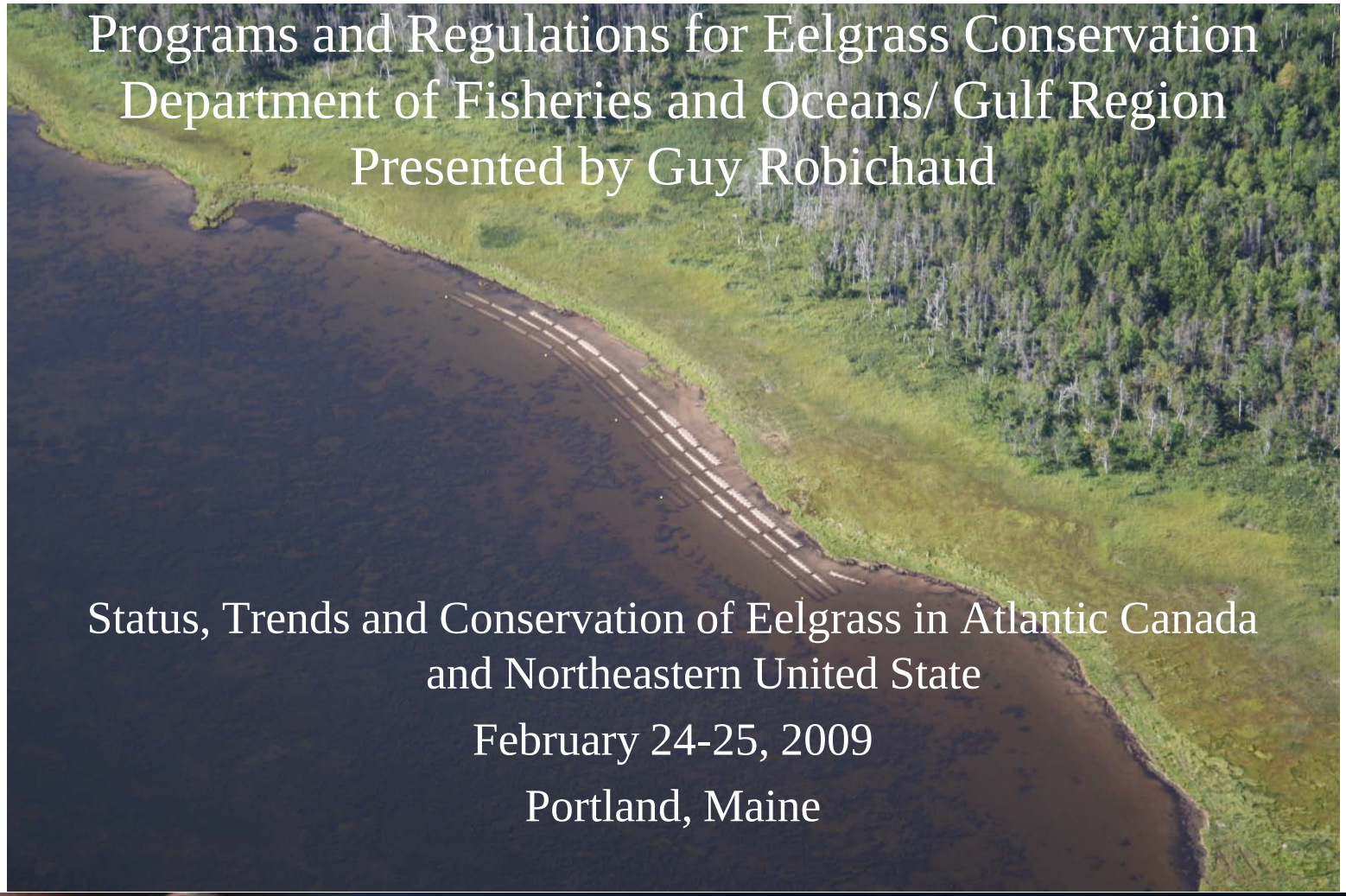
Programs and Regulations for Eelgrass Conservation Department of Fisheries and Oceans/ Gulf Region

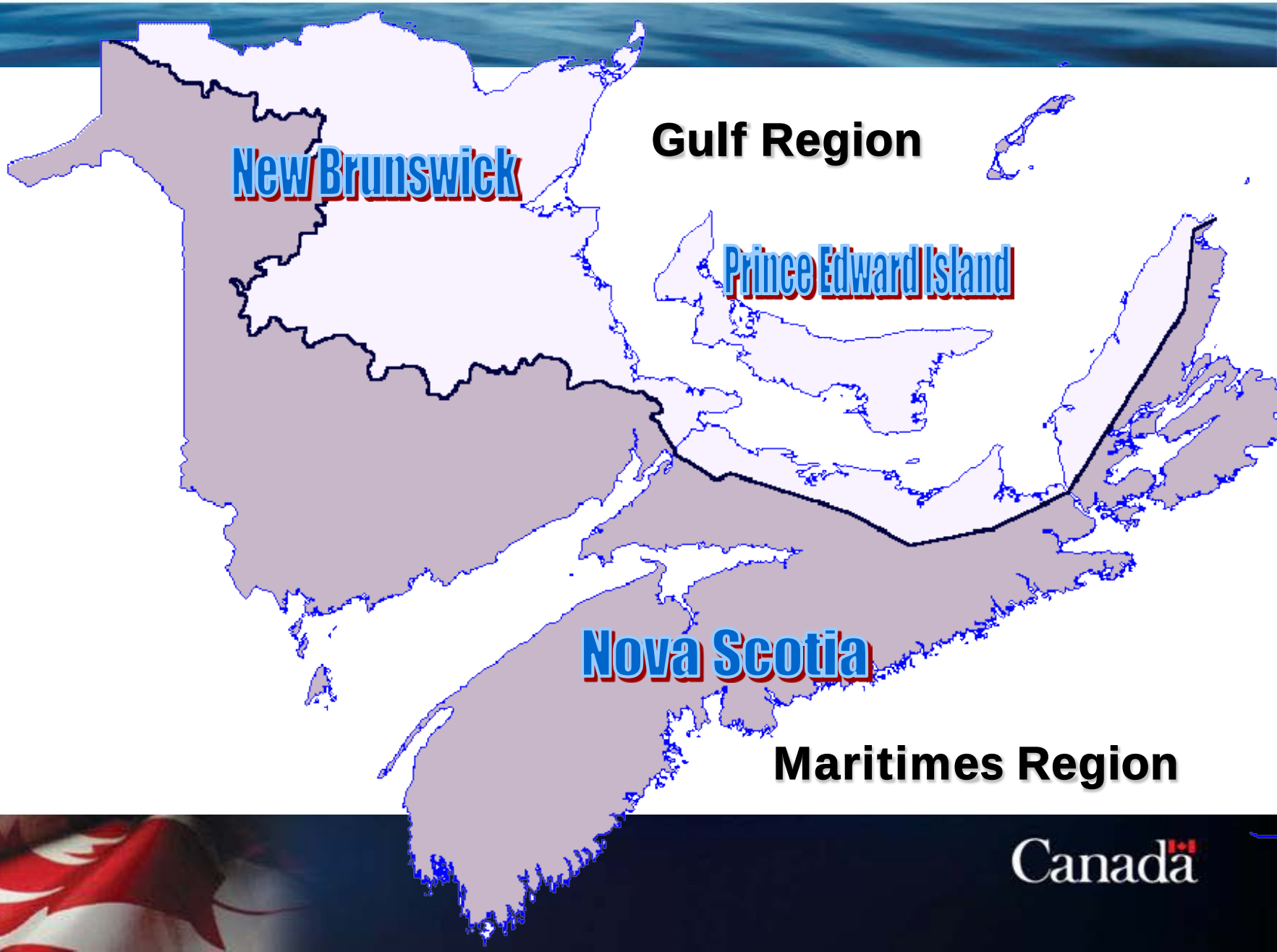
Presented by Guy Robichaud



Status, Trends and Conservation of Eelgrass in Atlantic Canada and Northeastern United State

February 24-25, 2009

Portland, Maine


Gulf Region
New Brunswick
Prince Edward Island
Nova Scotia
Maritimes Region

Species at Risk Act

- to prevent wildlife species from being extirpated or becoming extinct, to provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity and to manage species of special concern to prevent them from becoming endangered or threatened.

Oceans Act

- Calls for an Ocean Management Strategy,
- Integrated management of all activities affecting estuarial, coastal and marines waters of Canada.
- Includes Marine Protected Area program and Marine Environmental Quality program.

Fisheries Act

- As per the Fisheries Act, the conservation and the protection of habitat are the corner stone of DFO mandate,
- Provisions to protect the habitat and to prevent pollution prevention are included into the Act.

DFO/ Habitat Management Policy

- In 1986, DFO adopted the policy for the management of fish Habitat. Policy in reference to manage Section 35 of the Fisheries Act.
- The Policy defines objectives and strategies for the management of fish habitat wish depends Canadian fisheries resources in order to meet the net gain of fish habitat productive capacity.

Fisheries Act

What is fish habitat ?

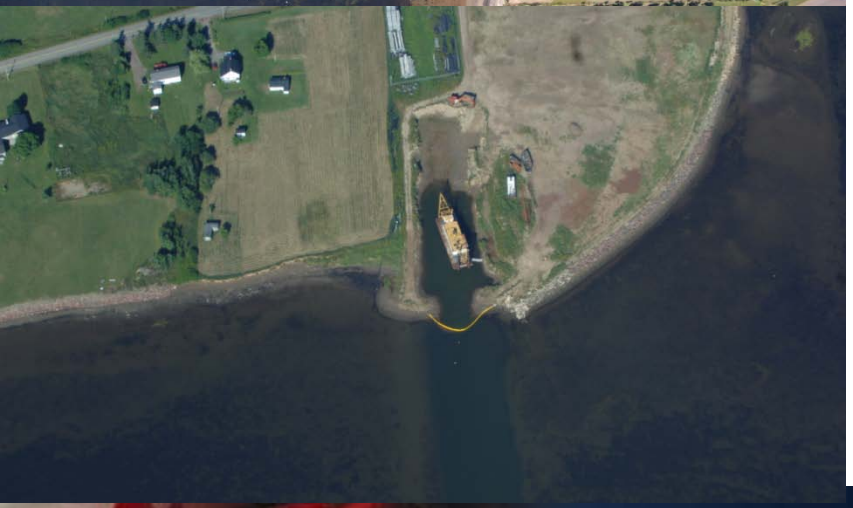
Section 34: "fish habitat" means spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes;

Fisheries Act/ Habitat Provision

- Section 32: Not allow to kill a fish other then by fishing
- Section 35: Shall not carry on any work or undertaking that results in the harmful alteration, disruption or destruction of fish habitat
- Section 36: Not allow to dispose of deleterious substances at sea

HADD is not defined in the *Fisheries Act*,
instead it is defined in *Decision Framework for the Determination and Authorization of Harmful Alteration, Disruption, or Destruction of Fish Habitat*
(1998)

Any change in fish habitat that reduces its
capacity to support one or more life processes of fish.



If authorized, a HADD must be compensated to achieve:
“No net loss in the production capacity of habitat”

Overview

- 1999: New Technique to cultivate oyster / On bottom culture to suspension culture,
- 2006, a shellfish aquaculture management plan is developed for the east coast of New Brunswick

DRAFT / ÉBAUCHE

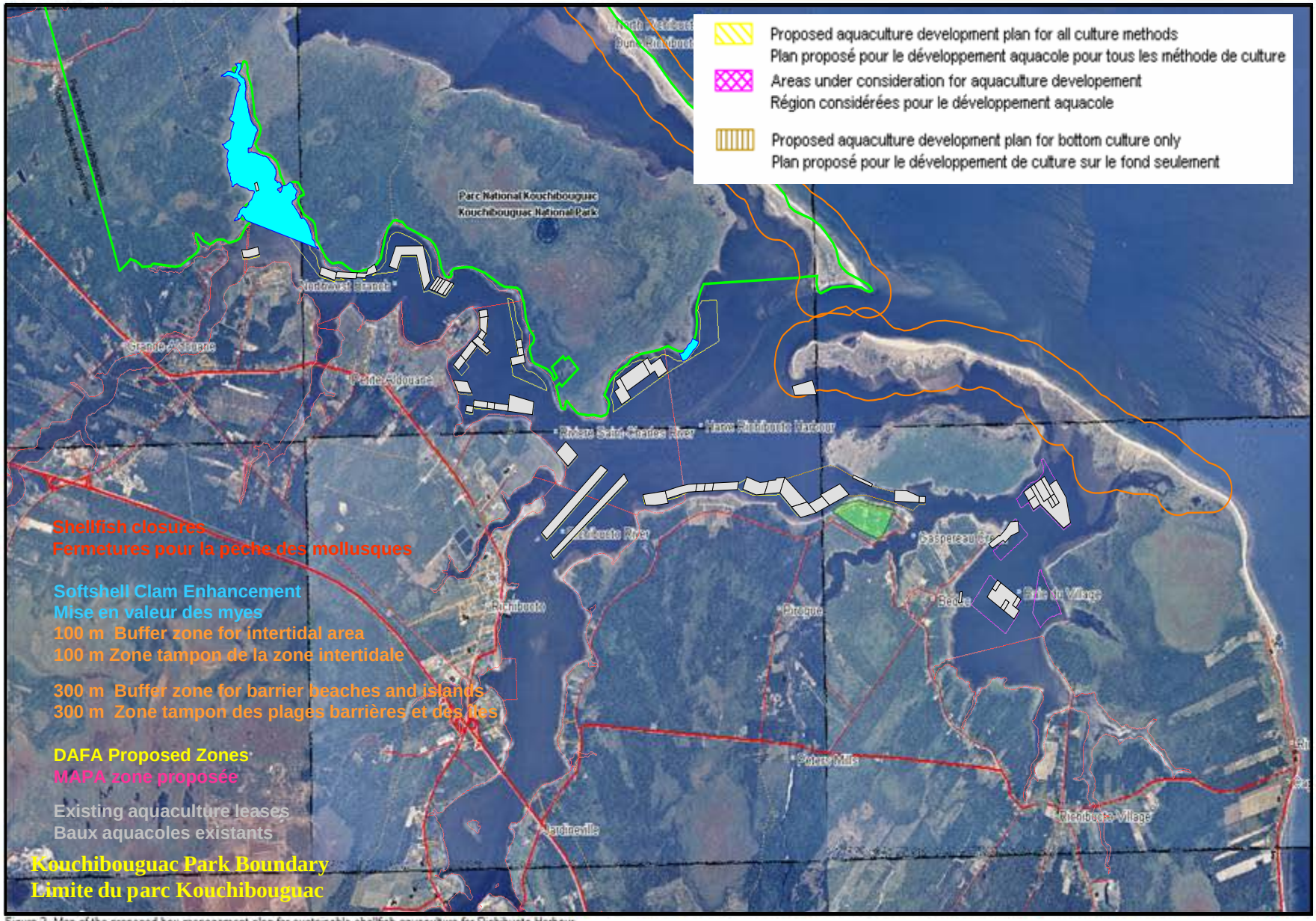


Figure 2. Map of the proposed bay management plan for sustainable shellfish aquaculture for Richibucto Harbour.
Carte du plan proposé de gestion par baie pour le développement durable de l'aquaculture pour le Havre de Richibucto.

Overview

2006-2007

- RAP/ Salmon and Shellfish aquaculture/ Impact on fish and fish habitat,
- Concluded that eelgrass is an important habitat and mitigation measures need to be developed.
- Bay wide monitoring should be developed

Overview

2007

- Under the Canadian Environmental Assessment Act a Replacement Class Screening Report is developed for the suspended shellfish aquaculture in New Brunswick,

- Federal Working group is created to develop an eelgrass monitoring program on the east coast of NB.

- Habitat Management Qualitative Risk Assessment: Water Column Oyster Aquaculture in New Brunswick

Overview

- March 2009, Science Advice/ Does eelgrass meet the criteria as an Ecologically Significant Species or Community Property?

Science Advice/ Does eelgrass meet the criteria as an Ecologically Significant Species or Community Property?

Background to Ecologically Significant Species or Community Properties

Canada's Fisheries and Oceans Act promotes an Ecosystem Approach to the integrated management of human activities.

•Integrated management plans must include objectives intended to protect the ecosystem.

•A such, enhanced protection should be provided to species and community properties that are particularly significant to maintaining ecosystem structure and function.

•To develop criteria to differentiate species or properties which are "particularly important" or "significant" with regards to specific ecosystem structure and function

DFO (2006)/ The criterias are the ecosystem properties that are ecologically significant.

"Significance refers to the role of a species, community property, area, etc. in the ecosystem, and is used in a relative sense. To identify a species or community property as "significant" is to conclude that if the species or community property were perturbed severely, the ecological consequences (in space, in time, and/or outward through the food web) would be substantially greater than an equal perturbation of most other species or community properties. All species have some influence on at least parts of ecosystem structure and function, and the degree of influence ranges on a continuum from weak to actually controlling important aspects of the structure and function. The concept of ecologically significant species and community properties applies to the high end of the continuum, where current knowledge indicates that the species or community property has controlling influence over key aspects of ecosystem structure and function."

•Concluding that a species or community property is ecologically significant does not confer any special legal status.

•It is a tool for calling attention to a species or community property that has particularly high ecological significance in order to facilitate provision of a greater-than-usual degree of risk aversion in management of human activities that may affect such species or community properties.

Eelgrass as a candidate (ESS)

•Species which provide three-dimensional structure important to biodiversity and productivity (type 2) were considered potential candidates as ESS (DFO 2006a).
•By definition, structural species create habitat that is used preferentially by other species.
•Eel grass (*Zostera marina* L.) is a common aquatic plant in estuaries and coastal areas of Canada.
•Their function as a habitat structure includes providing cover from predation, reducing local current regimes, and increasing secondary productivity by adding to local habitat complexity and surface area (Vandermeulen 2005). Vandermeulen (2005) suggested that due to the relatively constrained range of physical, biological and chemical factors favourable for eelgrass growth, eelgrass should be considered as sensitive habitat, i.e. structurally fragile.

In order to consider eelgrass as an Ecologically Significant Species, the following conditions must be met:

a. By its structure (i.e. as emergent from the seafloor), it creates habitat that is used preferentially by other species,

b. It physically support(s) other biota, and provides either settlement substrate or protection for this associated community, and

c. It is abundant enough and sufficiently widely distributed to influence the overall ecology (e.g.: biodiversity) of that habitat.

Assessment of this functional role requires:

- assessing quantity of the species present,
- assessing the quality of the structural habitat being provided, and
- assessing the significance of the structural habitat to the overall ecosystem structure and function on scales relevant to the Conservation Objectives and management plans.

Outputs

•Can eelgrass be considered an ESS under the criteria defined by DFO (2006) ?

•The Science Advisory Report is available at: http://www.dfo-mpo.gc.ca/CSAS/Csas/Publications/SAR-AS/2009/2009_018_e.pdf

Next Step

Science Advice

- Phase 1: 2009, Does eelgrass meet the criteria as an Ecologically Significant Species or Community Property?
- Phase 2: 2010, Eelgrass management plan in DFO/ Atlantic Regions (integrated management plan/ under Oceans Act)
- Phase 3: 2011, Does human activities have impacts on eelgrass ? (Section 35 under Fisheries Act)

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RAP/ Objectives

The review

• the functional role of eelgrass within the estuarine and coastal ecosystem,

•an assessment of the quantity of the species present, the temporal variation in its distribution and abundance, the quality of the structural habitat, and the significance of the structural habitat to the overall ecosystem structure and function.

What will be considered ?

•Summary of physical, chemical requirements of eelgrass including thresholds for growth and survival,
•Spatial distribution of eelgrass within eastern Canada,
temporal variation in eelgrass abundance and factors contributing to the variation,
•Evidence of preferential use of eelgrass habitat by other species,
•Function of the habitat created by eelgrass for other species,
•Role of eelgrass in the overall ecology of the aquatic habitat,
•And conclusion on whether eelgrass can be considered an ESS under the pre-defined criteria.

Science Advice/ Does eel grass meet the criteria as an Ecologically Significant Species or Community Property?

- Canada's Oceans and Fisheries Act promotes an Ecosystem Approach to the integrated management of human activities. Integrated management plans must include objectives intended to protect the ecosystem. A such, enhanced protection should be provided to species and community properties that are particularly significant to maintaining ecosystem structure and function. The identification of Ecologically Significant Species (ESS) is a tool for calling attention to a species or community property that has particularly high ecological significance.

- The estuary and coastal areas have been exposed to extensive human activities. The initiative to develop coastal tools to facilitate integrated management would benefit from the identification of ESS. Species/group that have received attention in recent years are the aquatic macrophytes which are common within the intertidal zones of estuaries. One species in particular, eelgrass (*Zostera marina* L.) provides three dimensional structure considered important to biodiversity and productivity and as such potentially corresponds to a category type 2 ESS as described by DFO (2006).

- DFO requested science advice on whether eel grass (*Zostera marina* L.) meets the criteria as an Ecologically Significant Species outlined in DFO 2006.

- The Science Advisory Report is available at:

  http://www.dfo-mpo.gc.ca/CSAS/Csas/Publications/SAR-AS/2009/2009_018_e.pdf