

Integration of ecosystem considerations into future fisheries management

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Integration of ecosystem considerations into future fisheries management

Developing a management system that ensures the delivery of fisheries and environmental objectives is the main challenge for contemporary fisheries managers

What is the science base needed to support this?

Integration of ecosystem considerations into future fisheries management

The Ecosystem Approach to Fisheries (EAF)

Steps towards an operational EAF

Research priorities

The Ecosystem Approach to Fisheries

The Ecosystem Approach is intended to ensure sustainable human use of the environment

‘meeting the needs of the present without compromising the ability of future generations to meet their own needs’

The broad purpose of an EAF is consistent with that of the EA, but with a focus on the management of fisheries

Adoption of an EAF is encouraged in policy documents and some management objectives have been specified

Policy commitment needs to be followed by implementation
This is the current challenge for science and management

The Ecosystem Approach to Fisheries

United Nations FAO Reykjavik Declaration (2001)

EC Council Regulation (2002)

5th International Conference on the Protection of the North Sea (2002)

World Summit on Sustainable Development (2002)

FAO “The Ecosystem Approach to Fisheries” (2003)

Declaration of the Joint Ministerial Meeting of the Helsinki and OSPAR Commissions (2003)

Marine Strategy Directive (2006)

The Ecosystem Approach to Fisheries

Article 2 of the Council Regulation Nr 2371/2002

“Precautionary approach shall be applied in taking measures designed to protect and conserve living aquatic resources, to provide for their sustainable exploitation and to minimise the impact of fishing activities on marine eco-systems. It shall aim at a progressive implementation of an eco-system based approach to fisheries management.”

The Ecosystem Approach to Fisheries

Changes associated with an EAF

Environmental issues formerly dealt with on an ad-hoc basis are now a central issue in management

Objectives relating to both fisheries and ecosystem concerns will be part of the management system

Potentially more conflicts from trying to meet multiple objectives on short and long-term timescales

Move towards treating fishing on a par with other sectoral activities (spatial planning, EIA, SEA)

Steps towards an operational EAF

Issues for managers to address

Excessive capacity	
Incompatible objectives	S
Changing societal perspective	
Prioritisation of fisheries impacts	S
Mitigation measures and incentives	S

When and where is research input needed?

Research priorities

Incompatible objectives

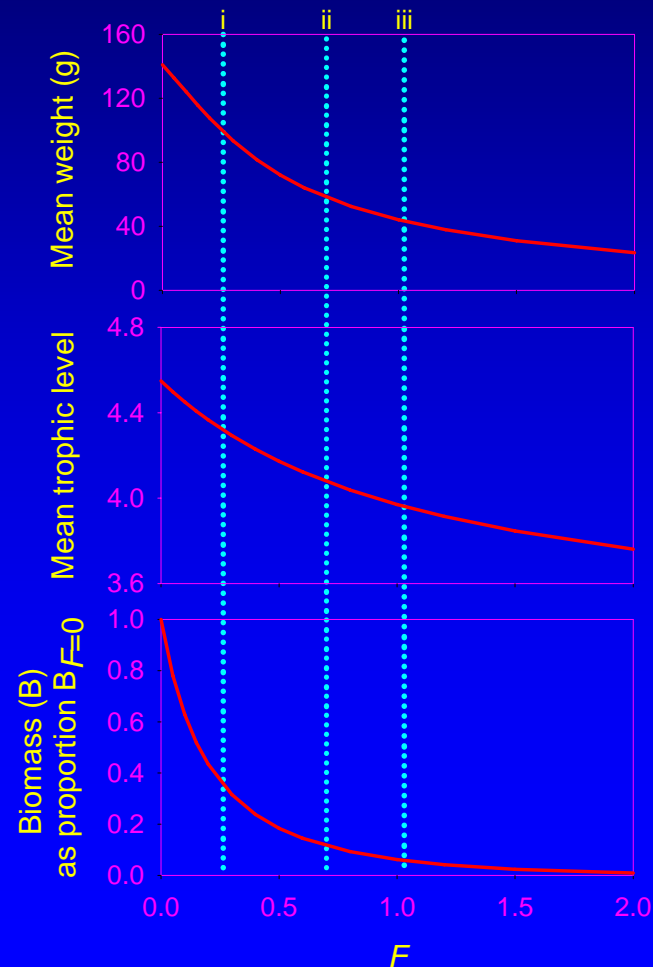
Describe explicitly the tradeoffs between fisheries and environmental objectives

Research priorities

Incompatible objectives: fisheries and environment

Objectives:

- i. MSY for most vulnerable species
- ii. Avoid extinction of most vulnerable species
- iii. Maximum multispecies yield



After Pope et al. 2006

Research priorities

Incompatible objectives

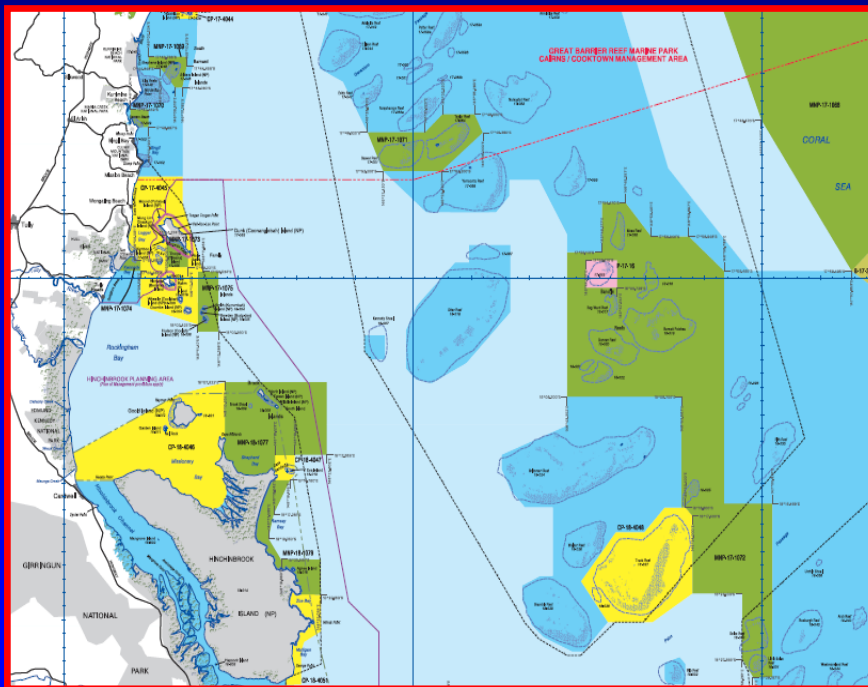
Describe explicitly the tradeoffs between fisheries and environmental objectives

Develop and test operational objectives for fishery and environmental management (at the RAC area scale)

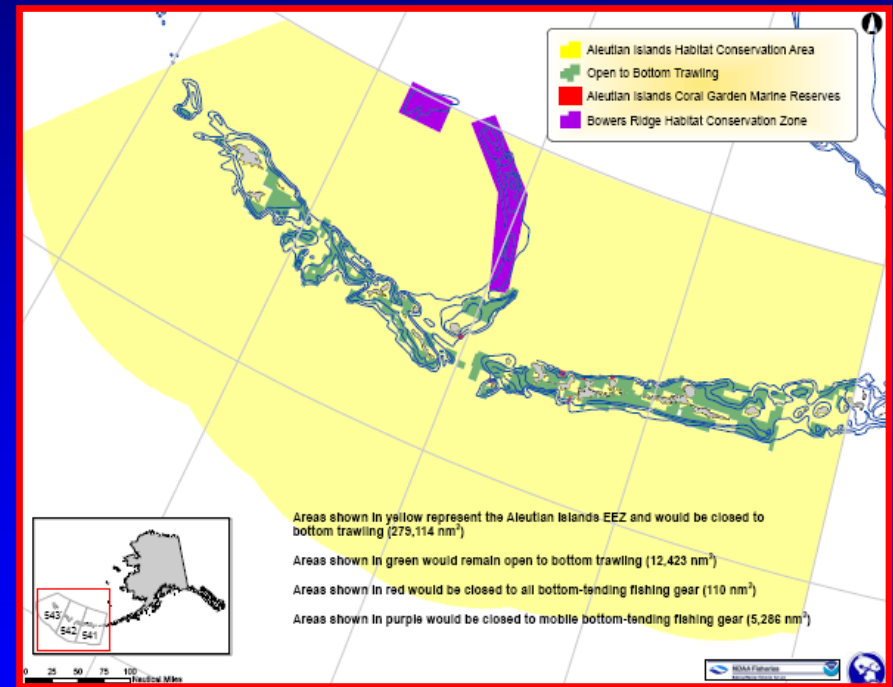
Develop and test tools for reconciling incompatible objectives at the sub-RAC area scale (e.g. spatial planning)

Research priorities

Incompatible objectives: spatial planning



Great Barrier Reef Marine
Park Authority



North Pacific Fishery
Management Council

Source: GBRMPA and NPFMC

Research priorities

Prioritisation of fisheries impacts

How effectively does single-species management support an ecosystem approach ? Which issues remain if MSY is achieved ?

Research priorities

Prioritisation of fisheries impacts

Issues

Low productivity species in mixed fisheries

Genetic effects of fishing

Bycatches

Food webs (processes, function. structure)

Habitats

Research priorities

Prioritisation of fisheries impacts

How effectively does single-species management support an ecosystem approach ? Which issues remain if MSY is achieved ?

Which management methods most effectively minimise the risk of the least desirable changes in marine ecosystems ?

What are the minimum requirements for data to support an effective ecosystem approach ? What can be achieved with pressure data ?

Based on the preceding analysis, develop indicators and reference points and the supporting data collection procedures

Research priorities

Mitigation measures and incentives

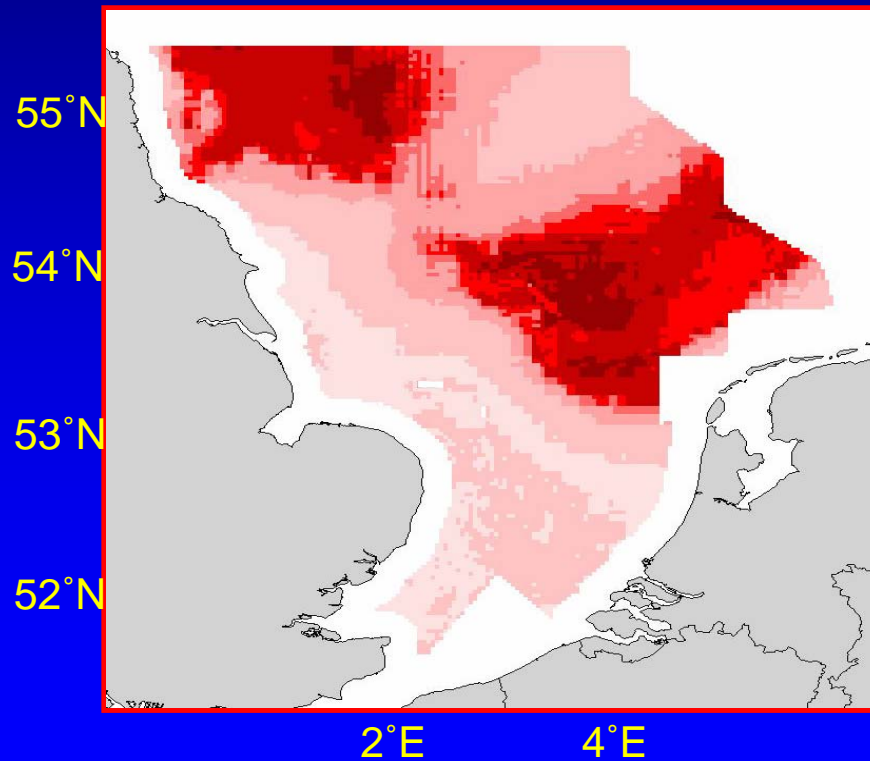
Develop and assess the impacts of incentive schemes that might promote environmentally responsible fishing (ERF)

Develop methods for assessing and reporting on the impacts of fisheries and comparing their environmental “footprints”

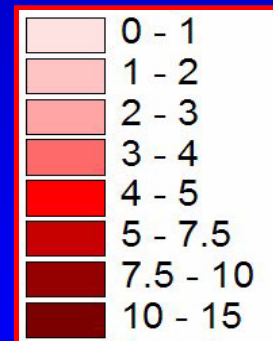
Research priorities

Mitigation measures and incentives

e.g. linking impact to sensitivity at RAC-area scales



Sensitivity =
recovery time for
production
(years)



Hiddink et al. 2006

Research priorities

Mitigation measures and incentives

Develop and assess the impacts of incentive schemes that might promote environmentally responsible fishing (ERF)

Develop methods for assessing and reporting on the impacts of fisheries and comparing their environmental “footprints”

Develop gears to reduce the environmental impact of fishing and assess their benefits in conjunction with other management tools

Develop and assess methods of EIA and SEA that might be applied to fisheries

Develop spatially based management systems that integrate with those developed by other (non-fisheries) sectors

Develop methods for assessing and consistently documenting the “track records” of fisheries

Integration of ecosystem considerations into future fisheries management: conclusions

Research priorities for an EAF

Compatibilities and interactions among objectives

Prioritisation and assessment of fisheries impacts

Mitigation measures and incentives

