
  - Data sharing
- DFO and community-based survey teams

Marine Fisheries Development

Marine Fish Surveys





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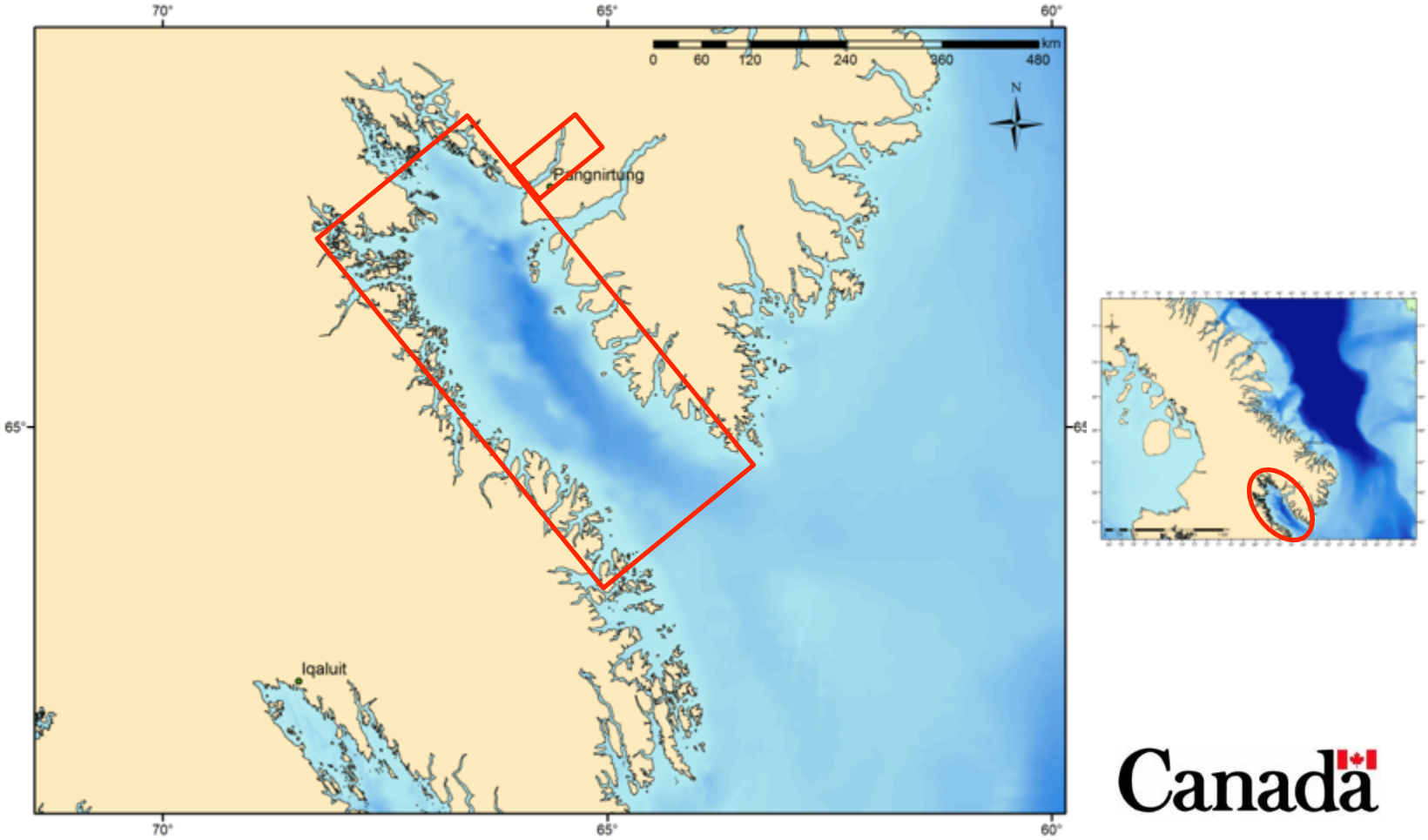
Marine Fish Surveys

- Cumberland Sound
  - Community-based commercial Greenland Halibut fishery
  - Established winter fishery
  - Developing summer fishery

Marine Fish Surveys

- Cumberland Sound
  - Greenland Halibut survey
    - DFO
  - Greenland Halibut movement patterns and habitat use
    - Ocean Tracking Network, DFO
  - Capelin survey
    - University of Manitoba, DFO, Pangnirtung

Cumberland Sound



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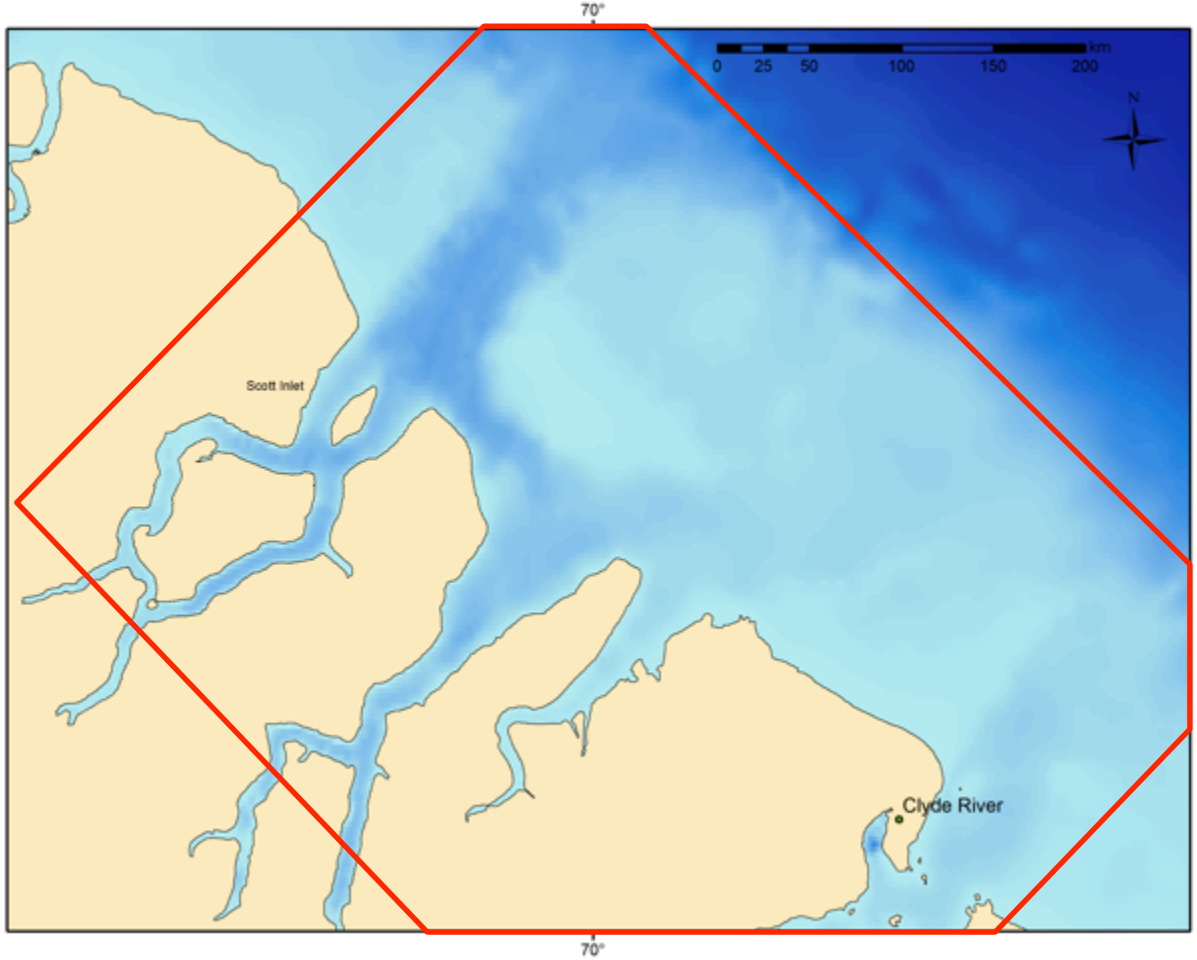
Marine Fish Surveys

- Clyde River
  - Greenland Halibut
    - Community test fishing
    - DFO led multi-gear, multi-species surveys
      - DFO, academia, community
    - Ocean Tracking Network project
      - Greenland Halibut
      - Greenland Shark
      - Arctic Skate

Scott Inlet



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Benefits of Collaboration

- Multiple knowledge sources
  - Local knowledge
  - Traditional ecological knowledge
  - Scientific knowledge

Benefits of Collaboration

- Reduce redundancy
- Permit verification
- Optimize field personnel
- Reduce logistic costs
- **Increase stakeholder understanding and receptivity**

Questions?

Biodiversity surveys are often conducted by government researchers to support department-specific mandates, academics conducting fundamental scientific research and industry agents monitoring development-specific impacts. In addition to these generally well-funded efforts, arctic communities are becoming increasingly aware of the importance of assessing and monitoring local biodiversity to maintain social, recreational and commercial uses of natural resources. The various driving factors of individual surveys invariably affect the study design and analyses, impeding the integration of results. However, given the paucity of knowledge regarding arctic marine communities and the overlapping interests of communities, industry and governments, the coordination of efforts is becoming increasingly acknowledged and undertaken. In the Eastern Canadian Arctic, coordinated biodiversity surveys of marine ecosystems are being undertaken by the federal and territorial governments, universities, non-government organizations, environmental consulting companies hired by natural resource development companies and communities. The integration of these efforts is rapidly improving our understanding of arctic marine communities and will allow detailed assessments of community changes in response to climate change and anthropogenic activities.