The Management of TraC Waters Related to the Restoration/ Recovery/Recreation of ES&SB

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Institute of Estuarine and Coastal Studies

Background:

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- Restore from what?
- Manage to what?
- Recreate/Recover what?
- Governance for restoration/recreation/recovery
- What knowledge for functioning?
- Ecosystem Services & Societal Benefits
- DPSIR Philosophy
- 7-tenets for sustainable management
- The Ecosystem Approach

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Editorial

Marine science and management means tackling exogenic unmanaged pressures and endogenic managed pressures – A numbered guide

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Viewpoint

Management of the marine environment: Integrating ecosystem services and societal benefits with the DPSIR framework in a systems approach

Jonathan P. Atkins [a,*], Daryl Burdon [b], Mike Elliott [b], Amanda J. Gregory [c]

The Ecosystem Approach

- At its most comprehensive, defined by The Convention for Biological Diversity (CBD, 2000) as:

  '*a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. The application of the Ecosystem Approach will help to reach a balance of the three objectives of the Convention: conservation, sustainable use and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources*'.

- In the European context Article 1(3) of the European Commission's recent Marine Strategy Framework Directive (MSFD) (EC 2008) states that:

  'Marine strategies shall apply an ecosystem-based approach to the management of human activities, ensuring that the collective pressure of such activities is kept within levels compatible with the achievement of good environmental status and that the capacity of marine ecosystems to respond to human-induced changes is not compromised, while enabling the sustainable use of marine goods and services by present and future generations'.

12 Principles of The Ecosystem Approach

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1. The objectives of management of land, water and living resources are a matter of societal choices.
2. Management should be decentralised to the lowest appropriate level.
3. Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.
4. Recognising potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context. Any such ecosystem-management programme should: a) Reduce those market distortions that adversely affect biological diversity; b) Align incentives to promote biodiversity conservation and sustainable use; c) Internalise costs and benefits in the given ecosystem to the extent feasible.
5. Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach.
6. Ecosystem must be managed within the limits of their functioning.
7. The ecosystem approach should be undertaken at the appropriate spatial and temporal scales.
8. Recognising the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for ecosystem management should be set for the long term.
9. Management must recognise that change is inevitable.
10. The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity.
11. The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.
12. The ecosystem approach should involve all relevant sectors of society and scientific disciplines.

Main Messages:

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- Fulfilling The Ecosystem Approach, the 7 tenets, ‘triple wins’ for ecology, society and economy.
- Determine problems (footprint) and then address/solve/ mitigate/compensate;
- Good business relies on good ecology/biology/husbandry;
- Essence is connectivity (good water conditions, ecological well-being, conditions fit-for-purpose);
- Determine inputs and outputs - the effects of the restoration actions on the natural system and vice versa;
- Monitoring/modelling/management - adaptive systems;
- Ensure sustainability - but for what/who/how/when?

Ecosystem Recovery and Restoration

The recovery or human-mediated modification of these habitats and ecosystems can be divided into four categories:

- natural recovery from a natural or anthropogenic change (whether adverse or otherwise);
- anthropogenic interventions in response to a degraded or anthropogenically changed environment;
- anthropogenic responses to a single stressor; and
- habitat enhancement or creation.

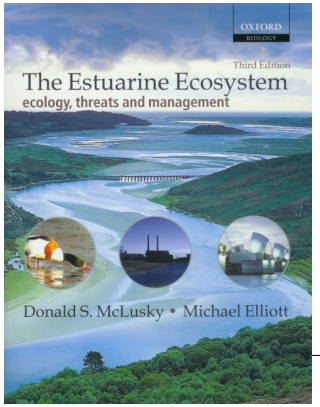
Pressures, Valuing, Valuation and Management

- Paradigm 7: *Estuaries have more human-induced pressures than other systems and these include both exogenic unmanaged pressures and endogenic managed pressures. Consequently their management has to not only accommodate the causes and consequences of pressures within the system but, more than other ecosystems, they need to respond to the consequences of external natural and anthropogenic influences.*

Challenging paradigms in estuarine ecology and management

M. Elliott [a,*], A.K. Whitfield [b]

e.g. ExUP & EnMP:
Aquaculture - fin-fish and shellfish



Adequacy of ecohydrology - engineering:

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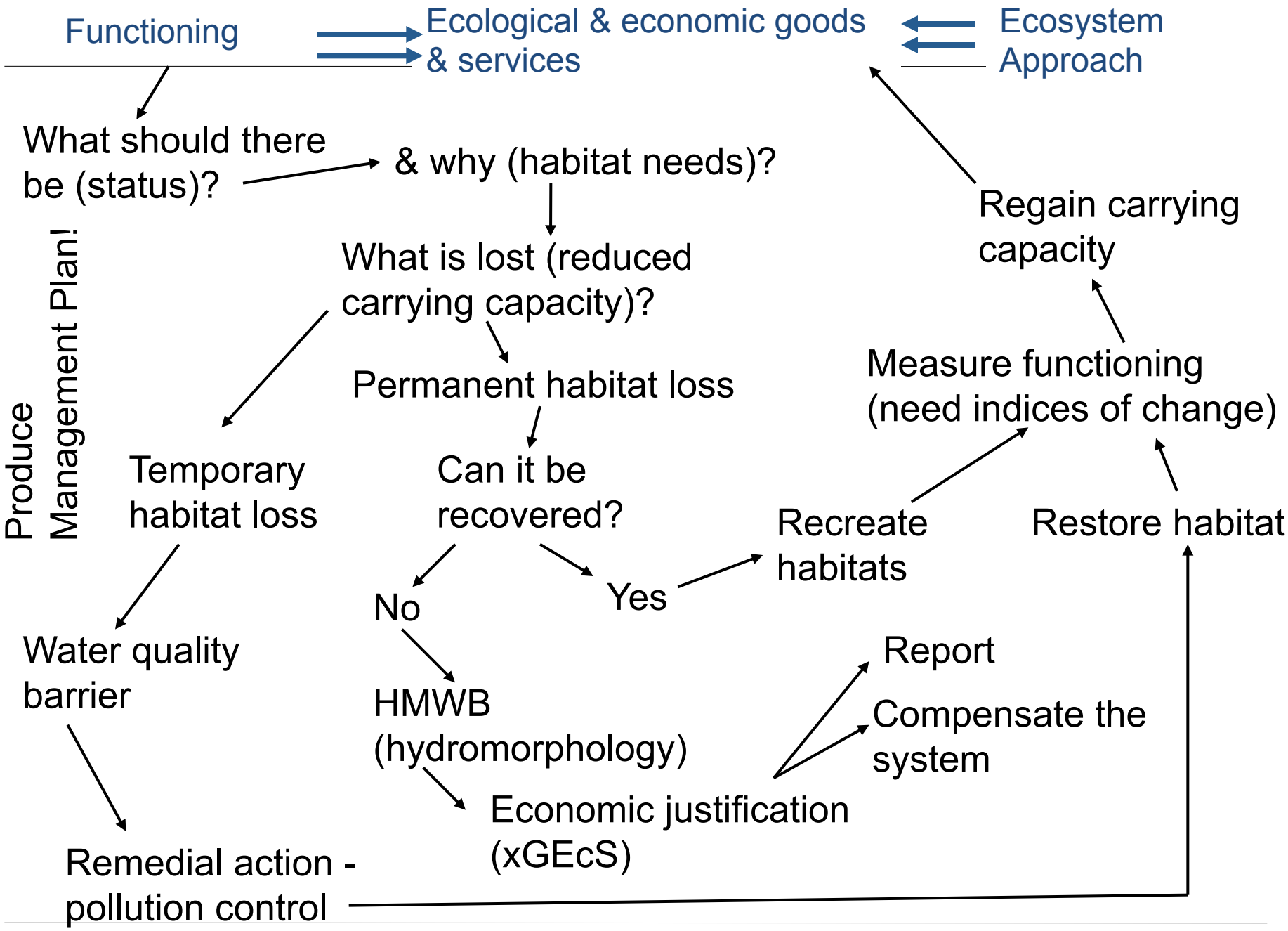
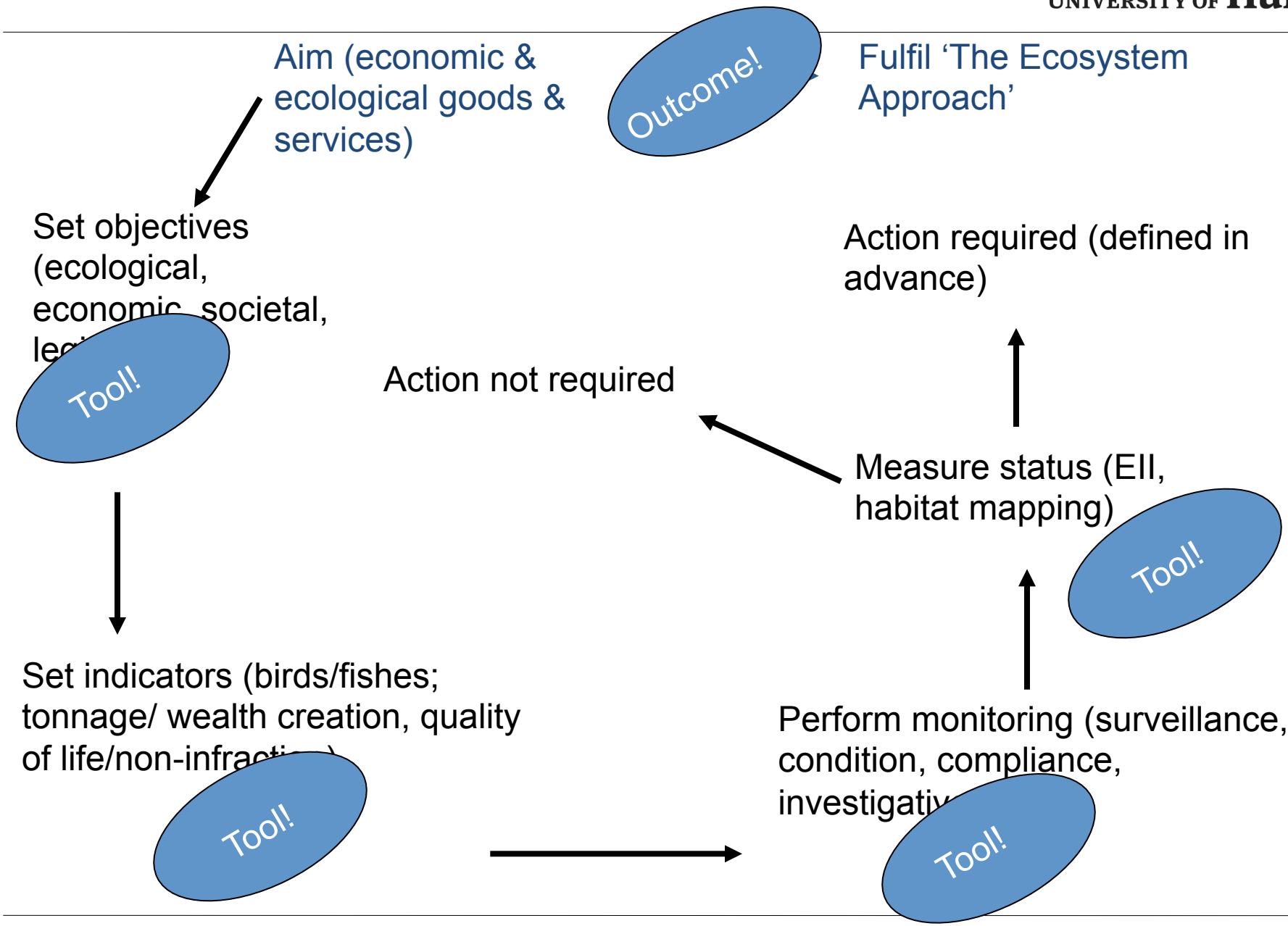
- Look after the physics and the ecology will take care of itself
- Get the physics wrong and the desired ecology won't be created
- Do we know enough to engineer the physics and the ecology?


Functioning
Ecological & economic goods & services
Ecosystem Approach
What should there be (status)?
& why (habitat needs)?
Regain carrying capacity
Produce Management Plan!
What is lost (reduced carrying capacity)?
Measure functioning (need indices of change)
Permanent habitat loss
Temporary habitat loss
Can it be recovered?
Recreate habitats
Restore habitat
No
Yes
Water quality barrier
Report
HMWB (hydromorphology)
Compensate the system
Economic justification (xGEcS)
Remedial action - pollution control

The need to overcome:

- Reductions in habitat and species diversity, and habitat size and heterogeneity;
- Reductions in the population size, dynamics and range of many species;
- Fragmentation of habitats increasing the vulnerability of remaining isolated pockets to natural or human-induced environmental changes, especially if fragmentation prevents the movement of propagules;
- Reductions in the ability of naturally functioning ecosystems to provide economically important goods and services such as erosion protection, nutrient reduction, or carbon retention


Aim (economic & ecological goods & services)
Outcome!
Fulfil 'The Ecosystem Approach'
Set objectives (ecological, economic, societal, leg
Tool!
Action required (defined in advance)
Action not required
Measure status (EII, habitat mapping)
Tool!
Set indicators (birds/fishes; tonnage/ wealth creation, quality of life/non-infracti
Tool!
Perform monitoring (surveillance, condition, compliance, investigativ
Tool!

Ecosystem Services & Societal Benefits (original):

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- Defined as:

  '*the conditions and processes through which natural ecosystems, and the species that make them up, sustain and fulfil human life*' (Daily, 1997).

- Defra, UK (2007) refer to ecosystem services as

  '*the wide range of valuable benefits that a healthy natural environment provides for people, either directly or indirectly*', and suggests these services

  '*are not generally considered within policy appraisal at present and represent an area where a greater and more systematic focus would be very useful*'.

- Ecosystem services are a reductionist method - they capture State Changes and Impacts of a system.

TraC ecosystem services...contd.

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- **Production services** which involve products and services obtained from the ecosystem;
- **Regulation services** which are the benefits obtained from the regulation of ecosystem processes;
- **Cultural services** which are the non-material benefits people obtain from ecosystems;
- **Option use values** which are associated with safeguarding the option to use the ecosystem in an uncertain future; and
- **Over-arching support services** which are those that are necessary for the production of all other ecosystem services, but do not yield direct benefits to humans.

TraC ecosystem services...contd.

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Category	Ecosystem Services
Production services	**Food provision** - extraction of estuarine/marine organisms for human consumption.
	Raw materials - extraction of minerals and organisms not for human consumption.
	Transport and navigation – use of waterways for shipping.
	Energy – non-consumptive use of the estuarine/marine environment for energy generation e.g. wave and tidal power.
	Residential and industrial water supply – abstraction of water for residential and industrial purposes.
Regulation services	**Gas and climate regulation** - balance and maintenance of the atmosphere.
	Disturbance prevention - flood and storm protection by biogenic structures.
	Bioremediation of waste - removal of pollutants by storage, burial and recycling.
Cultural services	**Cultural heritage and identity** - value associated with the estuarine/marine environment itself.
	Cognitive values - education and research resulting from the estuarine/marine environment.
	Leisure and recreation - refreshment and stimulation of the human body and mind through the perusal and study of, and engagement with, the estuarine/marine environment.
	Feel good or warm glow - value derived from the estuarine/marine environment without using it.
Option use values	**Future unknown or speculative benefits** - currently unknown future uses of the estuarine/marine environment.
Over-arching support services	**Resilience and resistance** - environmental life support by the estuarine/marine environment.
	Biologically mediated habitat - habitat provided by living estuarine/marine organisms.
	Physical habitat – habitat provided by the physical (non-living) environment
	Nutrient cycling - the storage, cycling and maintenance of nutrients by estuarine/marine environment.

Ecosystem Services?

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"*The conditions and processes through which natural ecosystems, and the species that make them up, sustain and fulfil human life*" Daily (1997)

"*The direct and indirect benefits that people obtain from ecosystems*" Beaumont et al. (2007)

"*The benefits people obtain from ecosystems*"

Millennium Assessment (2005)

but (and there is always a '*but*'!) ……..

Ecosystem Services! (new thinking)

The link between ecosystems and things that humans benefit from, not the benefits themselves

(Luisetti et al., 2010)

Sustainable and successful fundamental and final ecosystem services are required to deliver societal benefits but in order to obtain societal benefits from ecosystem services, society has to invest capital (time, money, energy).

(Atkins et al. 2011)

Fundamental and Final Services

Fundamental Services:

Associated with physico-chemical regimes which establish ecological niches.

Final Services:

Associated with the establishment of ecological communities.

Through both fundamental and final services, society secures benefits from ecosystems (i.e. societal benefits).

Delivery and Protection of Ecosystem Services & Societal Benefits

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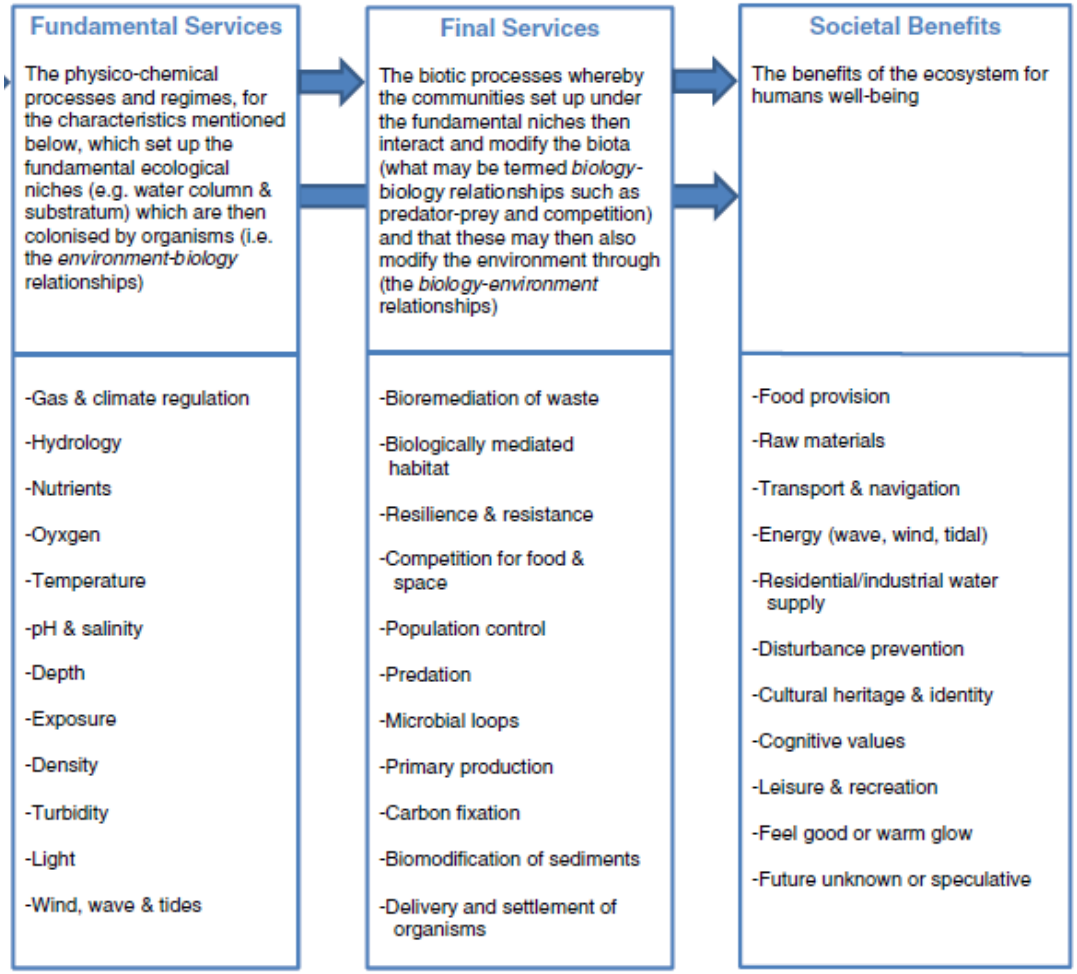
Paradigm 8: *Estuaries provide a wider variety of ecosystem services and an increased delivery of societal benefits than many other ecosystems. Hence estuaries are one of the most valuable aquatic ecosystems serving human needs but for this to occur they require functional links with the adjoining terrestrial, freshwater and marine systems.*



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Challenging paradigms in estuarine ecology and management

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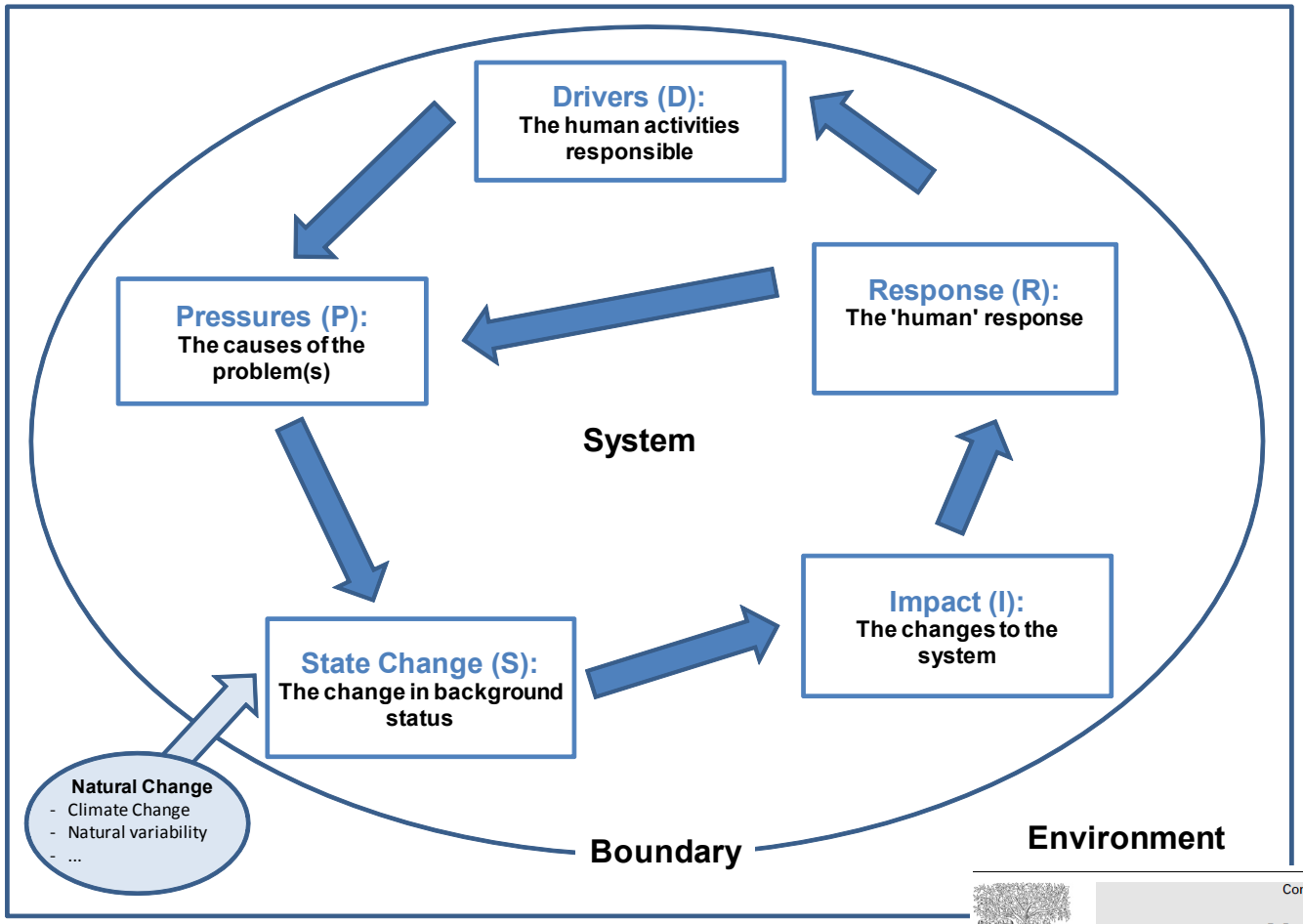
DPSIR modelling framework



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DPSIR Approach

Driving forces (human activities and economic sectors responsible for the pressures);

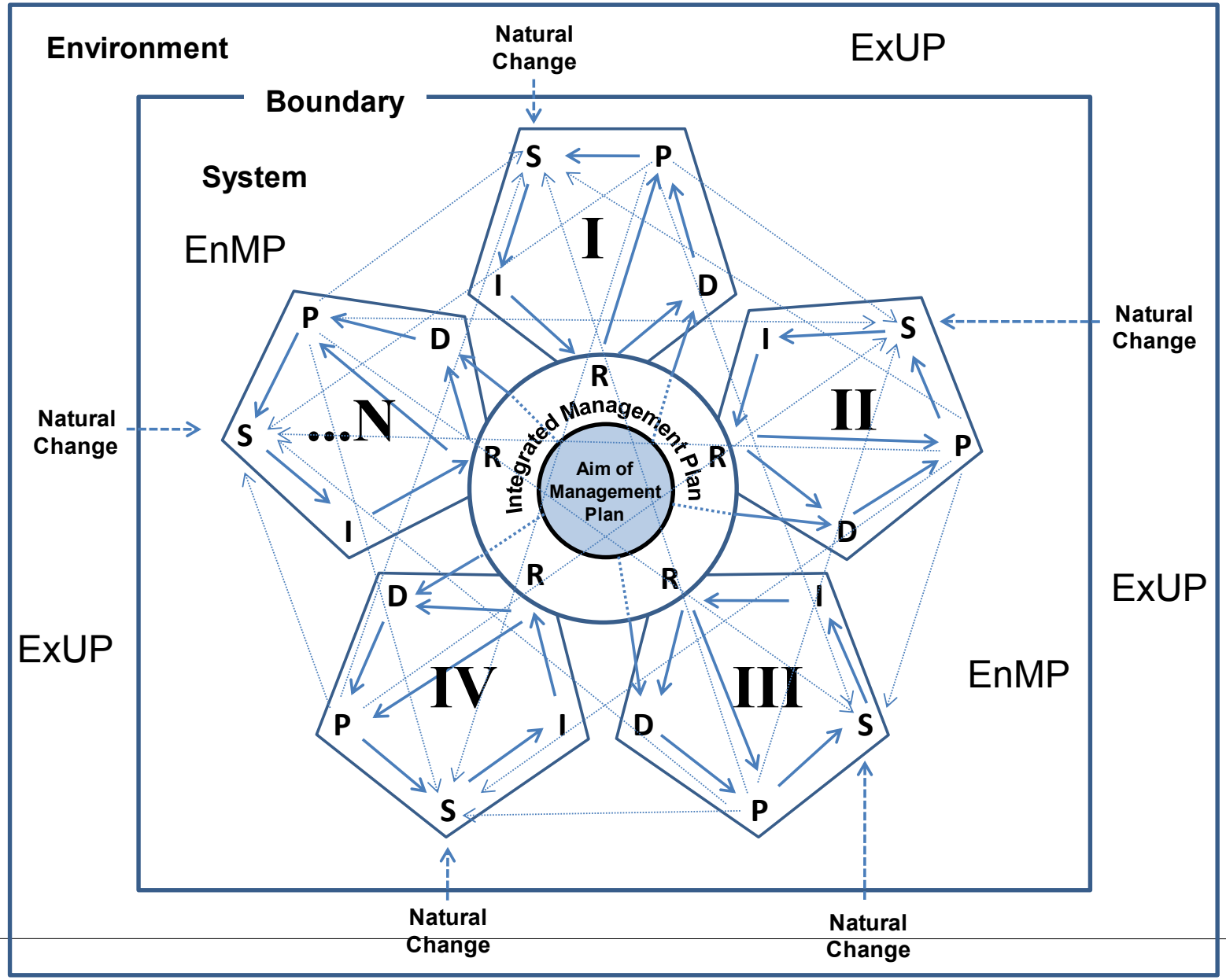
Pressures (particular stressors on the environment in the form of direct pressures such as emissions);

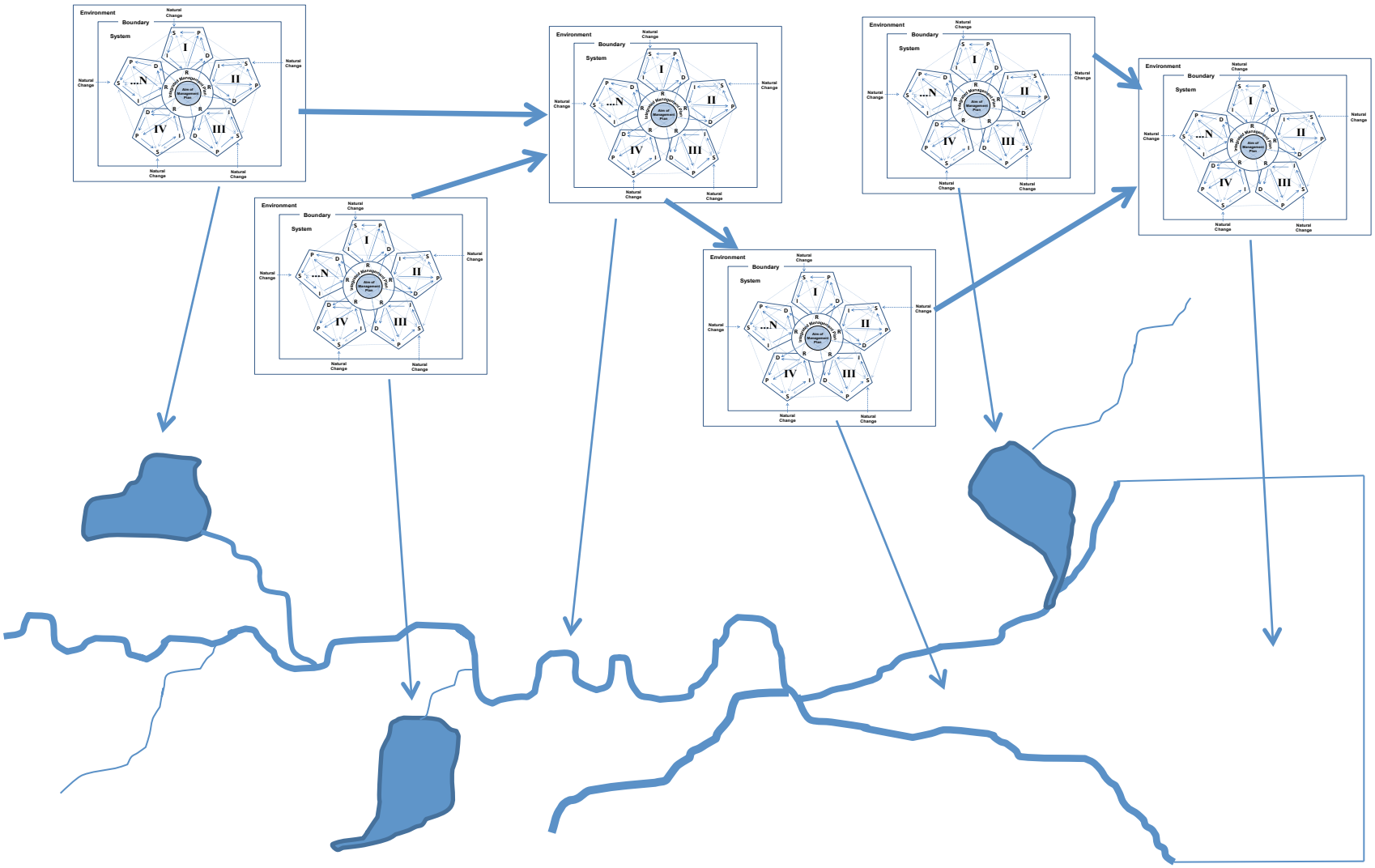
State change (environmental variables (geo/physical/ chemical/biological) which describe the characteristics and conditions of the coastal zone);

Impact (changes in the ecosystem, resources, human health);

Response (measurement of different policy options as a response to the environmental problems).

(see Elliott, 2011, Mar. Poll. Bull.)


Environment
Natural Change
ExUP
Boundary
System
EnMP
I
II
III
IV
...N
S
P
I
D
R
Integrated Management Plan
Aim of Management Plan
Natural Change
Natural Change
ExUP
ExUP
EnMP
Natural Change
Natural Change


Environment
Boundary
System
Natural Change
I
II
III
IV
...N
Aim of Management Plan
Wider Management Plan
Local Management Plan

Why Recreate/Restore/Offset?

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1. Policy
2. Obligations
3. Objectives
4. Law
5. Due diligence
6. Green credentials
7. Rectify historical losses

Voluntary offsets

Enforced offsets

Legally binding

Economic incentives

What to Recreate/Restore/Offset?

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Habitats:

1. Lagoon/subtidal/ sublittoral
2. Low/medium/high mud/ sandflat
3. Low/medium/high saline/ brackish macrophytes
4. Subtidal/intertidal seagrasses
5. Upper fw marsh/ *Phragmites*/Papyrus

Functioning:

- Ecosystem services
- Societal Benefits
- Ecological Carrying capacity
- Socio-economic carrying capacity
- Connectivity
- Feeding & nutrient dynamics

Ease of offset/restoration/recreation:

Increasing dynamics, openness, connectivity

Open marine areas

Then coastal

Then transitional waters

Then wetlands

The freshwater areas

Then terrestrial areas

Increasing ease

Where to Recreate/Restore/Offset?

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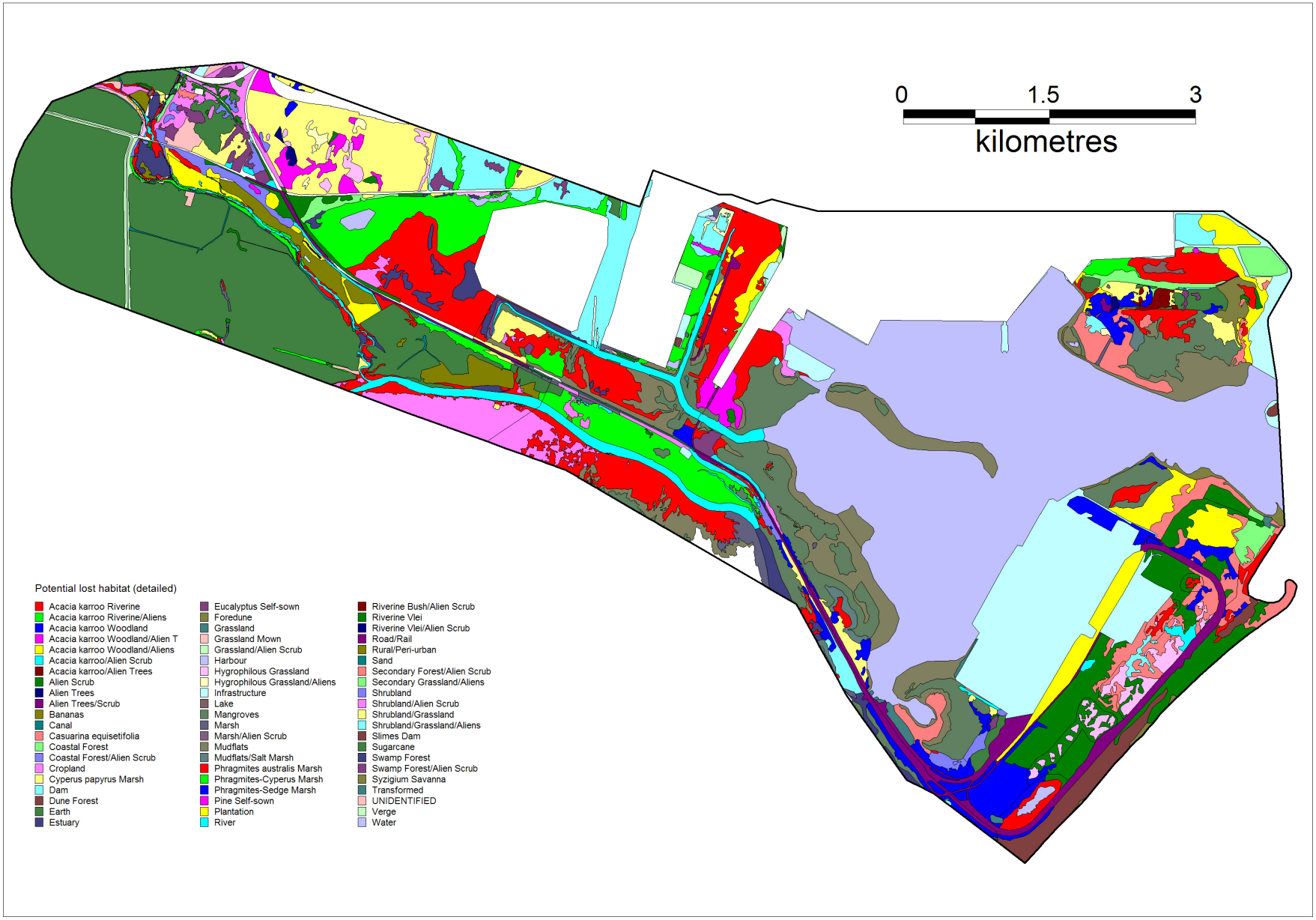
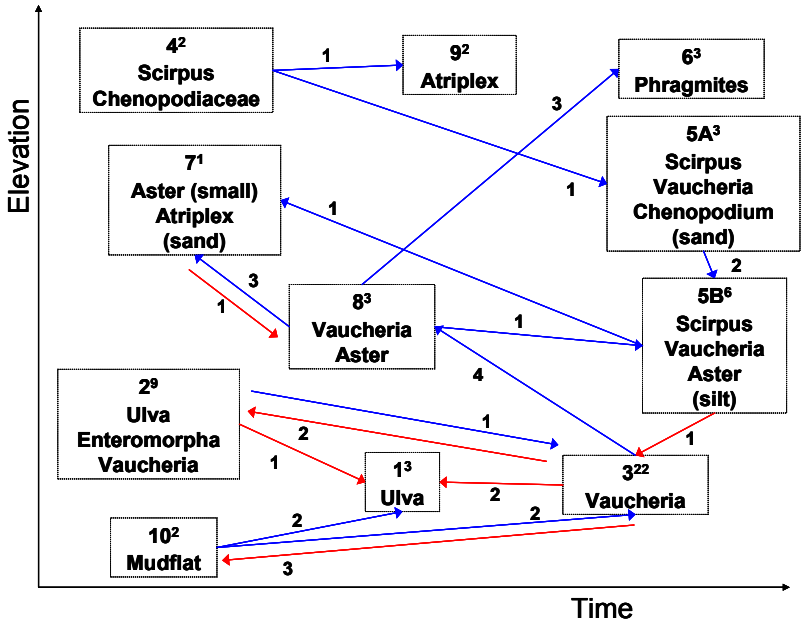
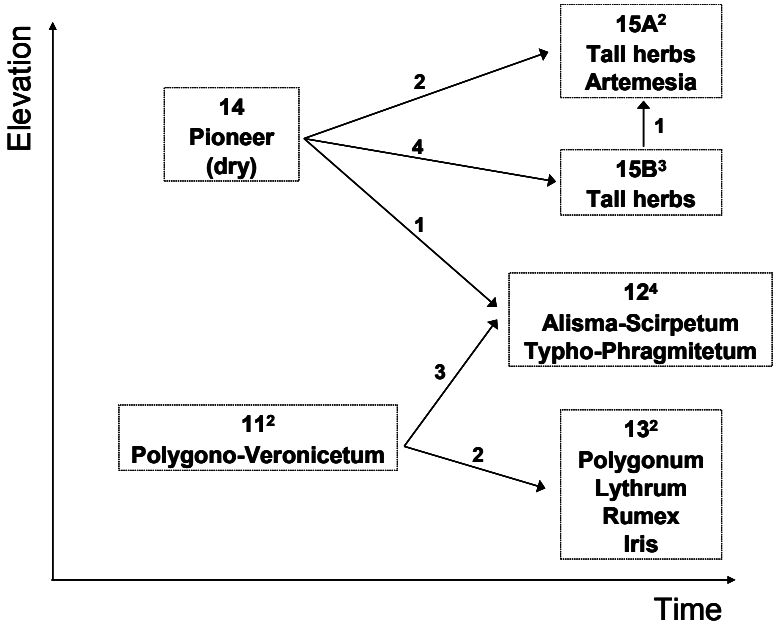
1. In situ/in site (locally)
2. Ex-situ/in site (locally)
3. Ex situ (regionally)
4. Ex situ (nationally)
5. Ex situ (biogeographic regime)


0
1.5
3
kilometres
Potential lost habitat (detailed)
Acacia karroo Riverine
Acacia karroo Riverine/Aliens
Acacia karroo Woodland
Acacia karroo Woodland/Alien T
Acacia karroo Woodland/Aliens
Acacia karroo/Alien Scrub
Acacia karroo/Alien Trees
Alien Scrub
Alien Trees
Alien Trees/Scrub
Bananas
Canal
Casuarina equisetifolia
Coastal Forest
Coastal Forest/Alien Scrub
Cropland
Cyperus papyrus Marsh
Dam
Dune Forest
Earth
Estuary
Eucalyptus Self-sown
Foredune
Grassland
Grassland Mown
Grassland/Alien Scrub
Harbour
Hygrophilous Grassland
Hygrophilous Grassland/Aliens
Infrastructure
Lake
Mangroves
Marsh
Marsh/Alien Scrub
Mudflats
Mudflats/Salt Marsh
Phragmites australis Marsh
Phragmites-Cyperus Marsh
Phragmites-Sedge Marsh
Pine Self-sown
Plantation
River
Riverine Bush/Alien Scrub
Riverine Vlei
Riverine Vlei/Alien Scrub
Road/Rail
Rural/Peri-urban
Sand
Secondary Forest/Alien Scrub
Secondary Grassland/Aliens
Shrubland
Shrubland/Alien Scrub
Shrubland/Grassland
Shrubland/Grassland/Aliens
Slimes Dam
Sugarcane
Swamp Forest
Swamp Forest/Alien Scrub
Syzigium Savanna
Transformed
UNIDENTIFIED
Verge
Water



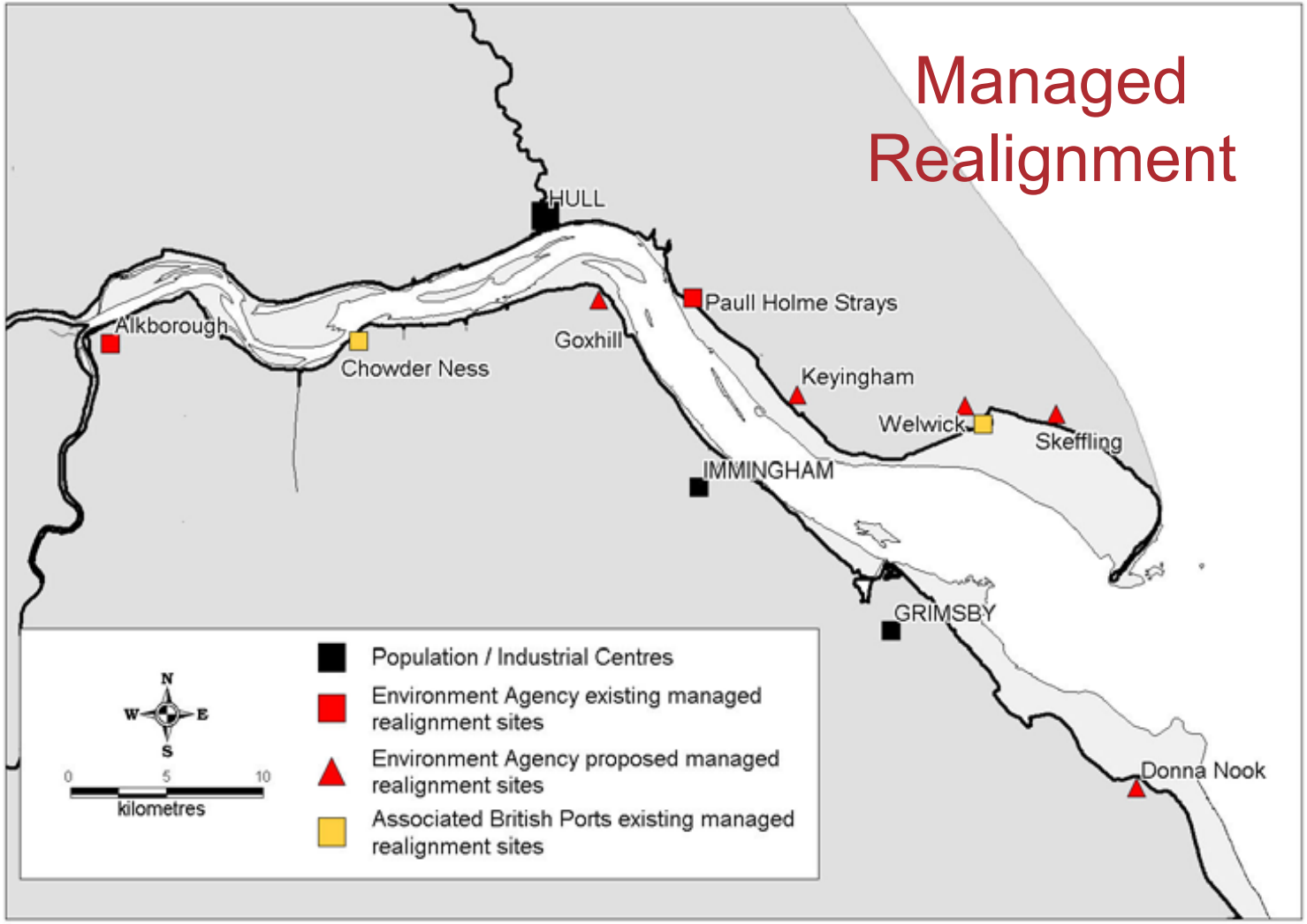


Vegetation succession in brackish (a) and fresh (b) tidal wetland restoration sites in the Zeeschelde.

Mud/sandflat productivity:

- Mid-tide more productive than upper and lower flats
- Suitable hydrodynamic regime produces suitable substratum
- Hence an area could be engineered to be more productive than an area being lost

Managed Realignment



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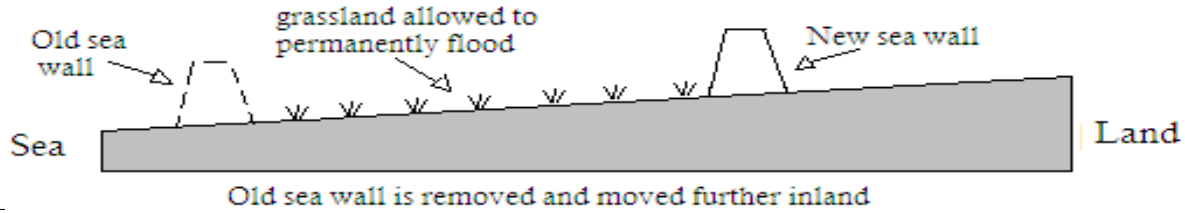
'triple wins' - for:

- **society** (safety from Relative SLR and Surges),
- **economy** (costs of protection) and
- **ecology** (habitat restoration/ creation

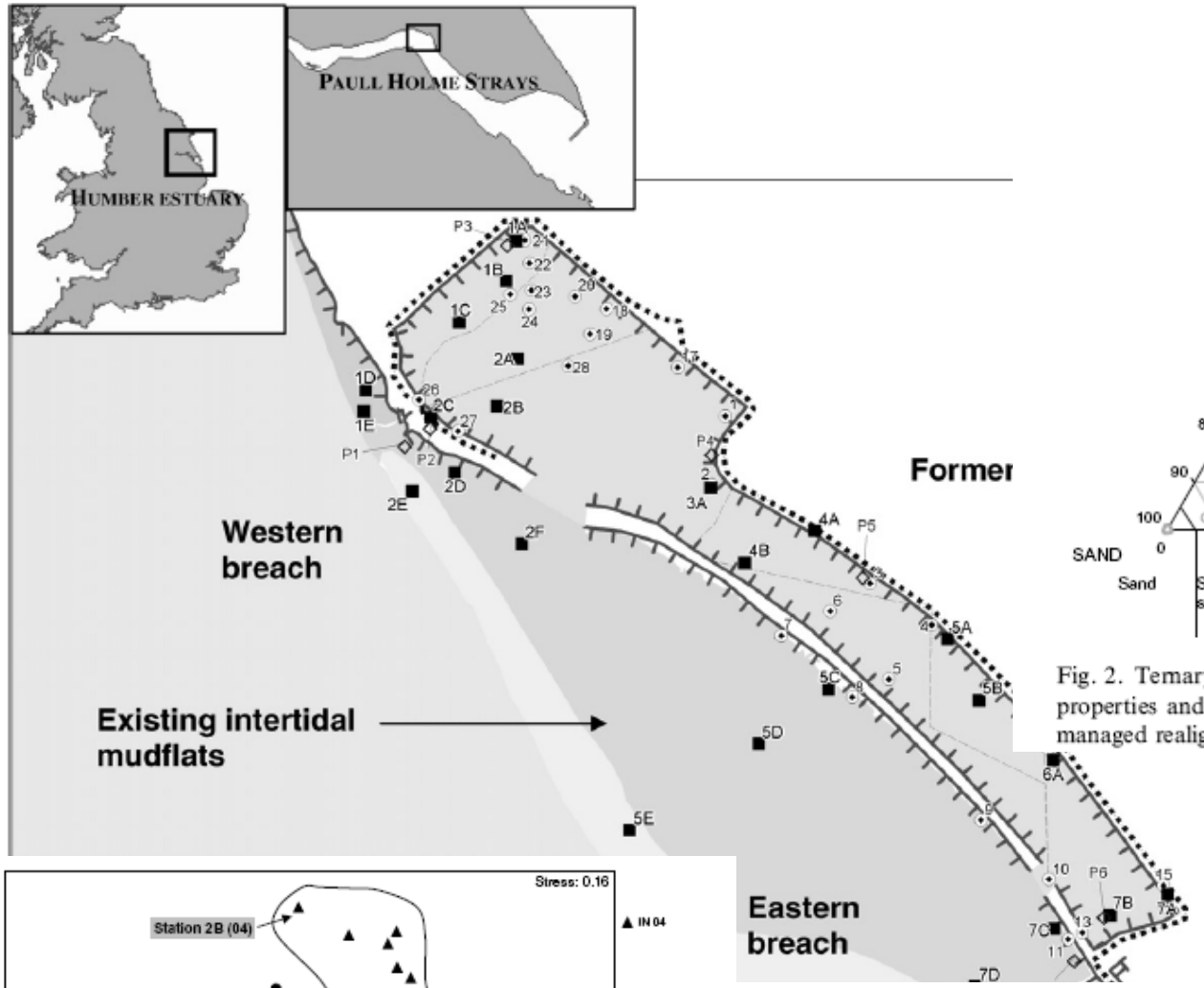


Alkborough

Chowder
Ness

Paull Holme
Strays

Welwick



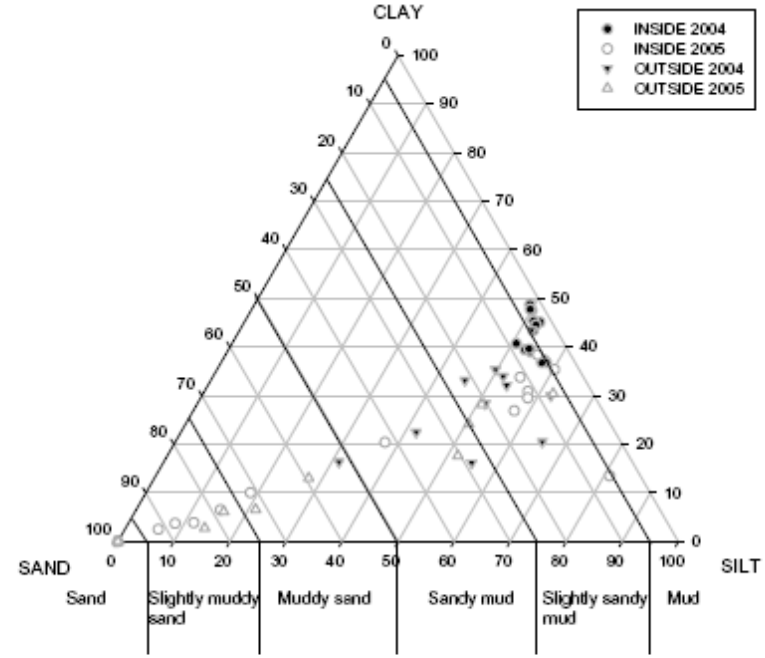


Fig. 2. Ternary diagram (Flemming, 2000) showing changes in sediment properties and textural classification at stations within and outside the managed realignment site between 2004 and 2005.

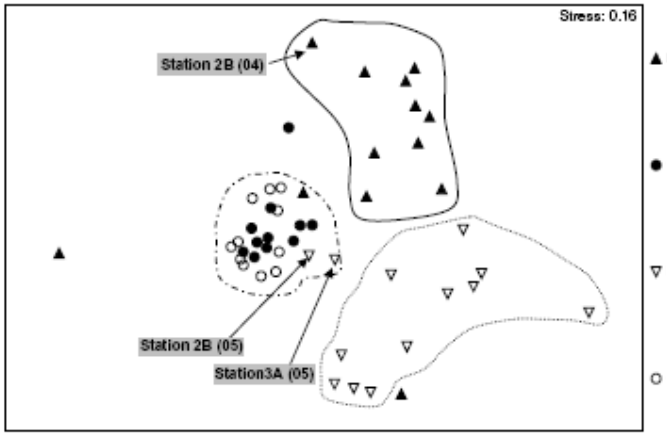


Fig. 8. MDS plot showing spatial and temporal differences betwee communities inside and outside of the managed realignment site.

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Marine Pollution Bulletin 55 (2007) 564–578

MARINE POLLUTION BULLETIN

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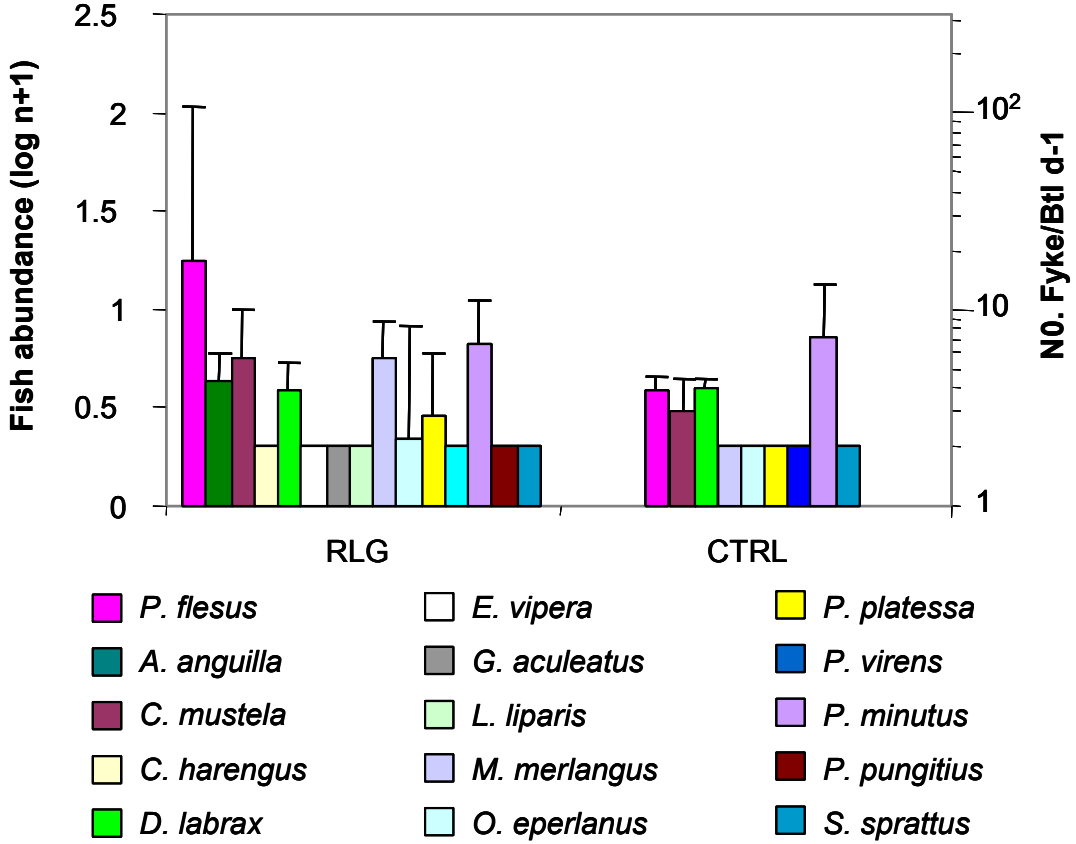
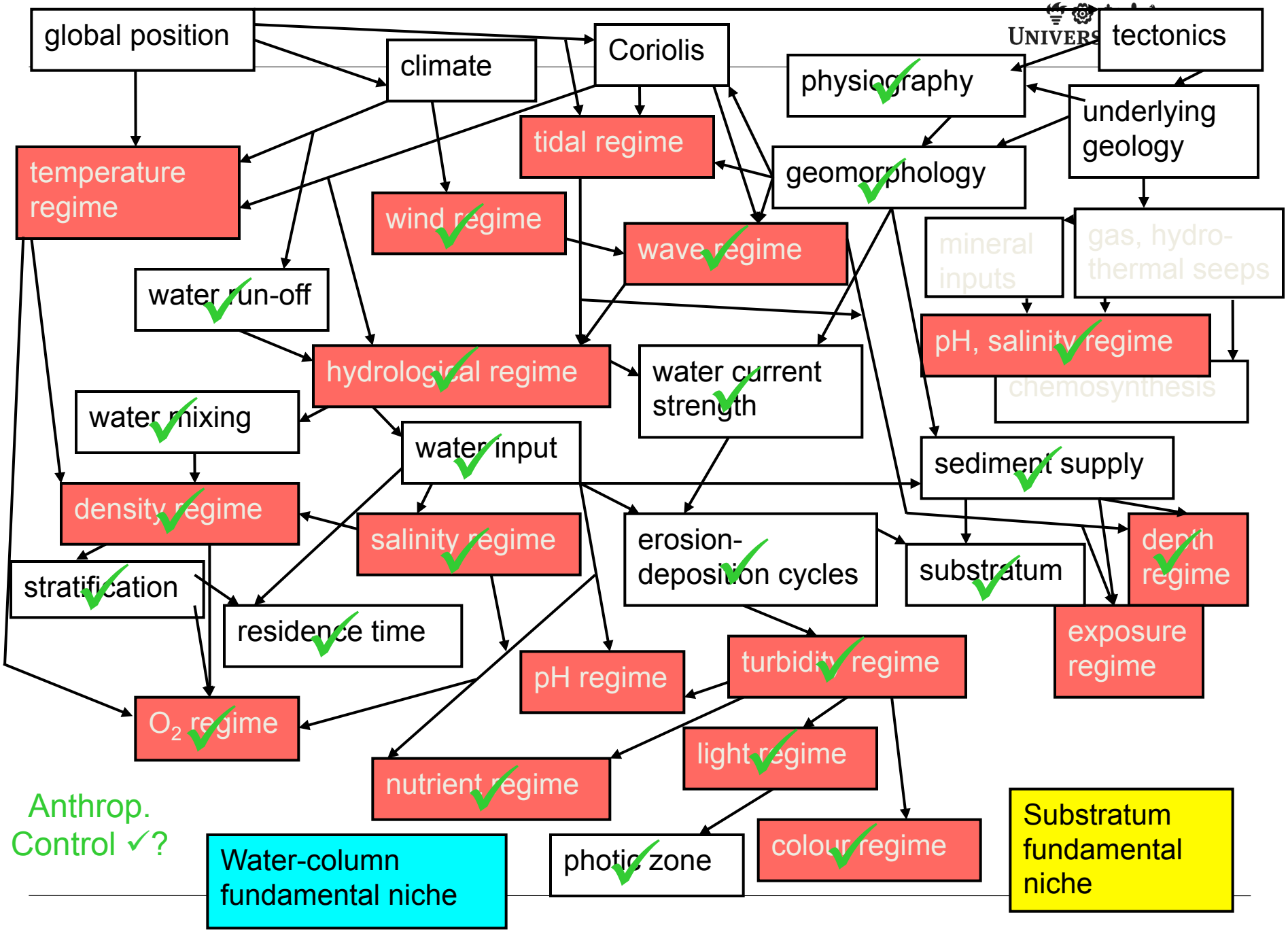
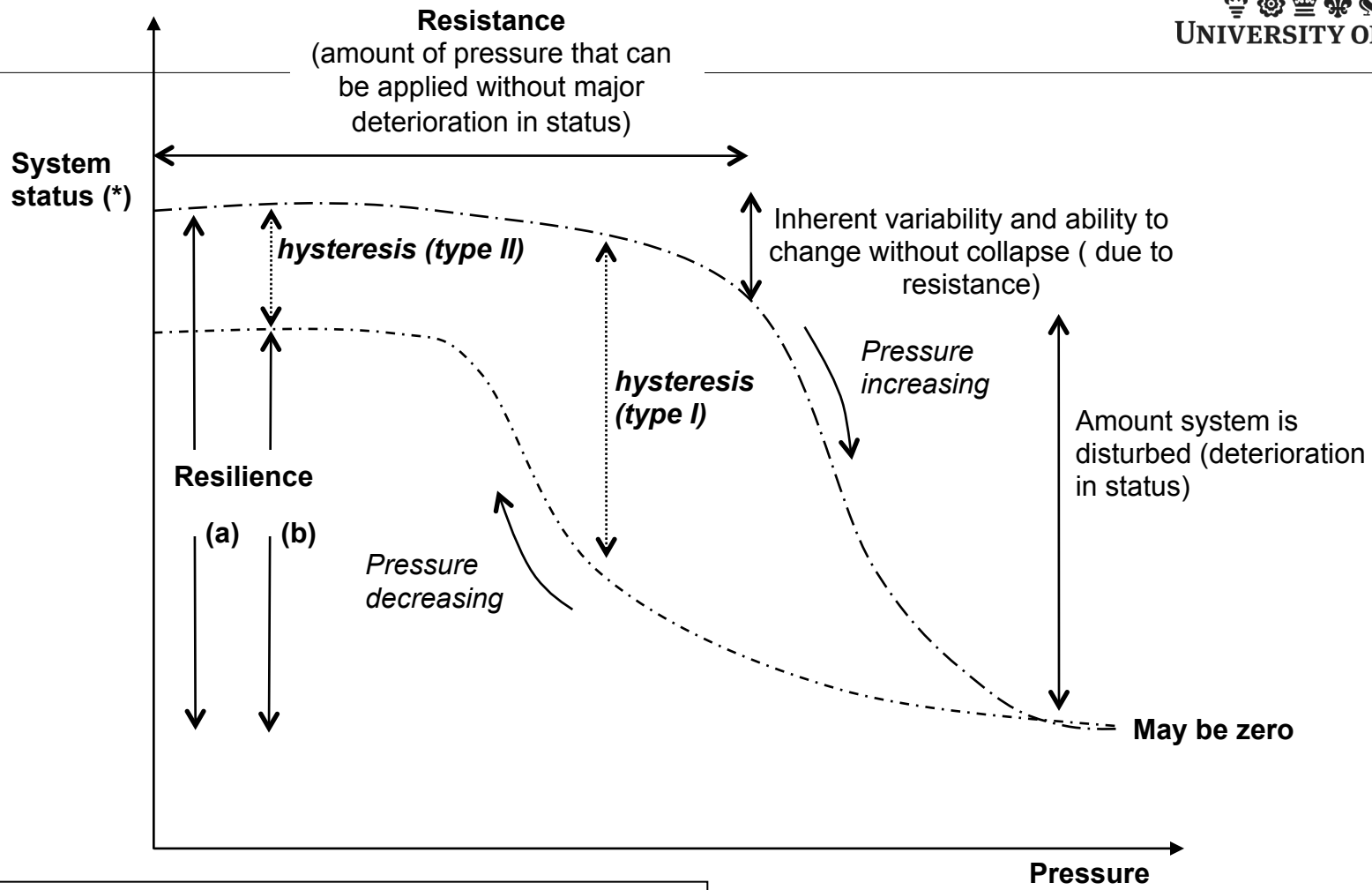
Physical and biological development of a newly breached managed realignment site, Humber estuary, UK

K. Mazik *, J.E. Smith, A. Leighton, M. Elliott



Fish abundance inside Paull Holme realignment site (RLG) and at the control stations (CTRL) outside the site.


global position
climate
Coriolis
tectonics
physiography
underlying geology
tidal regime
temperature regime
geomorphology
wind regime
wave regime
mineral inputs
gas, hydro-thermal seeps
water run-off
pH, salinity regime
hydrological regime
water current strength
chemosynthesis
water mixing
water input
sediment supply
density regime
salinity regime
erosion-deposition cycles
substratum
depth regime
stratification
residence time
exposure regime
pH regime
turbidity regime
O_2 regime
light regime
nutrient regime
colour regime
photic zone
Anthrop. Control ✓?
Water-column fundamental niche
Substratum fundamental niche



Key:
(*) relative to a defined metric of structure or function
(a) total resilience
(b) partial resilience

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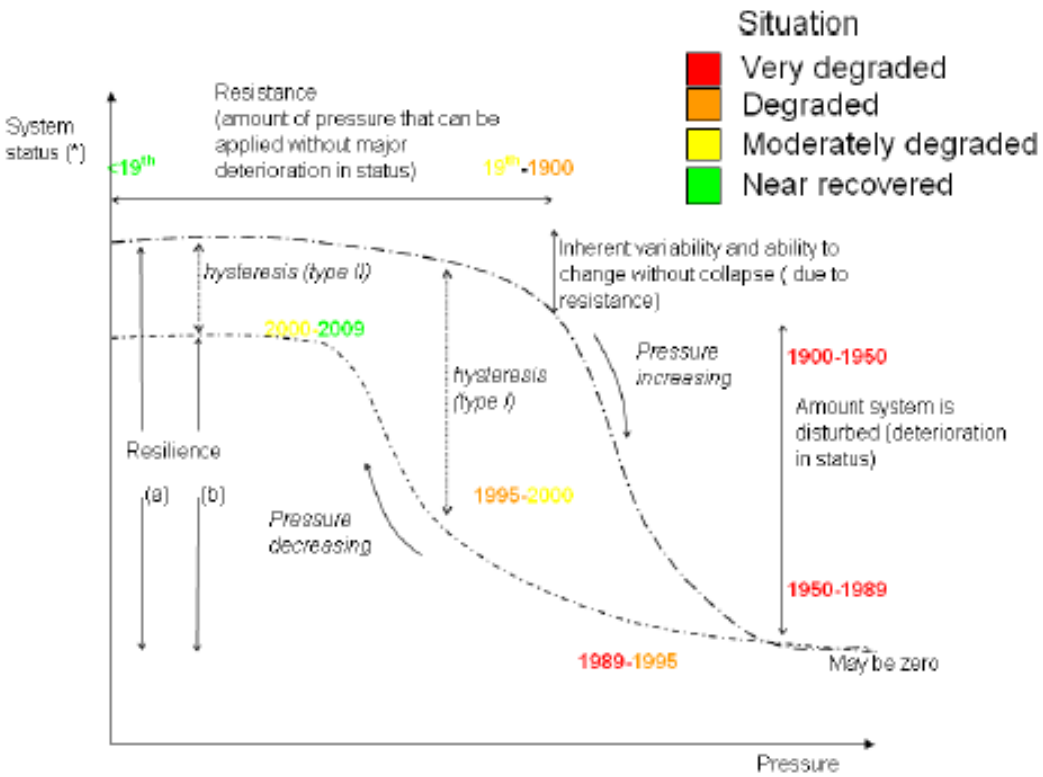
ESTUARINE COASTAL AND SHELF SCIENCE
www.elsevier.com/locate/ecss

Estuarine, coastal and marine ecosystem restoration: Confusing management and science – A revision of concepts

Michael Elliott [a,*], Daryl Burdon [a], Krystal L. Hemingway [a], Sabine E. Apitz [b]



Estuaries and Coasts (2010) 33:1249–1260
DOI 10.1007/s12237-010-9347-5

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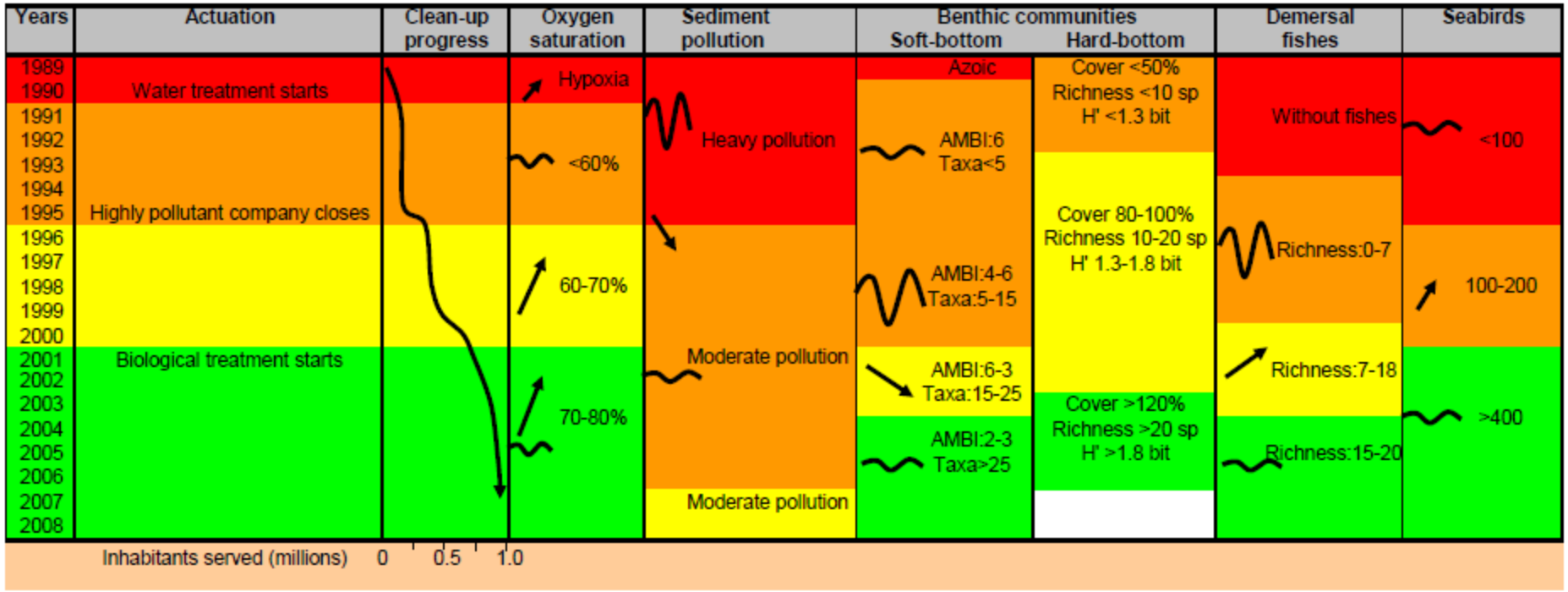
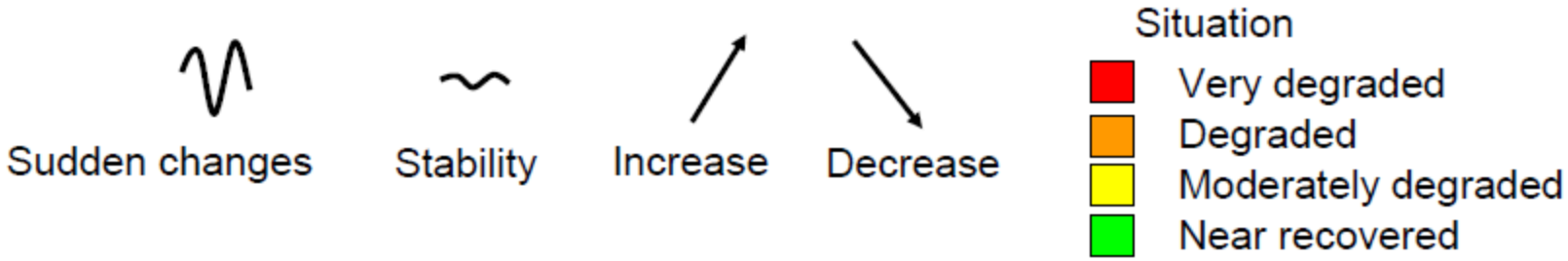
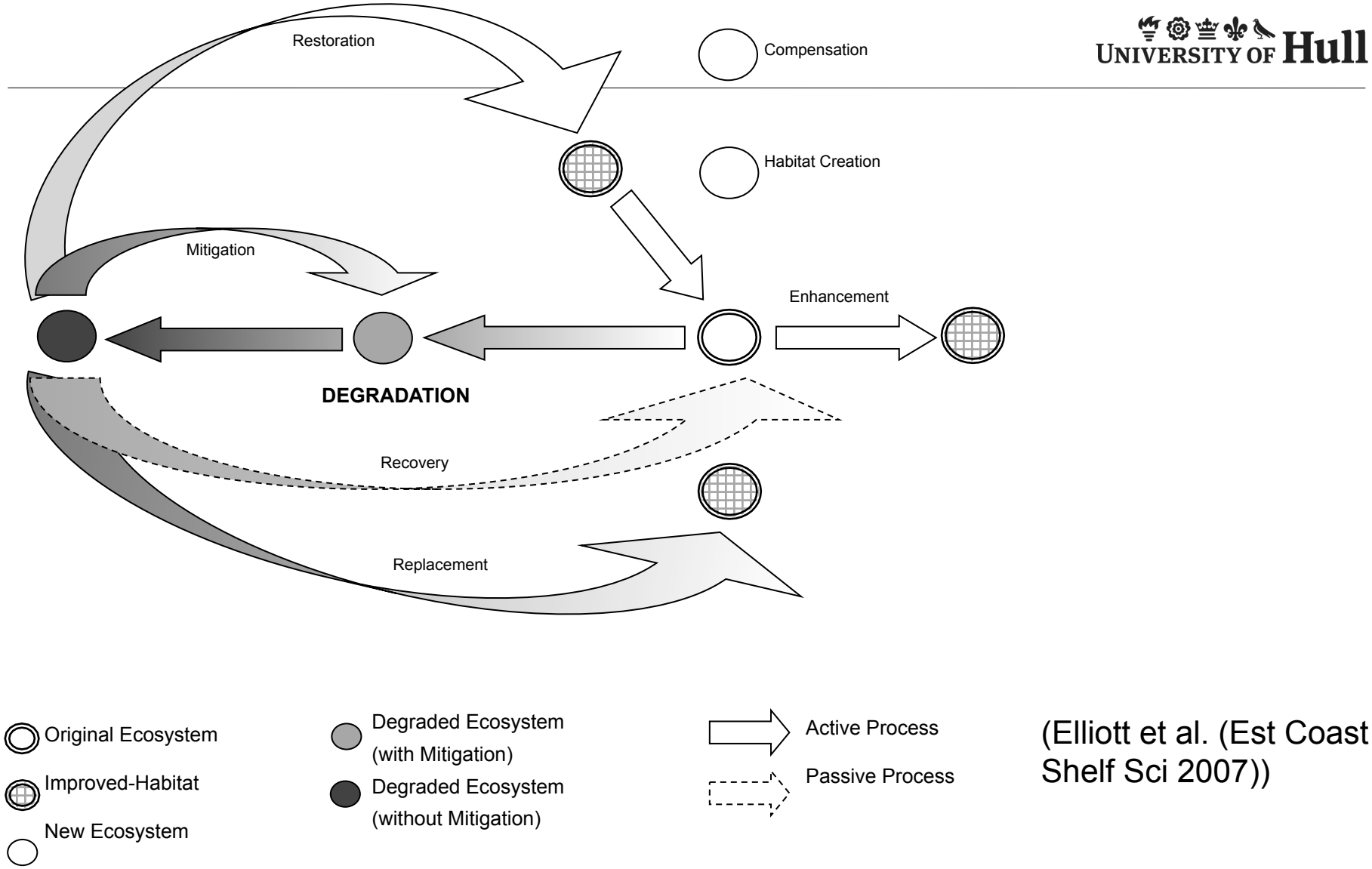
Medium- and Long-term Recovery of Estuarine and Coastal Ecosystems: Patterns, Rates and Restoration Effectiveness

Ángel Borja · Daniel M. Dauer · Michael Elliott · Charles A. Simenstad


Years
Actuation
Clean-up progress
Oxygen saturation
Sediment pollution
Benthic communities
Soft-bottom
Hard-bottom
Demersal fishes
Seabirds
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
Water treatment starts
Highly pollutant company closes
Biological treatment starts
Hypoxia
<60%
60-70%
70-80%
Heavy pollution
Moderate pollution
Moderate pollution
Azoic
AMBI:6
Taxa<5
AMBI:4-6
Taxa:5-15
AMBI:6-3
Taxa:15-25
AMBI:2-3
Taxa>25
Cover <50%
Richness <10 sp
H' <1.3 bit
Cover 80-100%
Richness 10-20 sp
H' 1.3-1.8 bit
Cover >120%
Richness >20 sp
H' >1.8 bit
Without fishes
Richness:0-7
Richness:7-18
Richness:15-20
<100
100-200
>400
Inhabitants served (millions)
0
0.5
1.0


Sudden changes
Stability
Increase
Decrease
Situation
Very degraded
Degraded
Moderately degraded
Near recovered

Approximate distance from estuary mouth (km)
80
70
60
50
40
30
Depth
Salinity



(Elliott et al. (Est Coast Shelf Sci 2007))

Restore/Recreate what?

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Shape + connectivity

- Hydrodynamics
- Ecotones
- Supply of water
- Supply of organic matter
- Supply of recruiting organisms

Surface area

- Biogeochemical/ storage area, sequestration (reactive surface)
- productive surface (feeding area, nursery area)
- resistance to anthropogenic change (size, water storage, RSLR)

Habitat complexity (ecotones)

- refuge area/nursery areas
-Productive surface
-Resilience
- 'Spillover' - nursery delivery to external fishery/populations

Services and benefits from MR sites

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Fundamental Services

- Gas + climate regulation
- Physical habitat
- Nutrient cycling
- Biogeochemical cycles/reactive surfaces
- Sequestration

Final Services

- Bioremediation of waste
- Fish connectivity (diadromous fishes)
- Biologically mediated habitat
- Resilience and resistance

Societal Benefits

- Food Provision
- Disturbance prevention
- Cultural heritage and identity
- Cognitive values
- Leisure and recreation
- Feel good/ warm glow
- Future unknown or speculative benefits

Valuation

- What are we valuing?

→ Non- market goods.

- Why?

→ Can be more readily understood by stakeholders/ policy makers.

- How?

→ Economically and ecologically.

Economic Methods of Valuation

- Revealed Preference Methods.

→ Hedonic pricing and Travel Cost Method.

- Stated Preference Methods.

→ Contingent Valuation and Choice Experiments.

Ecological Methods of Valuation

- Rarity/Uniqueness/Endemism
- Fragility
- Occupation/Connectivity
- Abundance of species/habitat mix/cover
- Representivity/Replication

	Maintenance	No Maintenance
Site characteristics	• All areas will be protected from flooding to the current standard. • All leisure and recreation activities currently available will remain so. • Natural beauty will continue to develop at current rate, including animal and plant species. • Research and education opportunities remain unchanged. • The site will be available for future generations to use.	• Possible less effective flood protection. • May decrease available leisure and recreation activities. • Possible decrease in natural beauty and number of bird and animal species. • Less education and research opportunities. • Site may not be available for future generations to enjoy.
Annual increase in council tax	£10 (£1 per month)	£0

TraC waters Restoration/Creation/Recreation

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- sustainable solutions - 7 *Tenets* for Sustainable Management:

Environmentally/ecologically sustainable

Create habitats for refuge, feeding, organic delivery, for maintenance of migration routes

Economically viable

Cost-effective solutions, dyke building, resource exploitation, mitigation not prohibitive, compensation, cumulative benefits

Technologically feasible

Techniques for habitat creation, water quality barrier alleviation, pollution remediation, removal of wastes, fish and shellfish processing; BAT; co-location

Socially desirable/tolerable

demand for fish and shellfish, quality appropriate, tolerance of aesthetic aspects, wise use of biological and physical resources

Legislatively permissible

global agreements (e.g. IMO, UNCLOS), European, national, regional legislation; EU Directives - HSD, WFD and MFD, Marine Strategy; Maritime Strategy; adequacy of enabling legislation and teeth in Directives; management *vs.* ownership

Administratively achievable

HELCOM, OSPAR, EU, EEA; need for all, overlapping regimes; particularly sensitive sea areas; out to 200 nm; production of QSR and spatial planning bodies; Regional Fisheries Councils; role of national and international environment and conservation bodies, links with fisheries bodies

Politically expedient

Acceptance of wetland creation (agricultural area loss), promotion of sustainable fish and shellfish, cultural benefits; ‘triple wins’ for society, economy and ecology

Governance as a driver:

for restoration/recreation/creation/recovery/protection

- the holistic marine assessment directives – the Marine Strategy Framework Directive, the Water Framework Directive, the Wild Birds Directive and the Habitats and Species Directive and the ICZM Recommendation;

- the sectoral impact assessment directives – The Environmental Impact Assessment Directive, Appropriate Assessments of the HSD, the Strategic Environmental Assessment Directive, the Bathing Beaches Directive, Sustainability Appraisal;

- the industrial control instruments – IMO ballast water controls, the Integrated Pollution Prevention and Control Directive, the Dangerous Substances Directive and its successors, the Environmental Standards Directive, etc.;

Hence:

- Delivering sustainability (as the protection of ecosystem services without compromising the delivery of societal benefits) relies on a coordinated and harmonised approach to marine governance.

- The regional, national, European and international legislative instruments all require to be harmonised and implemented by a coordinated administration by the designated competent authorities.

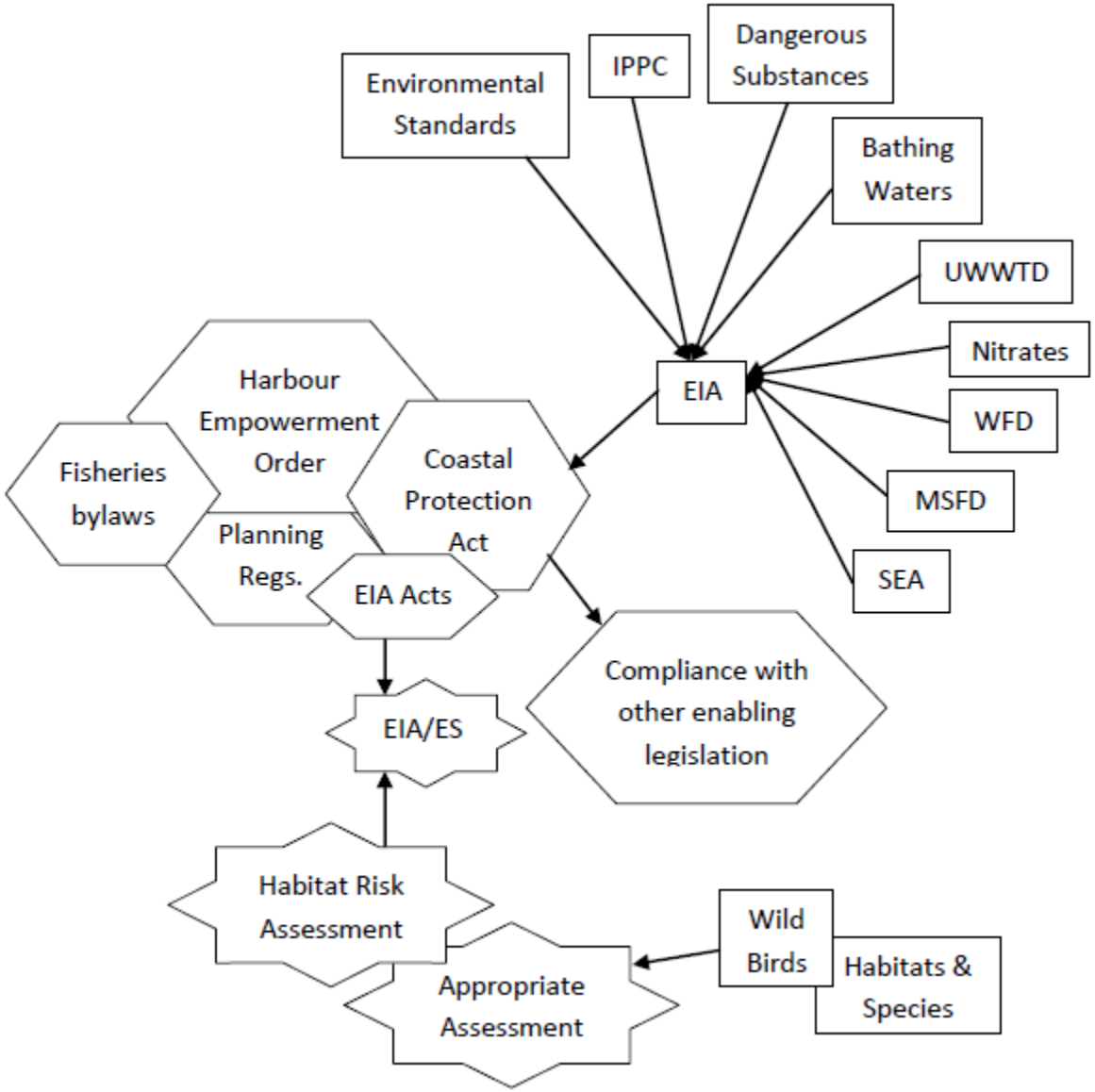
- The geographical boundaries of the various pieces of legislation and agreements similarly need to be harmonised to allow compatible implementation.

- Finally, the bodies charged with implementing these all are required to work in a coordinated manner to ensure the legislation and agreements are enacted.

But, (*and there is always a 'but' …….*)

Discussion Points:

- industries are confronted by a myriad of authorities leading to delays to development;
- there are different monitoring regimes and even the terms differ between bodies and different initiatives – for surveillance, condition, compliance, investigative and diagnostic monitoring, these many be conflicting or overlapping or even non cost-effective;



Discussion Points:

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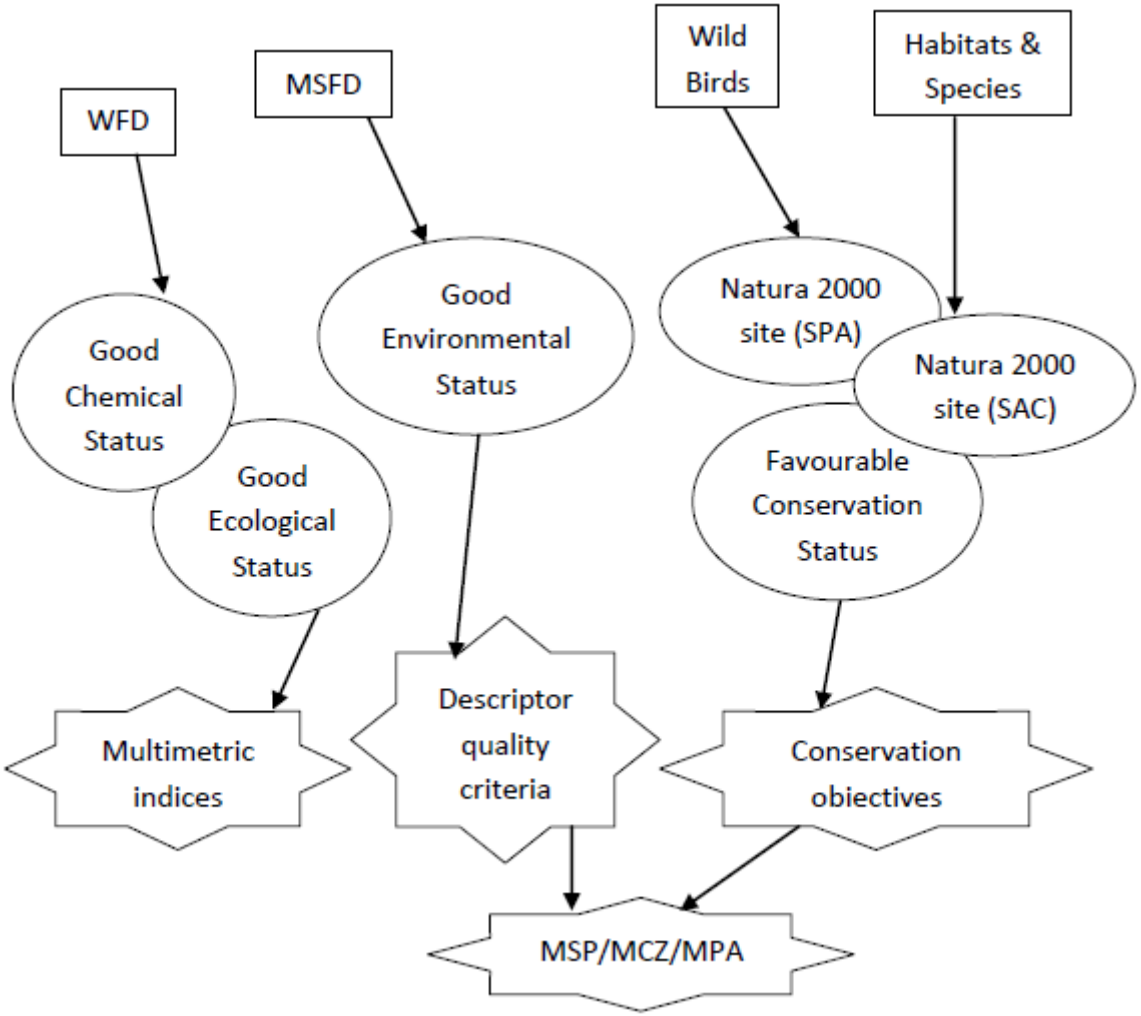
- There are different measurement and management regimes, and regimes which are not synchronised with regard to reporting, e.g., different Directives give us Favourable Conservation Status, Good Ecological Status (GES) and Good Environmental Status (GES!) ....

- ... all with (deliberately?) different definitions which may mean slightly different things in different countries and to different stakeholders; ....

- .... hence for the directives to be harmonised then the definitions of the best desirable state also need to be synonymous

Does GES (GEnS) = GES (GEcS) = FCS?

Do Descriptors = BQE = ConObs?



No!

Discussion Points:

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- different bodies are responsible for similar controls, and the terms are used and interpreted differently by different bodies despite considering the same aspects;
- the objectives for each statute and employed by each body are not harmonised and sometimes not clear or even defined openly (‘*if you don’t know where you are going then any road will take you there*’!);

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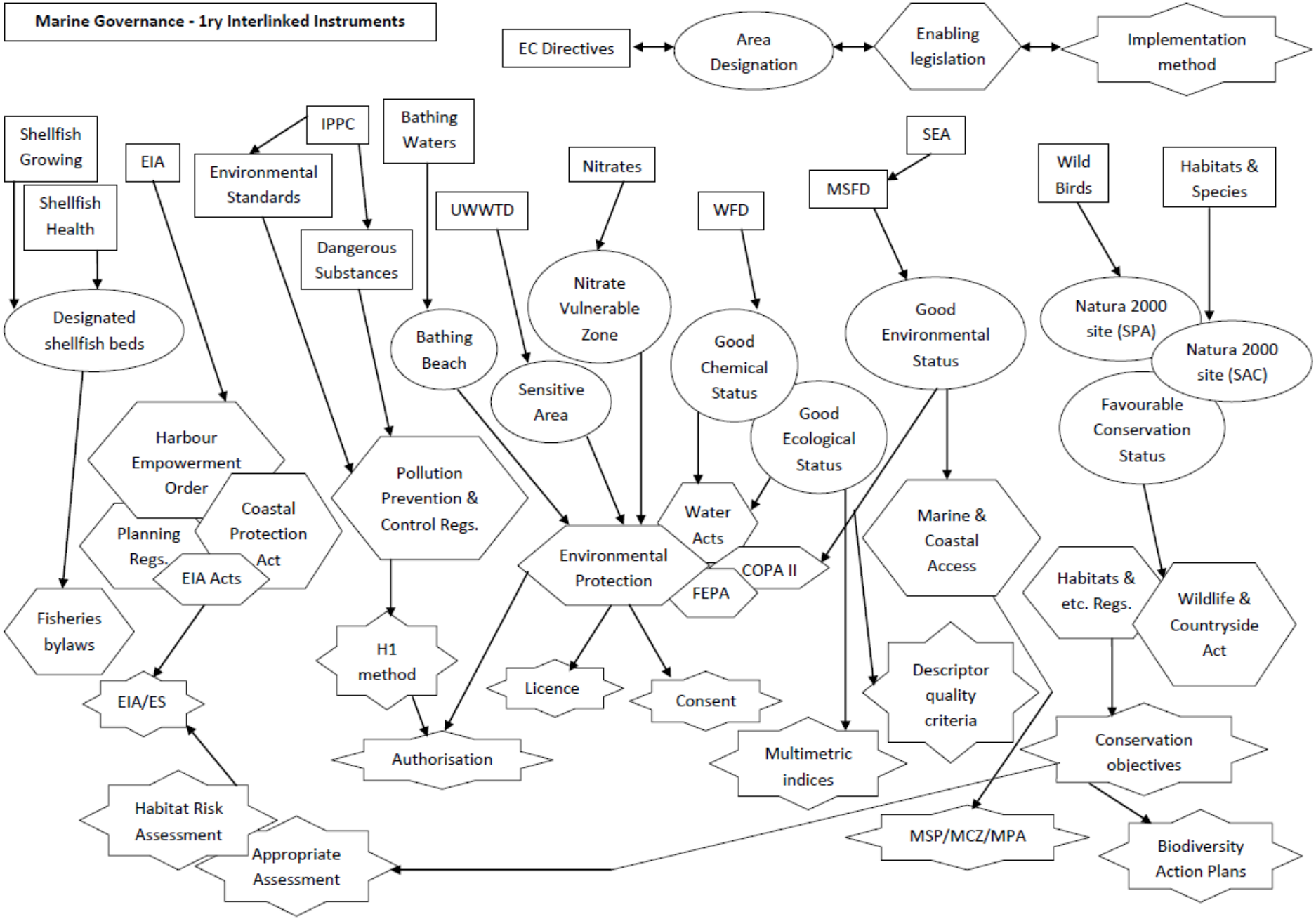
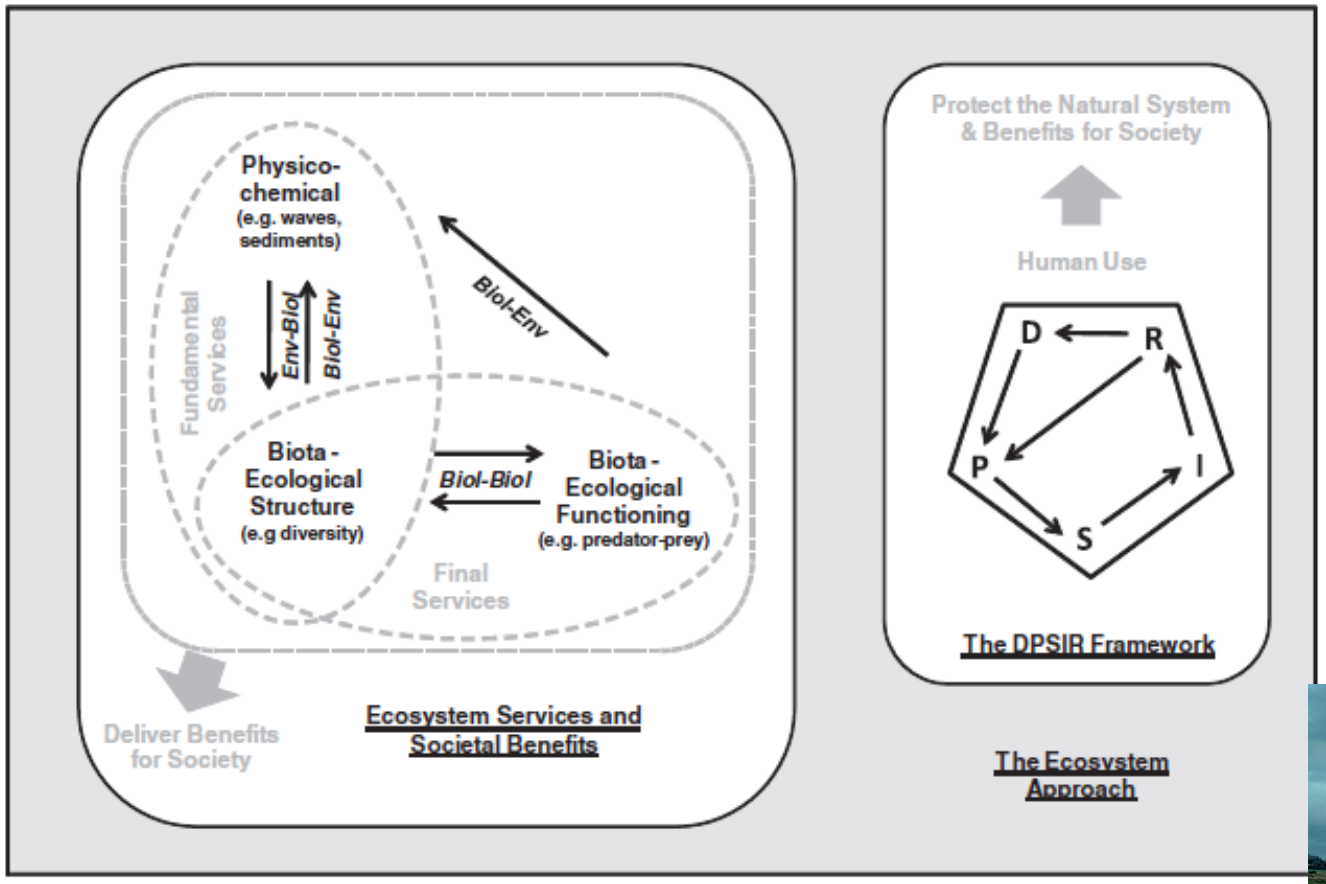
Viewpoint

Marine management – Towards an integrated implementation of the European Marine Strategy Framework and the Water Framework Directives

Ángel Borja [a,*], Mike Elliott [b], Jacob Carstensen [c], Anna-Stiina Heiskanen [d], Wouter van de Bund [e]


Marine Governance - 1ry Interlinked Instruments
EC Directives
Area Designation
Enabling legislation
Implementation method
Shellfish Growing
Shellfish Health
EIA
Environmental Standards
IPPC
Bathing Waters
Nitrates
UWWTD
WFD
MSFD
SEA
Wild Birds
Habitats & Species
Dangerous Substances
Designated shellfish beds
Bathing Beach
Nitrate Vulnerable Zone
Sensitive Area
Good Chemical Status
Good Ecological Status
Good Environmental Status
Natura 2000 site (SPA)
Natura 2000 site (SAC)
Favourable Conservation Status
Harbour Empowerment Order
Planning Regs.
Coastal Protection Act
EIA Acts
Pollution Prevention & Control Regs.
Environmental Protection
Water Acts
COPA II
FEPA
Marine & Coastal Access
Habitats & etc. Regs.
Wildlife & Countryside Act
Fisheries bylaws
H1 method
Licence
Consent
Descriptor quality criteria
EIA/ES
Authorisation
Multimetric indices
Conservation objectives
Habitat Risk Assessment
Appropriate Assessment
MSP/MCZ/MPA
Biodiversity Action Plans



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Viewpoint

Management of the marine environment: Integrating ecosystem services and societal benefits with the DPSIR framework in a systems approach

Jonathan P. Atkins [a,*], Daryl Burdon [b], Mike Elliott [b], Amanda J. Gregory [c]

Main Points for TraC waters: Restoration/Re Creation/Protection:

- From ExUP and EnMP using The Ecosystem Approach to achieve ecological and socio-economic carrying capacity;
- To protect and enhance ecosystem services and deliver societal benefits;
- To achieve and manage ecological and socio-economic connectivity via a nested DPSIR approach;
- To use ecological and economic valuation for communication and management decisions:
- Within a sustainable management framework (7-tenets, using governance 'as a servant not a master').

Mike.Elliott@hull.ac.uk

(Acknowledgements (and apologies) to all from whom I have borrowed/stolen ideas/data etc.!)

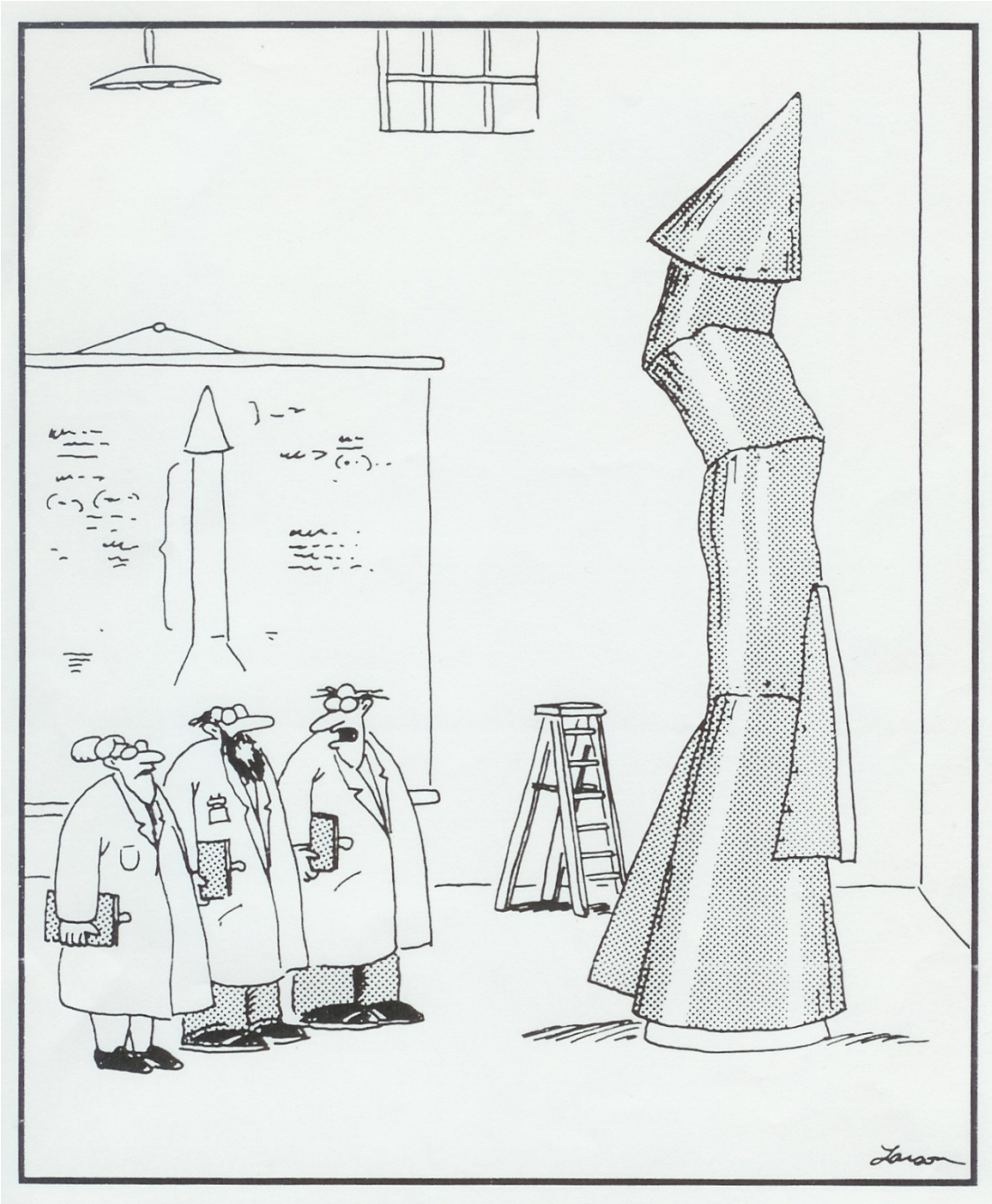
Interreg North Sea Region

HARBASINS

TIDE Tidal River Development

WISER

University of Hull
Institute of Estuarine and Coastal Studies



Either:

‘it’s not exactly rocket science’

Or:

“It’s time we face reality my friends ….. We’re not exactly rocket scientists.”

But (and there is always a’but’!):

- be optimistic …..