

# The Challenges of Ocean Management



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November 2005

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# This Presentation

Development of Ocean Management

Cultural context of marine management

Controls, sectors, boundaries & jurisdiction

MPAs and the Great Barrier Reef example

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# Development of Ocean Management

T H Huxley 1897 absurd to suggest humans could have significant impacts upon marine environments

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# Development of Ocean Management

## 3 approaches to Ocean Management

- Fisheries Management
- Multiple use management
- Marine Protected Areas

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# Development of Ocean Management

## UNCLOS OBLIGATIONS

- Ensure that the living resources of EEZ not endangered by over-exploitation
- Maintain or restore populations of harvested species within levels that produce the 'maximum sustainable yield'
- Provide other countries access to unused surplus allowable catch.

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# Development of Ocean Management

## UNCLOS OBLIGATIONS

- take measures to ensure that activities under their jurisdiction (in EEZ) or control (flag state beyond EEZ) are so conducted as not to cause damage by pollution beyond the areas where they exercise sovereign rights.

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# Development of Ocean Management

## UNCLOS

- The seabed and its geological resources are common heritage of mankind with the International Seabed Authority created to manage use and access
- Biological resources and diversity of the high seas not addressed

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# Development of Ocean Management

## Regional Fisheries Management Organizations

- Different regional structures and approaches
- Concerned primarily with fished stocks
- Biological diversity generally not addressed

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# Traditional Cultural Context

Vast, strange and scary

Demonise sea creatures

Inexhaustible source of great wealth

Cheap and easy way to dispose of  
wastes from land

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# New Cultural Context

## Visible ecosystem goods

Wild caught sea food

Raw materials - algae

Cultivated foods

Medicinal treatments and products

Non or slowly renewable resources  
building materials, oil, minerals

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# New Cultural Context

## Invisible ecosystem Services

Shoreline maintenance

Flood and storm protection

Sand production

Nutrient cycling

Waste assimilation and remediation

Mixing.

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# New Cultural Context

## Invisible Ecosystem Services

Transport of organic production  
to food webs

Development and transport of young  
Wave and tidal energy

Recreation

Inspiration

Support of cultural, aesthetic  
and spiritual values

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# New Cultural Context

High cultural/spiritual and recreational values of unspoiled coasts, beaches and seas

High Biodiversity values important and largely unexplored

Seas and coastal areas threatened by pollution and over use



# What are the threats?

- Habitat destruction
- Structural alteration of populations
  - Loss of predator/grazer/prey relationship
- Algal overgrowth
- Disease
- Marine pollution
  - Land based sources
  - Marine and atmospheric sources



# What are we trying to manage?

Human impacts on marine biodiversity

Ecologically sustainable fisheries

Other current and potential uses of  
environmental goods and services

Impacts of terrestrial activities

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# What are we trying to protect?

## Genetic Biodiversity :

the variety and frequency of different genes and/or genomes within each species

## Species Biodiversity :

the variety and frequency of different species.

## Ecosystem Biodiversity :

the variety and frequency of different habitats or ecosystems and the processes that shape them.

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# What are the threatening activities?

- \* Destructive fishing techniques
- \* Overfishing
- \* Pollutants from land use
- \* Conversion or alienation
- \* Operational and catastrophic marine pollution from shipping or mineral/petroleum extraction
- \* Overuse for recreation or tourism
- \* Atmospheric pollution, Ocean warming

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# What controls can we apply?

Spatial  
Temporal  
Equipment  
Permitted impact levels  
Skills  
Quotas

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# Where can MPAs fit in?

MPAs are a key to systematic delivery of biodiversity conservation

They can't be created in isolation from other interests so need to reach across boundaries between sectors and to communities

There is no simple answer or model for all contexts

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# Where can MPAs fit in?

Total exclusion for everything but science

- Strict Nature reserve  
IUCN Category I

No Take but access for recreation and tourism

- Marine Park  
IUCN Category II

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# Where can MPAs fit in?

Habitat protection, consistent fisheries,  
tourism

- Habitat/Species Management Area
- IUCN Category IV

Sustainable consistent multiple use of  
natural ecosystems

- Managed Resource Protection Area
- IUCN Category VI

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# Sectors, boundaries and management

## Terrestrial thinking

good fences make good neighbours  
sectoral management because  
    few serious overlaps  
robust competitive sectoralism  
separate catchments, downstream flows,  
discrete areas

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# Sectors, boundaries and management

## Sectors

Fisheries

Shipping

Environment

Tourism

Science

Border control

National, Provincial and Local Government

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# Sectors, boundaries and management

## Sectors

Most systems based on regulation of and by user sectors or interests

Departmental and Ministerial inclination typically to work “within the fences”

Interdepartmental and inter-jurisdictional collaboration often grudging

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# Sector-specific or integrated?

## Sectoral

Individual species  
Small Spatial Scale  
Short-term perspective  
Humans independent of ecosystems  
Management divorced from research

Source: Lubchenco 1994

## ICOM

Ecosystems  
Multiple Scales  
Long-term perspective  
Humans as integral parts of ecosystems  
Adaptive management

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# What can't be managed by marine laws?

- Land Use
- Terrestrial run-off
- Influences from other marine jurisdictions
- Atmospheric pollution
- Climate change

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# Great Barrier Reef issues – early 1970s

Iconic environment

National identity and pride

Deteriorating

Crown of Thorns starfish

Loss of inshore reefs

Unmanaged sectoral threats

Oil exploration and limestone mining

Fisheries

Recreation and tourism

Coastal development, Shipping

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# The core of the GBRMP Act (1975)

- u The ***conservation*** of the Great Barrier Reef
- u The regulation of the use of the Marine Park so as to protect the Great Barrier Reef ***while allowing reasonable use***

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# The Goal of the GBRMPA

To provide for the protection, wise use, understanding and enjoyment of the Great Barrier Reef in perpetuity through the development and care of the Great Barrier Reef Marine Park.”

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# Zoning Study

3 “legal” plans showed that

Terrestrial approaches of constraints and opportunities overlay analysis work well despite multiple use

Although imperfect the available information was adequate to proceed with zoning the first section of the GBRMP.



# The first cycle of zoning

Took 10 years

Limited available information - Delphi

Outcome 20.6% habitat protection with 4.7% no-take, and the rest general use

The clear view of those involved in the process was that that was as good a balance of conservation and reasonable use as could be achieved at the time.

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# Longer term strategic planning

Zoning revealed the need for a more explicit underlying long term strategic framework

25 year Strategic Planning Process

Participation by sectors/stakeholders informed by their involvement in zoning

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# Guidelines and Principles

Needed from the start

Must address the issues of all groups of interest – some will conflict

Must be a package

Must be accepted as the basis for addressing difficult issues

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# 25 year vision for the GBRWHA

A healthy environment:

Sustainable multiple use

Maintenance and enhancement of values:

Integrated management:

Knowledge-based but cautious decision-making

An informed, involved, committed community

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# Changes over 25 years

In 1979 the largest direct economic use was fishing.

By 1990 tourism was 4:1 more important than fishing – now 8:1

Activities once seen as reasonable no longer factors - Shell collecting

In 1979 discussion of recreational bag limit proposals provoked outrage

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# Changes over 25 years

By 1989 Recreational fishing organisations were calling for bag limits.

In 1979 scientific research was regarded as an automatically beneficial activity

In 1997 ethical guidelines were needed to:  
address impacts on populations, habitats and species - particularly endangered ones; and  
to ensure that research designs justify impacts

# The second cycle of zoning

Took 4 years

Outcome 66 % habitat protection including 33% no-take,  
and the rest general use

The clear view of most of those involved in the process  
was that it achieved a balance of conservation  
and reasonable use appropriate for a World  
Heritage Area and primary tourism asset

Success due in large part to Ministerial support for clear  
operating criteria applied in an informed public process.

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# Adjustments

Adjustment panel to address and  
recompense claims of  
disadvantage

Importance of good prior-performance  
data: VMS vs log books

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# Lessons from the GBR

Lesson 1: Zoning - or spatially based strategic planning - is a good starting point for multiple use management.

Lesson 2: Zoning plans and regulations that meet the requirements of legislative drafting can still be hard to implement

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# Lessons from the GBR

Lesson 3: A clear legislative mandate with precedence for conservation AND reasonable use at the ecosystem scale is a good basis for dealing with existing and new sectoral interests.

Lesson 4: Clear publicly discussed and understood guidelines or operational principles are needed for the planning process.



# Lessons from the GBR

Lesson 5: The situation is dynamic.

Community values, attitudes and understanding change with experience and new information. Don't wait for perfect information - it may be too late

Lesson 6: An issues based approach is important for setting management objectives and determining effectiveness in achieving them.



# Keys to Ocean Management

Fisheries and Biodiversity managed must be addressed together

Each is an important factor for managing the other

Sectoral squabbling is a recipe for failure in the objectives of both sectors

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# Keys to Ocean Management

Important to reach across boundaries,  
between sectors and to communities

There is no simple answer or model for all  
contexts but goodwill and the development  
of trust are essential components

For every complex problem there is usually a simple  
solution – and its usually wrong. H.L.Mencken

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# Thank You

