Marine Protected Area Network Planning in the Bay of Fundy and Scotian Shelf

Progress to date and next steps

Max(ine) Westhead, M.Sc.

Section Head, Protected Areas and Conservation Planning

Fisheries and Oceans Canada, Maritimes Region

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Canada

Presentation Outline

Background

Context for Canada's MPA Network

- Canadian Federal MPA Programs
- National Framework for Canada's Network of MPAs

Convention on Biological Diversity (CBD) guidance

MPA Network Planning in the Scotian Shelf Bioregion

Progress to date

Selecting the St Anns Bank Area of Interest

Moving forward

Canada's oceans
A natural resource, a national treasure

Context for Canada's MPA Networks

International

- CBD (1992): System of protected areas to conserve biological diversity
- WSSD (2002): Representative MPA networks by 2012
- CBD 2010 (Aichi Target 11): "By 2020…10% of coastal and marine areas… conserved through… ecologically representative and well connected systems of protected areas and other effective area-based conservation measures…"

Domestic

- *Oceans Act* (1996): DFO to lead development of an MPA network
- Canada's Federal MPA Strategy (2005)
- *National Framework for Canada's Network of Marine Protected Areas* (2011)

Why an MPA Network?

The ecosystem is under pressure…

CNSOPB

Atlantic Canada Holiday

Cape Breton News

© Mercator Media 2012

MPA network will help achieve a balance between human use and conservation…

Why an MPA Network?

Protect biodiversity…

bayoffundy.com

Joachim Muller

2006 CMB Discovery Corridor

Environment Canada

Photo: Trisha Cheney

**…maintain or restore ecosystem structure, function and health…**

What is an MPA Network?

IUCN Definition of a Network of MPAs

A collection of individual marine protected areas…

…operating cooperatively and synergistically…

…at various spatial scales…

…with a range of protection levels.
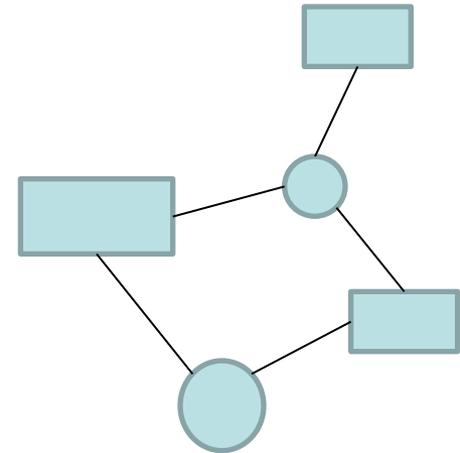
Outcome:

More effective and comprehensive protection than can be achieved by any single site.

Marine Protected Area (IUCN):

"A clearly defined geographical space recognized, dedicated, and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values".

Federal MPA Programs (2005 strategy)

Fisheries and Oceans Canada (DFO)

•Marine Protected Areas (*Oceans Act*): Eight in place (2) + eight Areas of Interest (1)

•Fisheries Closures (*Fisheries Act*) (2?)

•Critical Habitat (*Species at Risk Act*) (5)

Environment Canada

•National Wildlife Areas (*Canada Wildlife Act*): 54 in place (4)

•Migratory Bird Sanctuaries (*Migratory Birds Convention Act*): 92 in place (10)

Parks Canada

•National Marine Conservation Areas (*NMCA Act*): 4 in place (0)

National Framework (2011)

Federal/Provincial/Territorial scope

Strategic guidance

Goals of the National Network:

1. To provide long-term protection of marine biodiversity, ecosystem function and special natural features.

2. To support the conservation and management of Canada's living marine resources and their habitats, and the socio-economic values and ecosystem services they provide.

3. To enhance public awareness and appreciation of Canada's marine environments and rich maritime history and culture.

National Framework for Canada's
Network of Marine Protected Areas

Canada's oceans
A natural resource, a national treasure

Canada

Canada's Bioregions / Biorégions du Canada

1 - Strait of Georgia / Détroit de Georgia
2 - Southern Shelf / Plate-forme Sud
3 - Offshore Pacific / Haute mer du Pacifique
4 - Northern Shelf / Plate-forme Nord
5 - Arctic Basin / Bassin Arctique
6 - Western Arctic / Arctique de l'Ouest
7 - Arctic Archipelago / Archipel Arctique
8 - Eastern Arctic / Arctique de l'Est
9 - Hudson Bay complex / Complexe de la baie d'Hudson
10 - NL-Labrador Shelves/ Plate-formes de Terre-Neuve et du Labrador
11 - Scotian Shelf / Plate-forme Scotian
12 - Gulf of St. Lawrence / Golfe du Saint-Laurent
13 - Great Lakes / Grands Lacs

Arctic Ocean / Océan Arctique

Pacific Ocean / Océan Pacifique

Atlantic Ocean / Océan Atlantique

0   250   500   1,000   1,500   Km

Scotian Shelf Bioregion – planning areas

Bay of Fundy

Atlantic Coast

Offshore Scotian Shelf
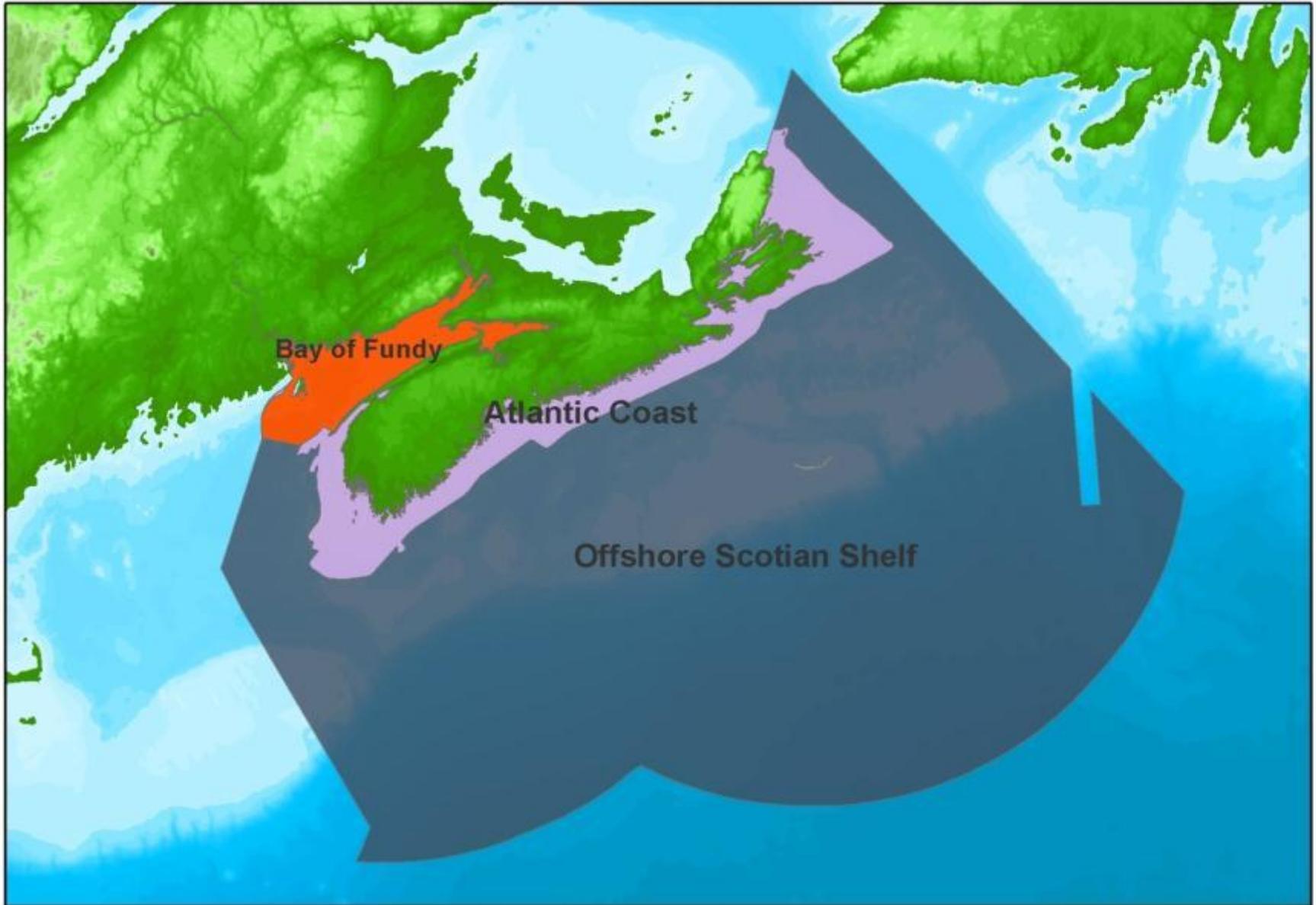
CBD Guidance

Ecologically coherent networks of MPAs:

Criteria for identifying EBSAs (Annex I)

Required network properties and components (Annex II): Site selection and network design

Initial steps to be considered in designing a network of MPAs (Annex III)

From COP 9 Decision IX/20: Marine and Coastal Biodiversity

CBD Guidance

Annex I: Criteria for identifying EBSAs

- Uniqueness or rarity

- Special importance for life history stages of species

- Importance for threatened, endangered or declining species and/or habitats

- Vulnerability, fragility, sensitivity, or slow recovery

- Biological productivity

- Biological diversity

- Naturalness

CBD Guidance

Annex II: Scientific guidance for selecting areas
Network components + properties:

- Ecologically or biologically significant areas

- Representativity

What networks should protect

- Connectivity

- Replicated ecological features

- Adequate and viable sites

Design properties

CBD Guidance

Annex III: Initial steps to be considered

1. Scientific identification of an initial set of EBSAs
    –   Use best available information
2. Develop/choose a biogeographic, habitat, and/or community classification system
    –   Benthic and pelagic habitats
3. Drawing upon steps 1 and 2 above, iteratively use qualitative and/or quantitative techniques to identify sites to include in a network.
4. Assess the adequacy and viability of the selected sites.

MPA Network Planning in the Scotian Shelf Bioregion

Scotian Shelf Bioregion – Past Work

- Began in earnest late 1990s, post *Oceans Act* assent
- Parks Canada Marine Natural Areas studies
- Numerous ecological overview reports
- WWF-Canada MPA network analysis (*Marxan*)
- Benthic Habitat Classification Workshops EBSA identification
- Atlantic Coast EBSA Analysis
- *Marxan* analysis (Horsman et al. 2011): Informed the selection of the St Anns Bank AOI

… lots of work, but until National Framework developed in 2011, the work didn't 'fit' anywhere…
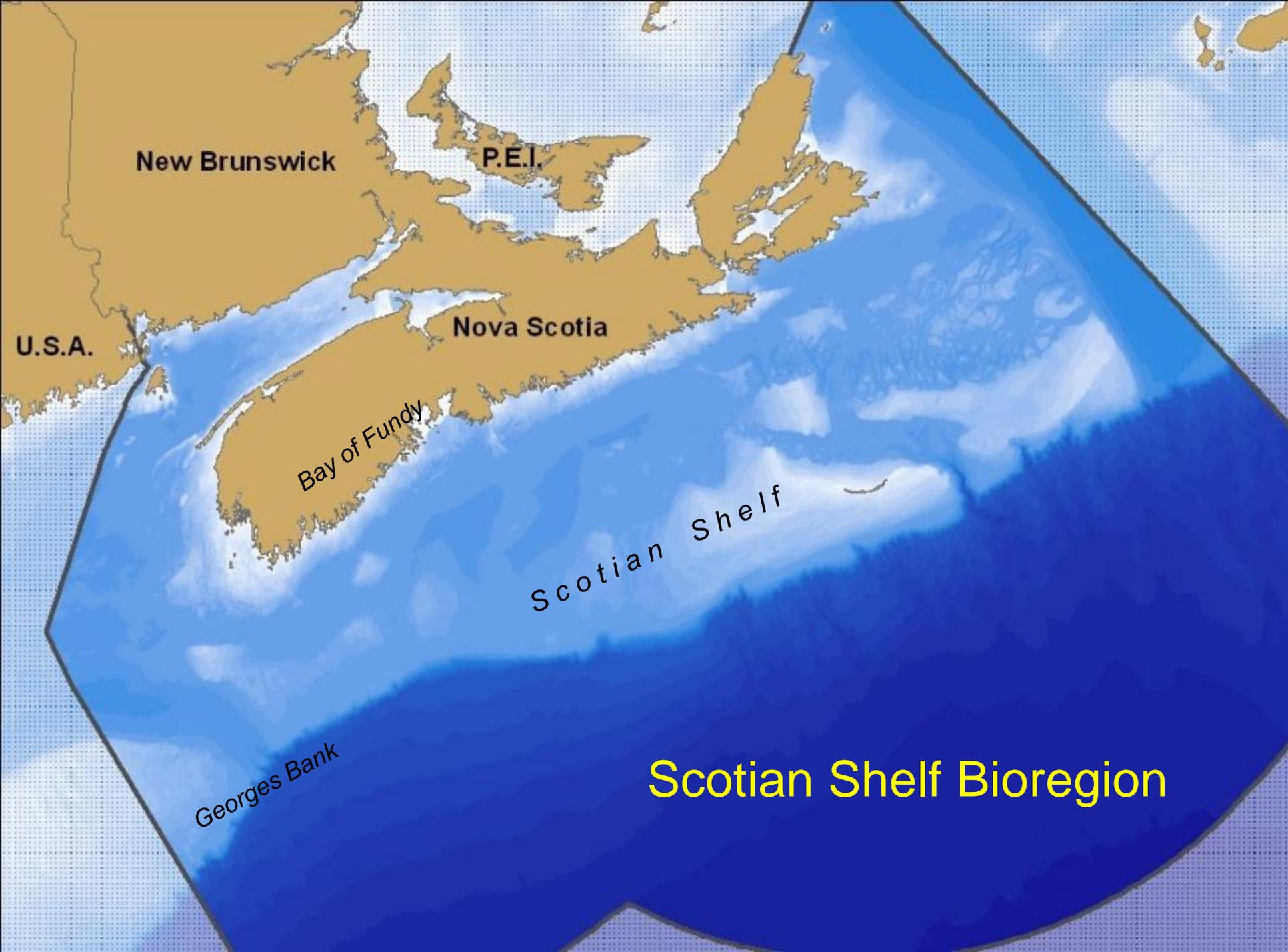
Scotian Shelf Bioregion

St Anns Bank
Area of Interest

Musquash MPA

Right Whale
Critical Habitat

GEAC Sponge
Closure

Lophelia Coral
Conservation
Area

Sable Island
National Park
Candidate

Northern Bottlenose
Whale Critical Habitat

Gully MPA

Juvenile Haddock
Closure

Right Whale
ATBA

Lobster Fishing
Area 40

Northeast Channel
Coral Conservation Area

N

0   25   50   100 KM

Marine Protected Areas (Oceans Act)
Area of Interest
Coral Conservation Areas (Fisheries Act)
Other Fisheries Closures
Species at Risk Act - Critical Habitat
National Park Candidate
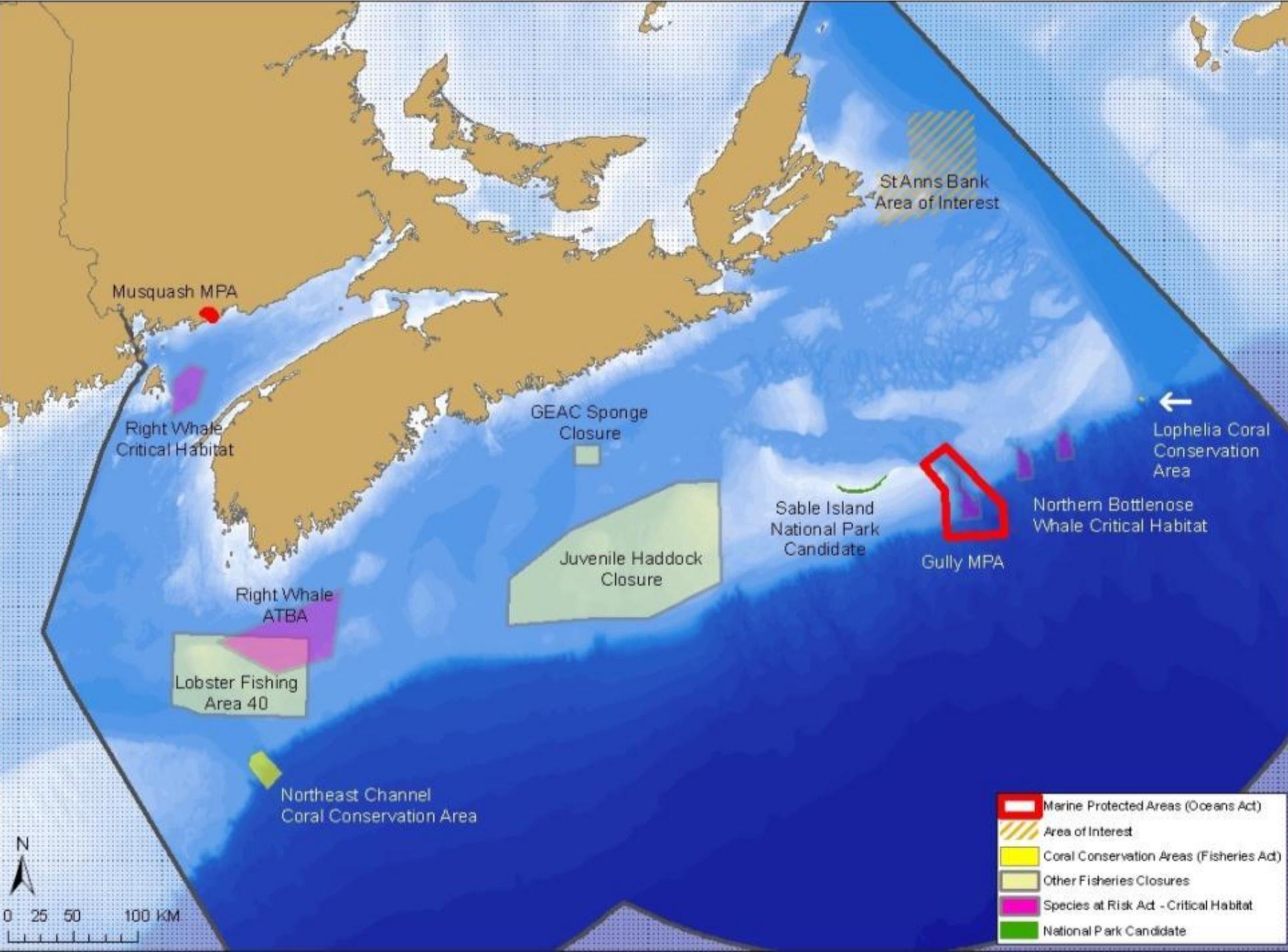
MPA Network Planning – Recent Work

2007 Health of the Oceans Initiative (in 7th year of funding)

Six new MPAs in Canada, one on Eastern Scotian Shelf

- Selected new AOI within network context
- Sufficient data for systematic, data-driven approach
- *Marxan* analysis
  - Compiled ~100 ecological data layers under the two themes of Representation and EBSAs
  - Set specific % targets for each layer
 - Used *Marxan* to identify a set of areas that met all targets

Goal of analysis was

a) Proof of concept

b) Selection of Area of Interest

MPA Network Planning – Recent Work

Seabed features

Biodiversity hotspots

Important cod habitat

High coral density

Marxan Analysis (Horsman et al 2011)

http://www.dfo-mpo.gc.ca/Library/343100.pdf
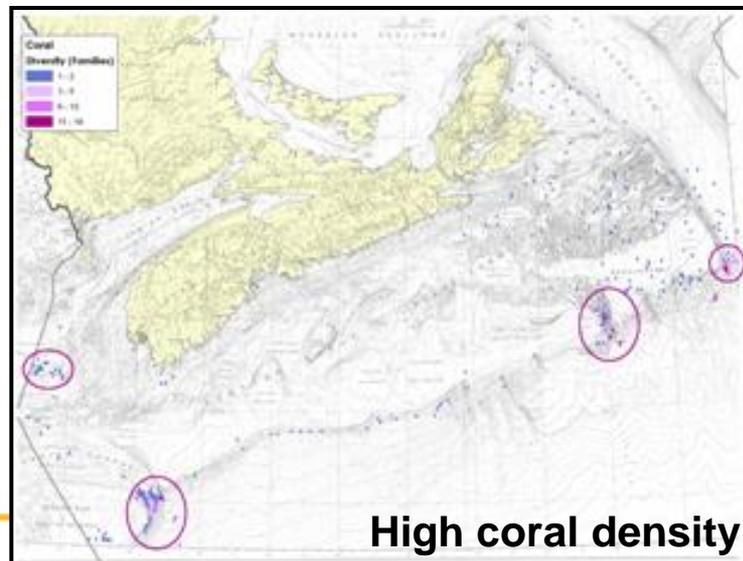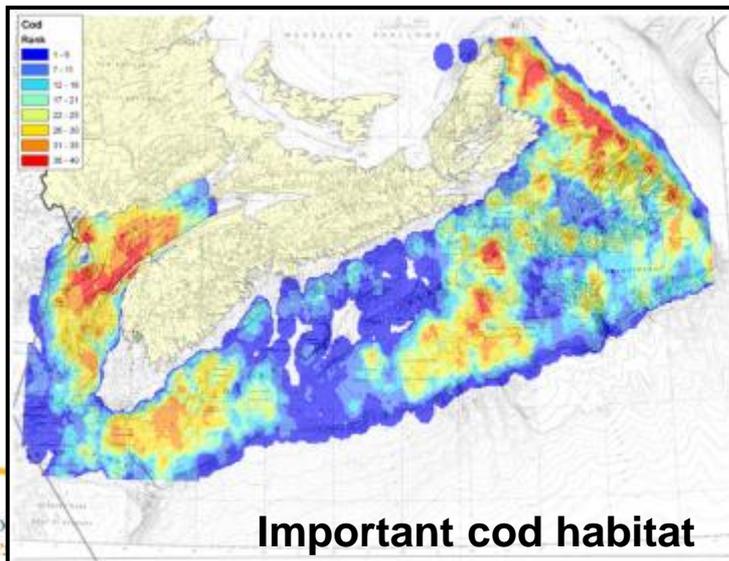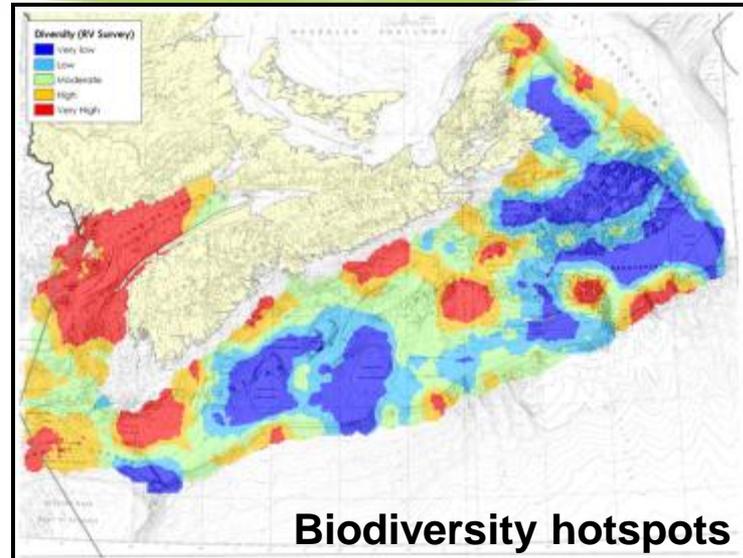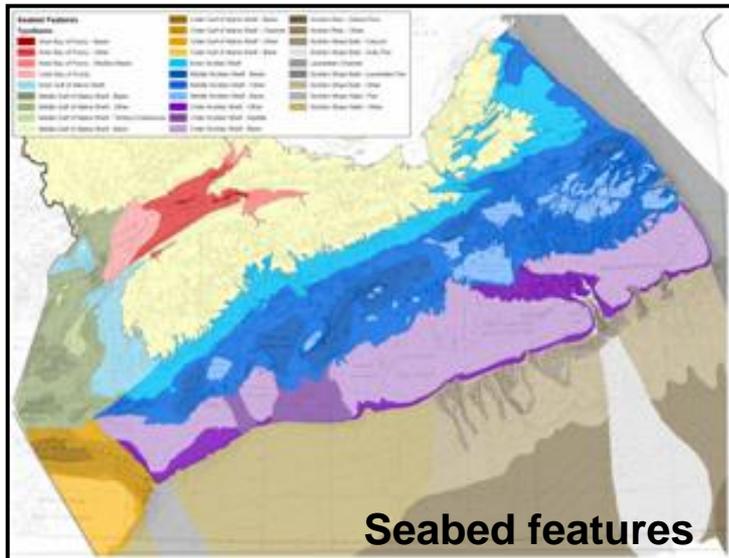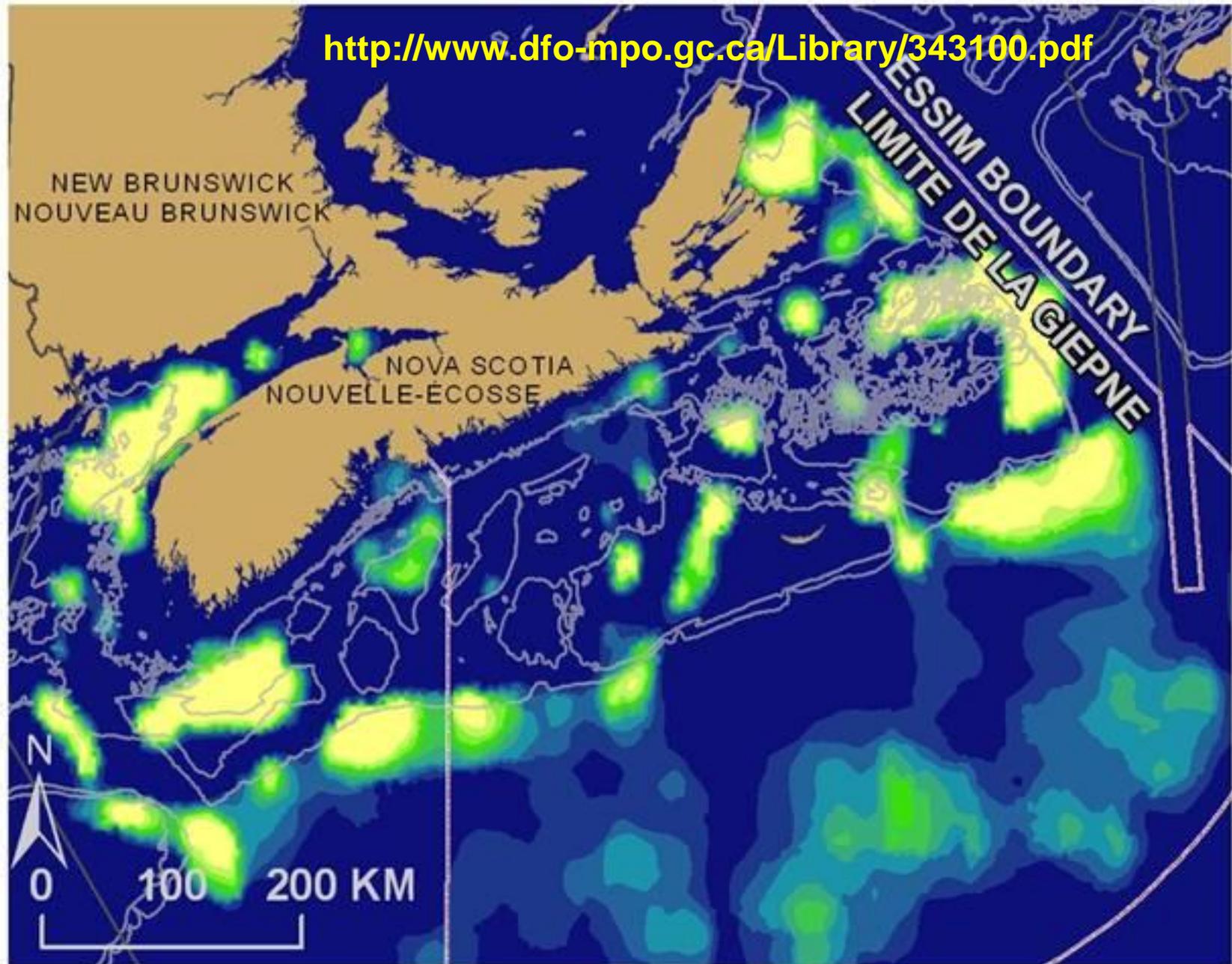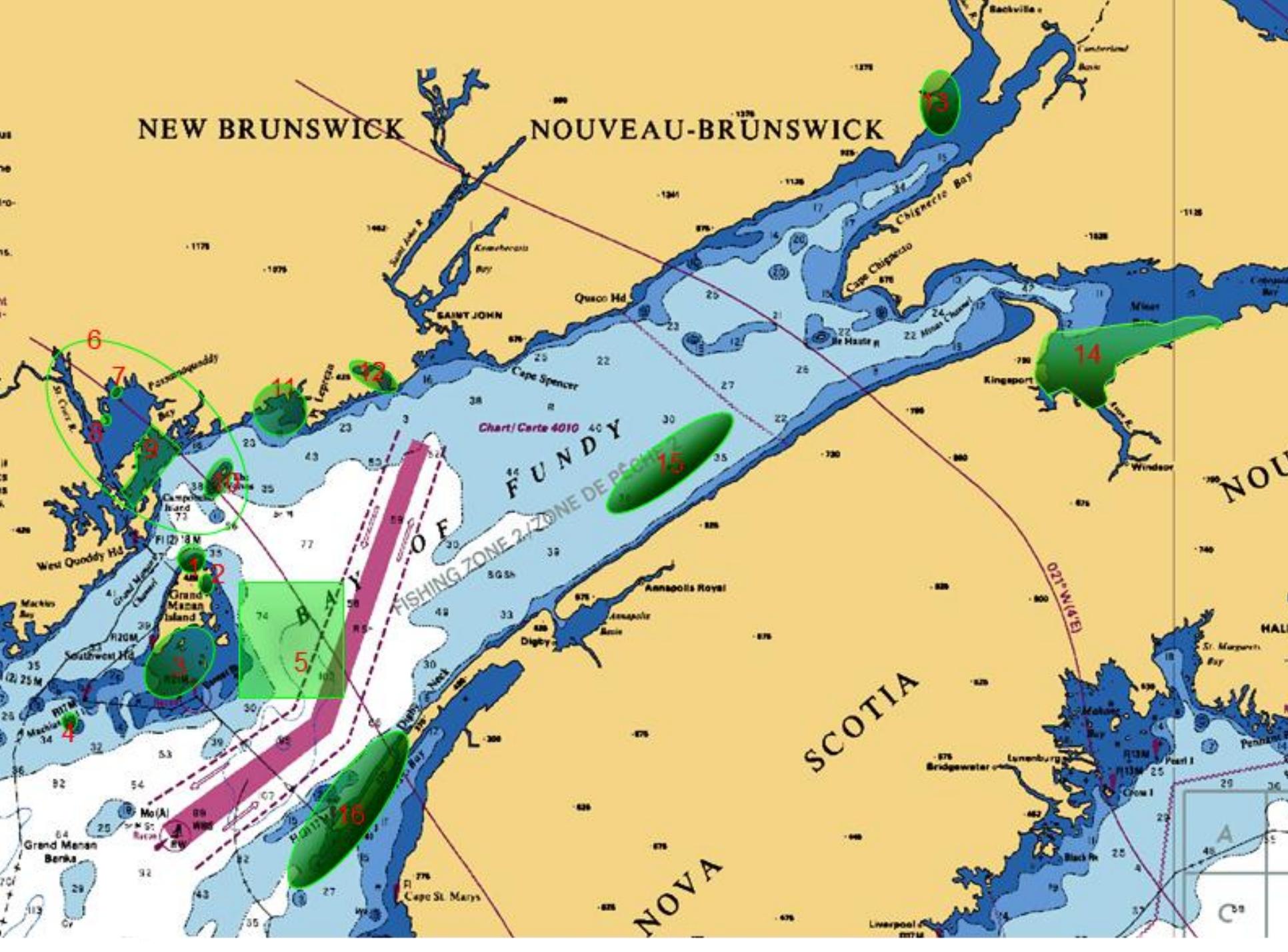
Selecting an Area of Interest in the Context of a Network

Selecting St Anns Bank Area of Interest

Selecting St Anns Bank Area of Interest
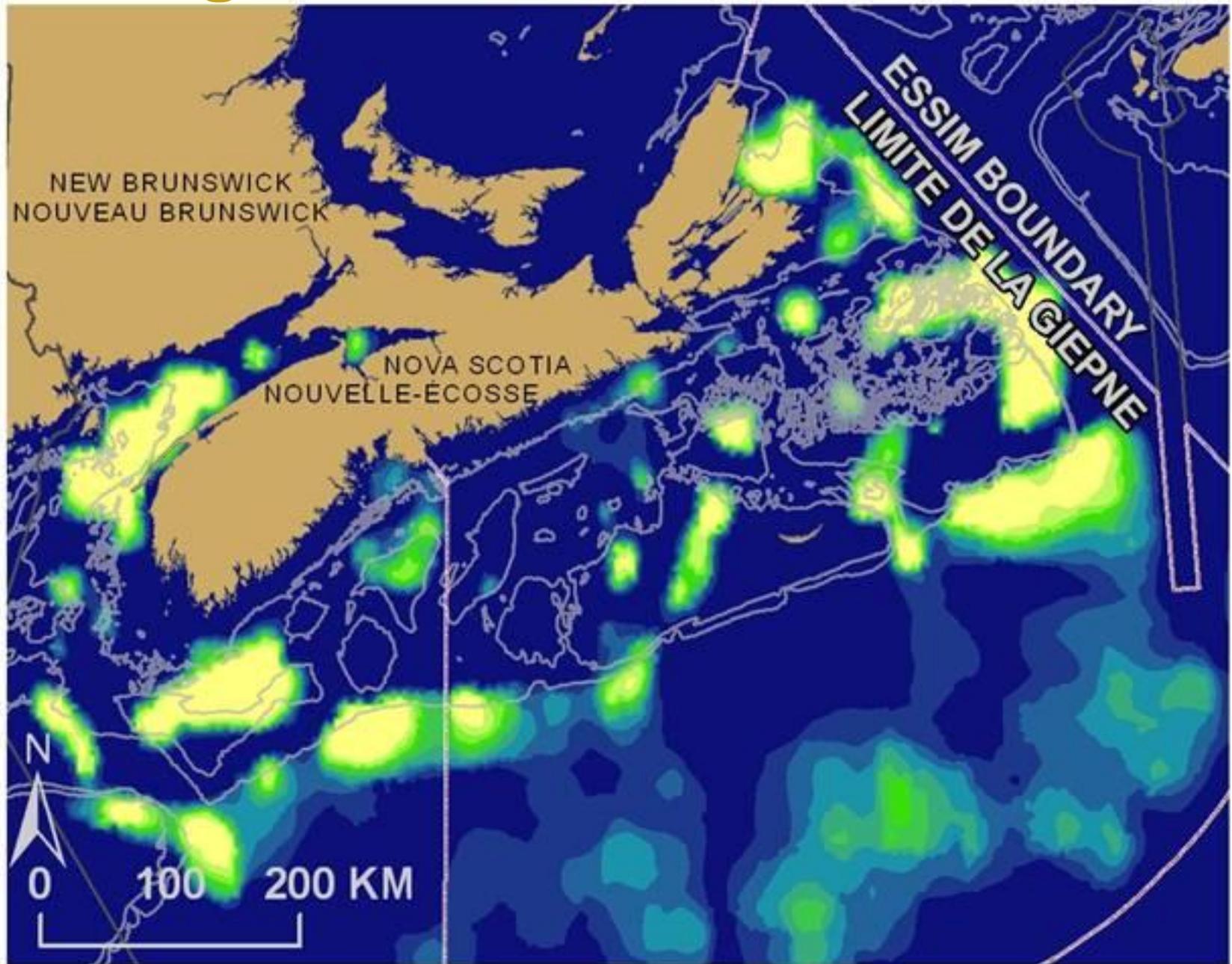
Three candidate AOIs

Ecological priority areas on Eastern Scotian Shelf (14)
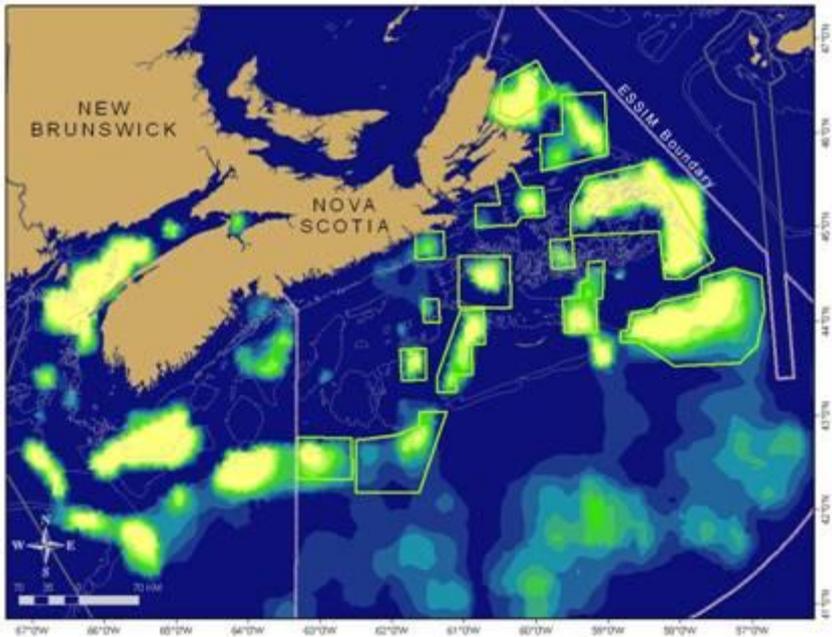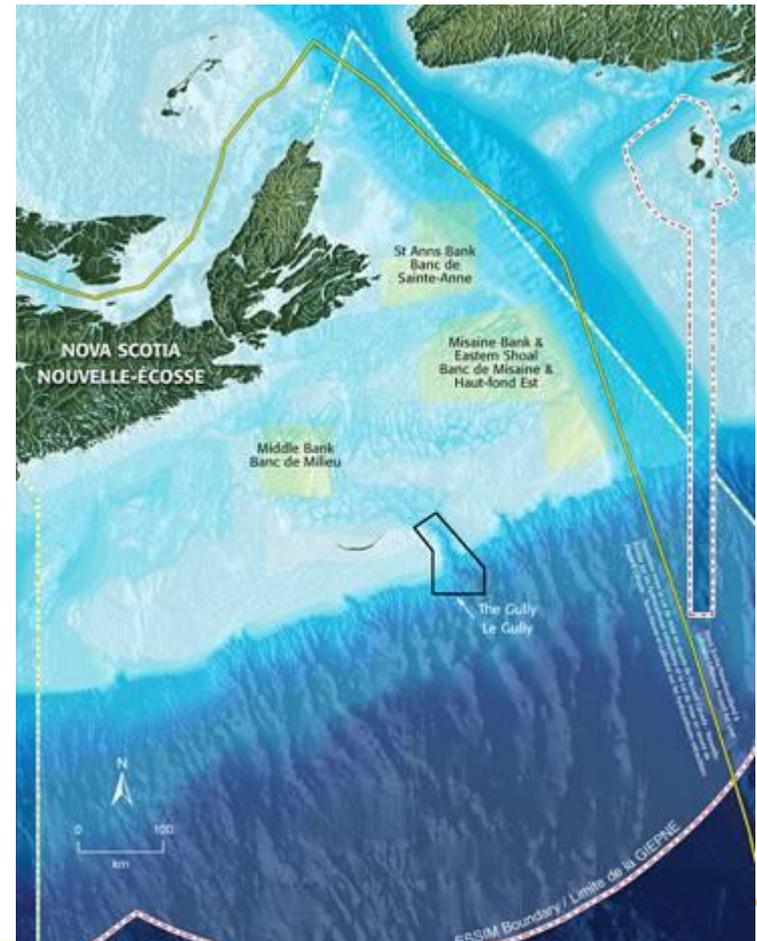
Selecting St Anns Bank Area of Interest

Seven-month consultation process !

Oct 2009 – May 2010

Two extensions on consultation

70 meetings, 35 with the fishing industry

Selecting St Anns Bank Area of Interest

- Announced as AOI: June 2011

- Working with Stakeholder Advisory Committee to finalize MPA proposal

- Formal MPA designation expected in 2014
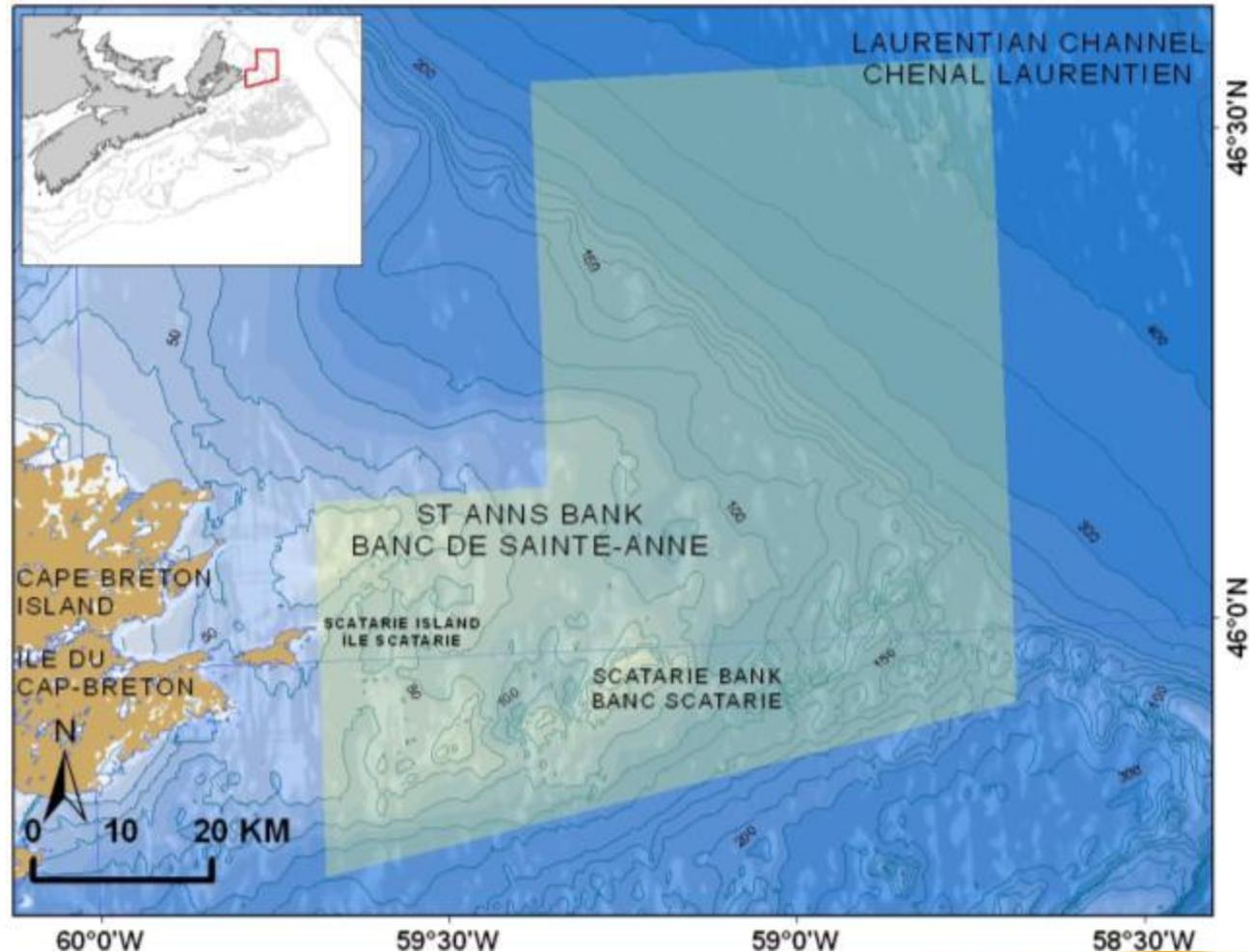
Selecting St Anns Bank Area of Interest

What we heard about MPAs and network planning

- Want clarification on the long-term intent of the MPA program (i.e., when will you be done?)

- Need to engage governments, Aboriginal groups and stakeholders from the outset

- Socioeconomics must be considered earlier in the process

- Science aspects of network design should be peer reviewed

What's Next?

Moving Forward with Network Planning

Science advice — Phase 1

Science advice — Phase 2

Science advice — Phase 3

1. Identify and Involve Key Players
Government agencies
Aboriginal groups
Stakeholders

2. Set Objectives
Ecological
Socioeconomic
Cultural

3. Compile and Map Data
Ecological
Human use

4. Design MPA Network
Identify areas of high conservation value
Socioeconomic considerations
Finalize network design
Site prioritization and action plan

5. Implementation
Site Selection and Establishment

6. Monitor and Adapt

WE ARE HERE

2015

Piping Plover

Storm-petrels

LRIT Vessel Traffic
2 x 2 Arc Minute Grid
Aggregation

Mar 2010 - Feb 2011

- 1 - 10
- > 10 - 25
- > 25 - 50
- > 50 - 250
- > 250 - 1,061

http://www.dfo-mpo.gc.ca/Library/345629.pdf
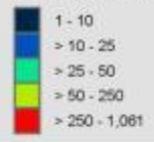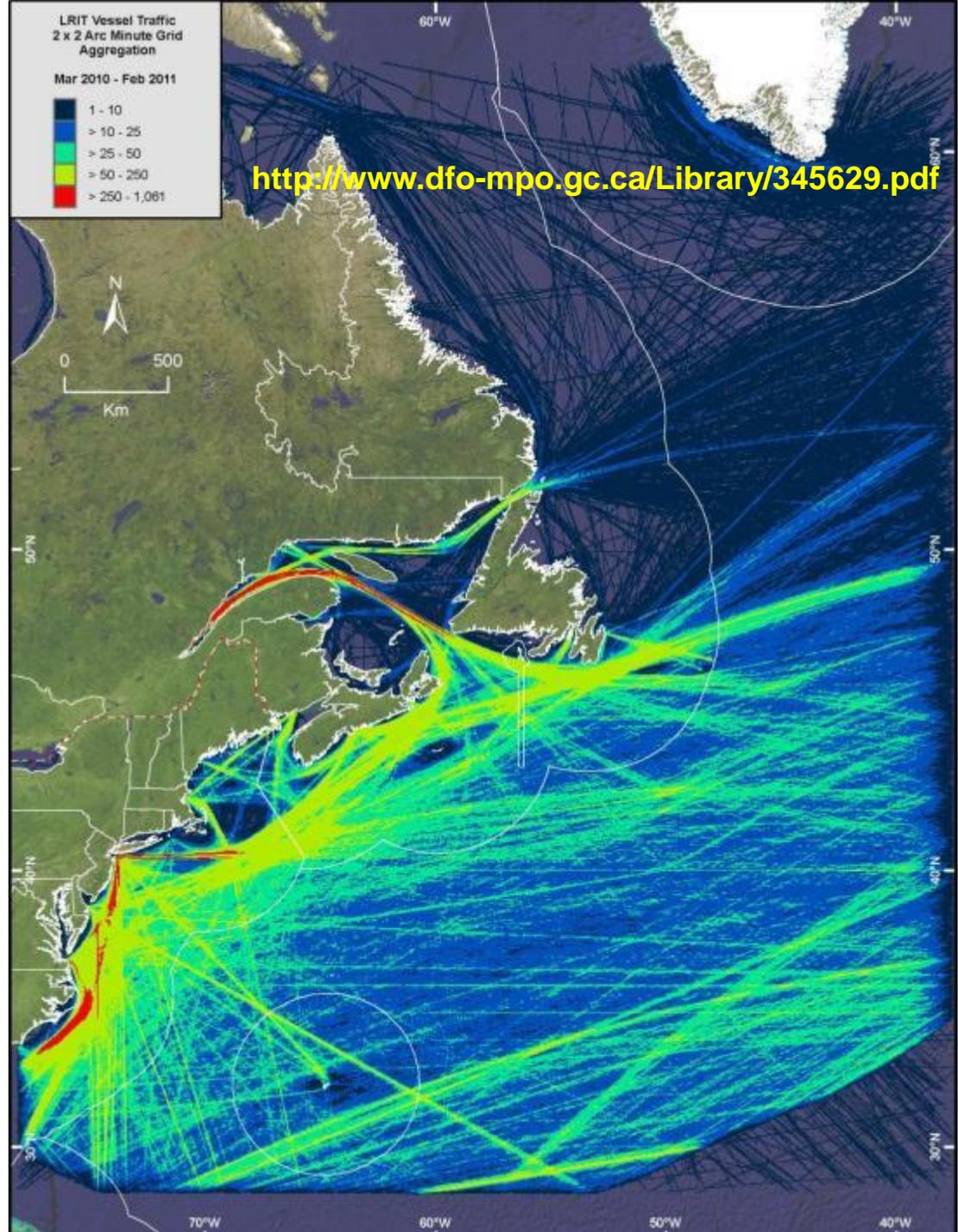
Composite Landings (kg) per
2-Minute Grid Cell (Maritimes)
Groundfish, Mobile Gear, 2006-2010

- 0 - 753.0
- 753.0 - 2719.0
- 2719.0 - 8689.0
- 8689.0 - 30644.0
- > 30644.0
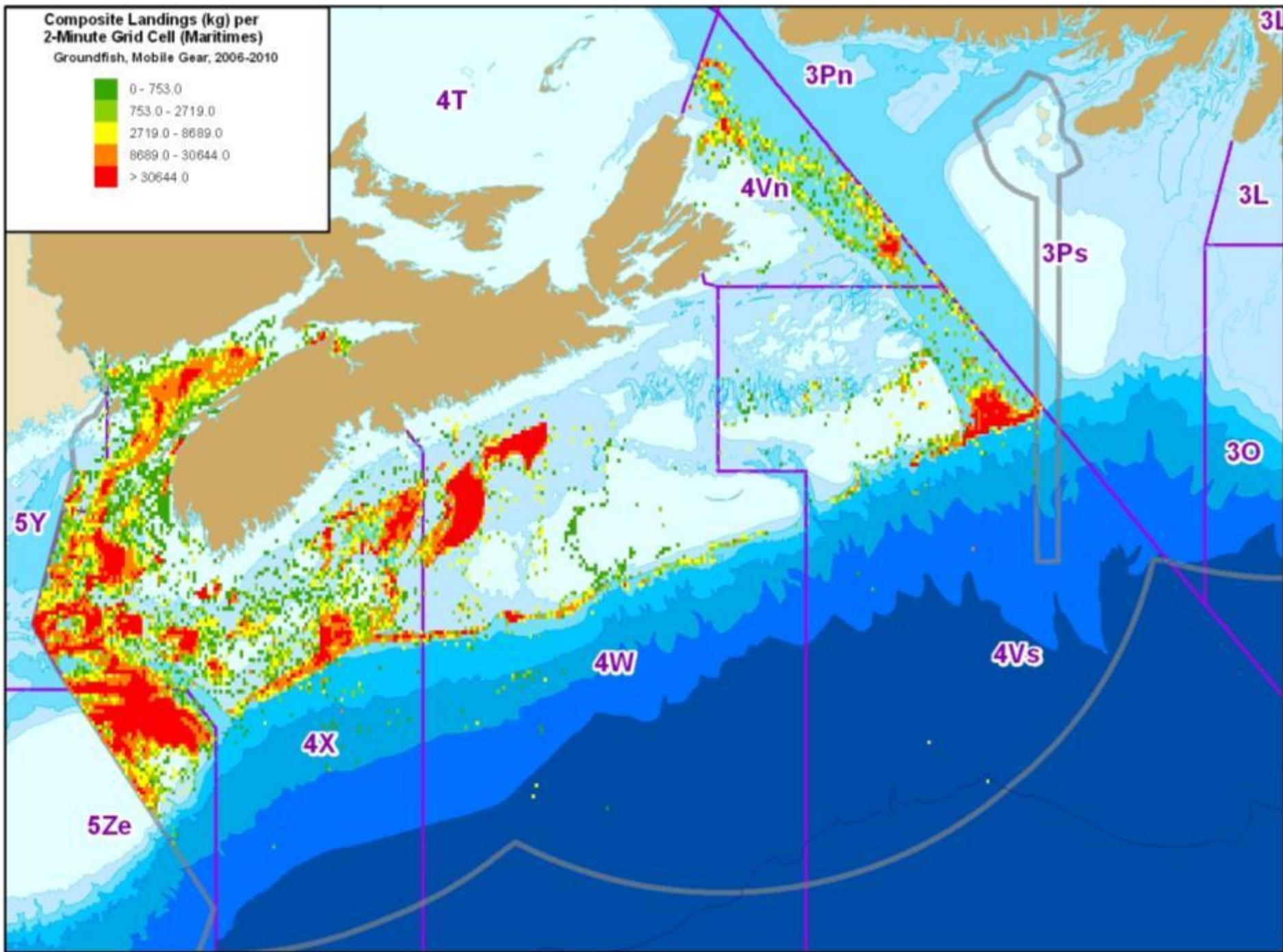
Composite Landings (kg) per 2-Minute Grid Cell (Maritimes)

Snow Crab, 2006-2010

- 0 - 1874.0
- 1874.0 - 4424.0
- 4424.0 - 8854.0
- 8854.0 - 21541.0
- > 21541.0
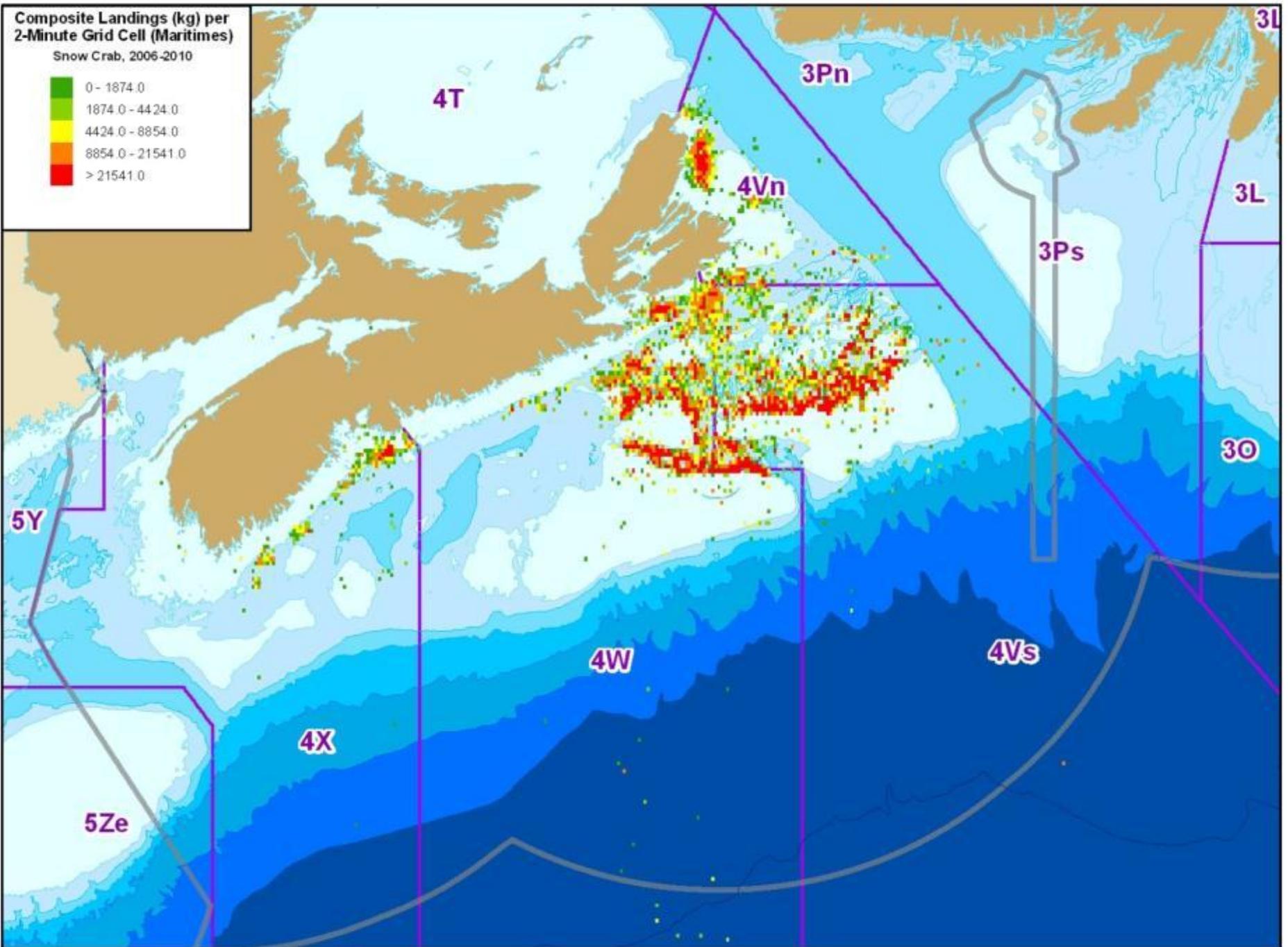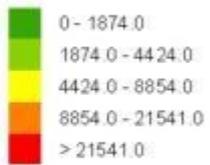
Composite Landings (kg) per 2-Minute Grid Cell (Maritimes)
Scallops, 2006-2010

- 0 – 1170.0
- 1170.0 – 5017.0
- 5017.0 – 18499.0
- 18499.0 – 69108.0
- > 69108.0
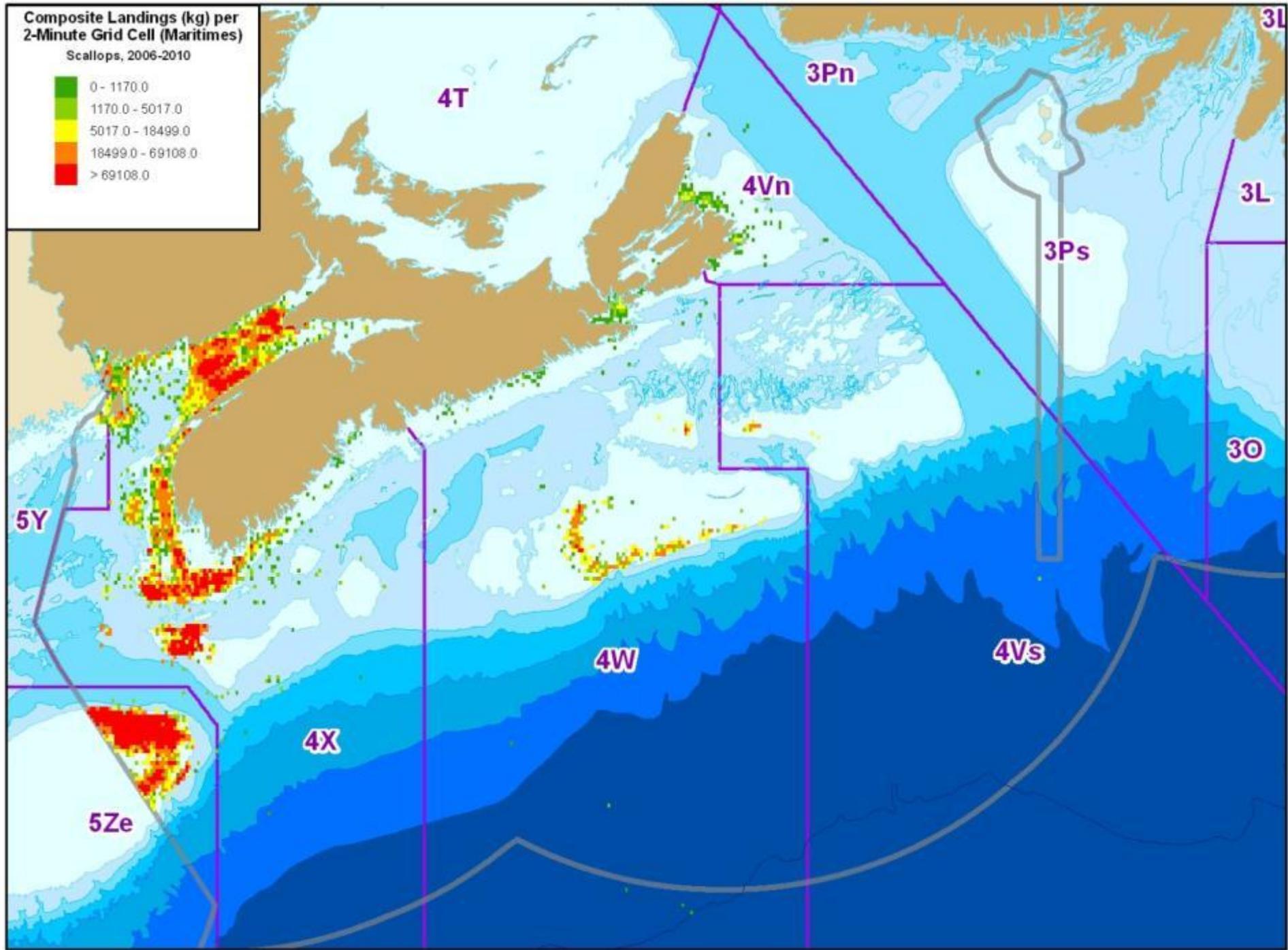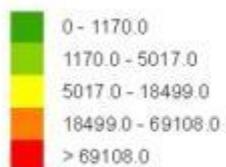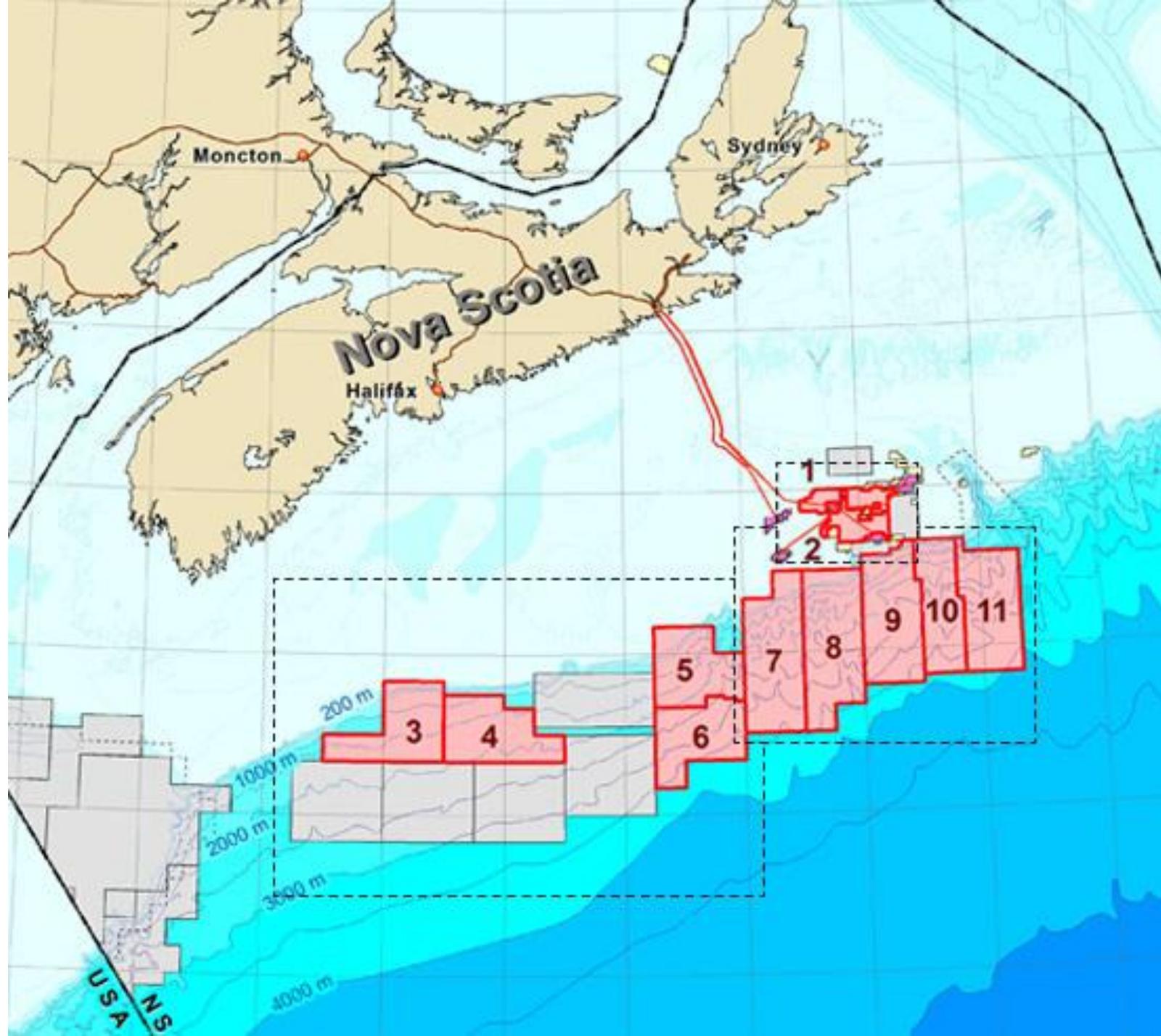
Moving Forward with Network Planning

Next steps: Technical

- – Develop specific Conservation Objectives and Targets
- – Update and create new ecological data layers
- – Create socioeconomic layers (economic 'cost' of areas)
- – 2nd iteration of *Marxan* analysis
- – Assess connectivity within potential network scenarios
- – 2nd Regional Science Advisory Process (February 2014)

Moving Forward with Network Planning

Communication, communication, and did I say communication?

- – Finalize consultation strategy (Spring 2013)
    - – Clearly define what we want, who to engage, etc.
    - – Determine best way to receive technical and citizen advice
- – Initiate public planning process (Fall 2013)
    - – Public meetings
    - – Targeted stakeholder meetings

Challenges and Opportunieies

- Funding until 2014 yet uncertain beyond
- Finding common ground with other government agencies (federal and provincial), capacity for engagement
- Stakeholder involvement
  - Best ways to engage different groups?
  - How do we 'engage from the outset'?
- Industry intensity maps for socio-economics
- Fair approaches to minimizing socioeconomic costs?
- Science meeting February 2014 to look at Marxan (offshore) EBSAs and CBD design elements (size, spacing, connectivity, adequacy)

Looking for Experiences and Feedback…

How to engage and how not to engage?

Do you know of papers or reports for us to review?

How to consider socioeconomics?

Renewable vs. non-renewable and the concept of 'fair'?

Positive terminology instead of "costs"?

International collaboration?

Active network planning in the US?

Opportunities for collaboration?

Thank You

Maxine Westhead, Section Head
Protected Areas and Conservation Planning
902.426.4215; Maxine.westhead@dfo-mpo.gc.ca

Marty King, Project Lead
Katie Hastings, Biologist
Anna Serdynska, GIS Analyst and Marxan

Melanie MacLean, Penny Doherty, Derek Fenton, Nancy Shackell, Michelle Greenlaw, Aimee Gromack, Tracy Horsman, Jen Ford, Glen Herbert, Tim Hall, Charles Hannah, Jennifer Smith, many others…

Atlantic MPA + 'other' summary slide
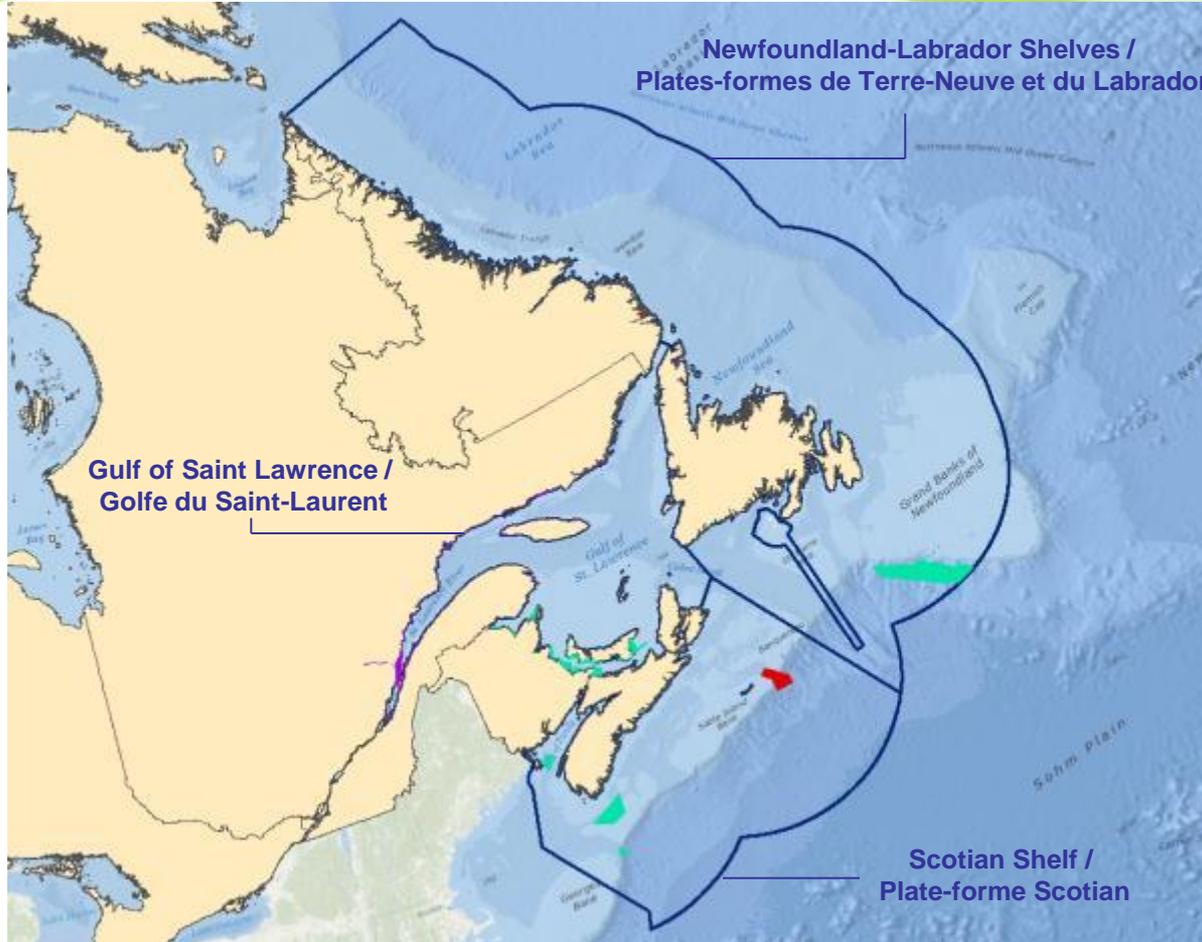
Combined Marine Bioregions (~1,705,000 km^2)

MPA (DFO) ~2,400 km^2 (0.14%)

MPA (Other) ~4,400 km^2 (0.26%)

Other Conservation Measures ~19,500 km^2 (1.14%)

Total = ~26,300 km^2 (1.5%)

Canada's oceans
A natural resource, a national treasure

(Based on 2012 data)

Existing MPAs

The Gully

- Edge of eastern Scotian Shelf

- Largest submarine canyon off east coast of North America

- Endangered resident population of Northern bottlenose whales

- Cold-water corals

- Hotbed for deep-sea research
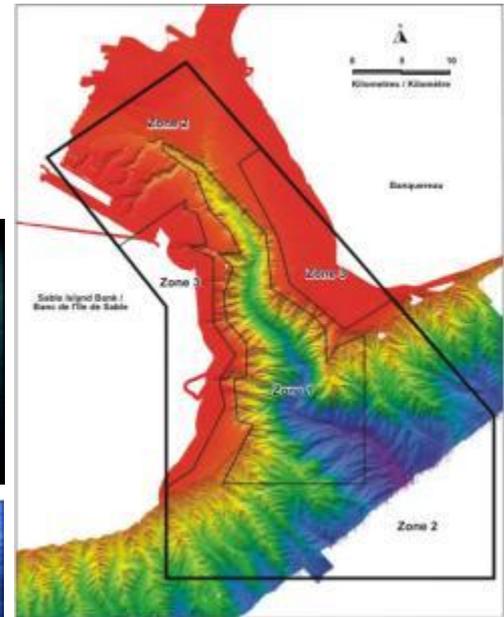
Existing MPAs

Musquash Estuary

- Located just west of Saint John, NB

- One of the last large, relatively undisturbed estuaries in the Bay of Fundy

- Supports diverse habitat and an abundance of wildlife
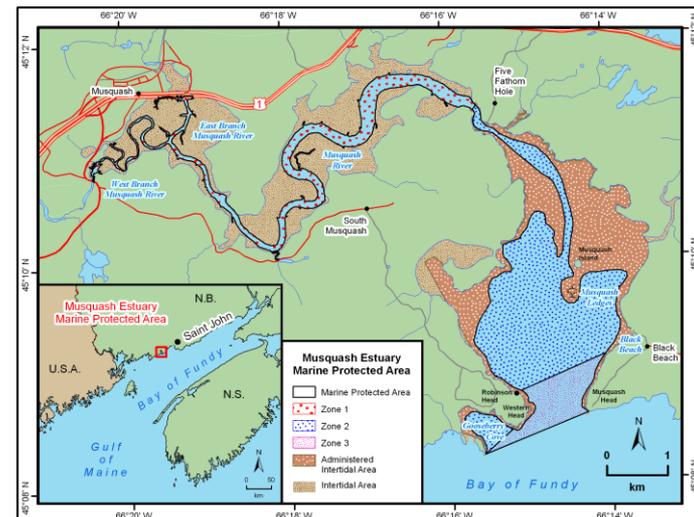
Oceans Act MPA (DFO)

Oceans Act states that an MPA may be established for the special conservation and protection of:

(*a*) commercial and non-commercial fishery resources, including marine mammals, and their habitats;
(*b*) endangered or threatened marine species, and their habitats;
(*c*) unique habitats;
(*d*) marine areas of high biodiversity or biological productivity; and
(*e*) any other marine resource or habitat as is necessary to fulfil the mandate of the Minister.

Created in regulations (unlike fishery closures)

Terminology

- ***Representation:*** Representation is achieved by protecting examples of the full range of biogeographic units in a particular planning area. Representation (or representativity) can be considered at different spatial scales ranging from broader biogeographic regions (e.g., Parks Canada Marine Regions) to finer-scale habitats or communities.

    – MPA network planning at the bioregional level will focus on achieving representation at the ecosystem or habitat scale.

Bioregional Network Conservation Objectives

1. Protect EBSAs and other special natural features in the bioregion that benefit from long-term, year-round, spatial management

2. Protect representative examples of all marine ecosystem and habitat types in the bioregion based on coastline, coastal subtidal and offshore classifications, along with their associated biodiversity and ecological processes