



RHODES UNIVERSITY
Where leaders learn

EAF: common sense as a concept

Kevern Cochrane

Dept of Ichthyology and Fisheries Science

Rhodes University



Definition

(FAO, 2003)



- An Ecosystem Approach to Fisheries strives
- to balance diverse societal objectives,
 - by taking account of the knowledge and uncertainties about biotic, abiotic and human components of ecosystems and their interactions
 - and applying an integrated approach to fisheries
 - within ecologically meaningful boundaries.



Definition

(FAO, 2003)



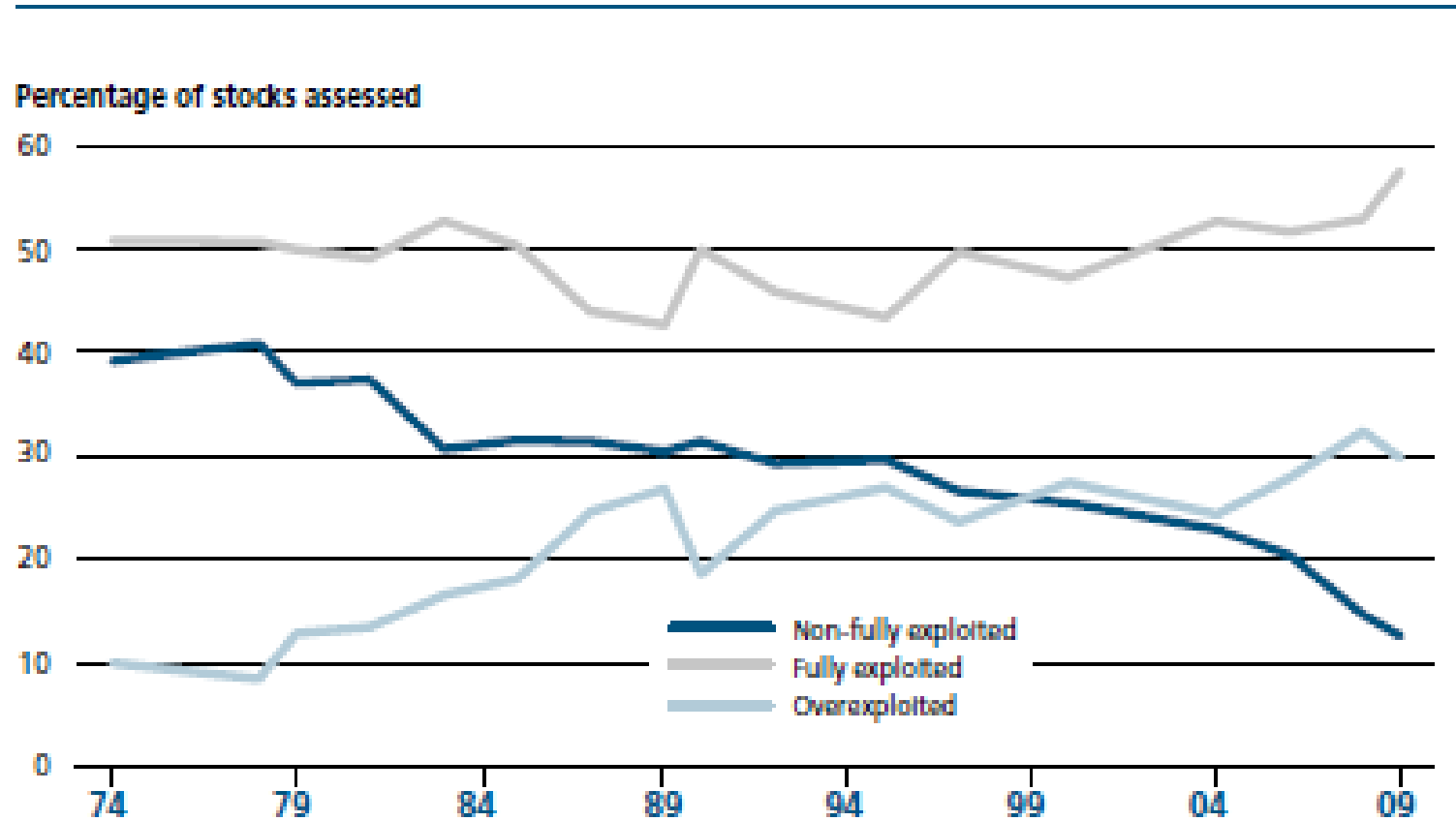
- An Ecosystem Approach to Fisheries strives
- to balance diverse societal objectives,
 - by taking account of the knowledge and uncertainties about biotic, abiotic and human components of ecosystems and their interactions
 - and applying an integrated approach to fisheries
 - within ecologically meaningful boundaries.

All roads lead to ~~Rome~~ EAF



A key driver: estimated status of world stocks (FAO, SOFIA 2012)

Global trends in the state of world marine fish stocks since 1974



Concept development. Why EAF?

- Increasing awareness of the importance of the interactions among fishery resources and between fishery resources and the ecosystem
- Concerns over status of target and associated fish stocks and ecosystems
- Recognition of a wide range of societal interests in marine ecosystems
- Advances in science (environmental effects on fishery resources and effects of fishing on non-target species and habitats, food-chain effects and biodiversity)



Kruger National Park Habitat and Vegetation

- Sandveld - predominantly sandy
- Wooded savanna on shale
- Mopane-dominated woodland on mixed soils
- Open savanna grassland with stunted mopane
- Mopane-dominated woodlands on granite
- Lebombo - low, arid rhyolite hills
- Mixed woodland with sweet grazing
- Olifants rugged veld
- Mixed thorn and marula woodlands on granite
- Open savanna grassland on basalt
- Pretoriuskop sourveld
- Malelane mountain bushveld
- Mixed woodland and thorn thickets



SIYABONA
AFRICA



Global Evolution



UNCLOS



UNCED



FAO



Ecosystem Approach to Fisheries

UNCED (Rio) 1992: Agenda 21

1. [protection and sustainable development of the marine and coastal environment and its resources] requires new approaches to marine and coastal area management and development.....that are integrated in content and are precautionary and anticipatory in ambit

5. Coastal States commit themselves to integrated management and sustainable development of coastal areas and the marine environment under their national jurisdiction. To this end, it is necessary to, inter alia:
 - a. Provide for an integrated policy and decision-making process, including all involved sectors, to promote compatibility and a balance of uses;
 - d. Apply preventive and precautionary approaches;
 - f. Provide access, as far as possible, for concerned individuals, groups and organizations for consultation and participation in planning and decision-making at appropriate levels

Reykjavik Declaration 2001

- Recognizing the complex inter-relationship between fisheries and other components of the marine ecosystems,
- Convinced that including ecosystem considerations in fisheries management provides a framework within which States and fisheries management organizations would enhance management performance,
- Affirming that incorporation of ecosystem considerations implies more effective conservation of the ecosystem and sustainable use....
- Recognizing that certain non-fishery activities have an impact on the marine ecosystem and have consequences for management.
- Declare that, in an effort to reinforce responsible and sustainable fisheries in the marine ecosystem, we will individually and collectively work on incorporating ecosystem considerations into that management to that aim.

An ecosystem approach is implicit in the South African constitution

24. Environment.-Everyone has the right-

(a) to an environment that *is* not harmful to their health or well-being;
and

(b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that-

(i) prevent pollution and ecological degradation;

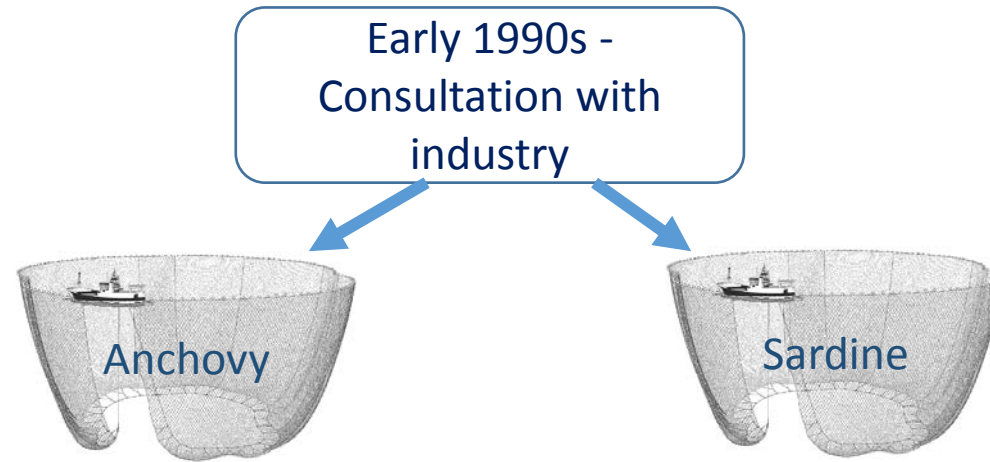
(ii) promote conservation; and

(iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

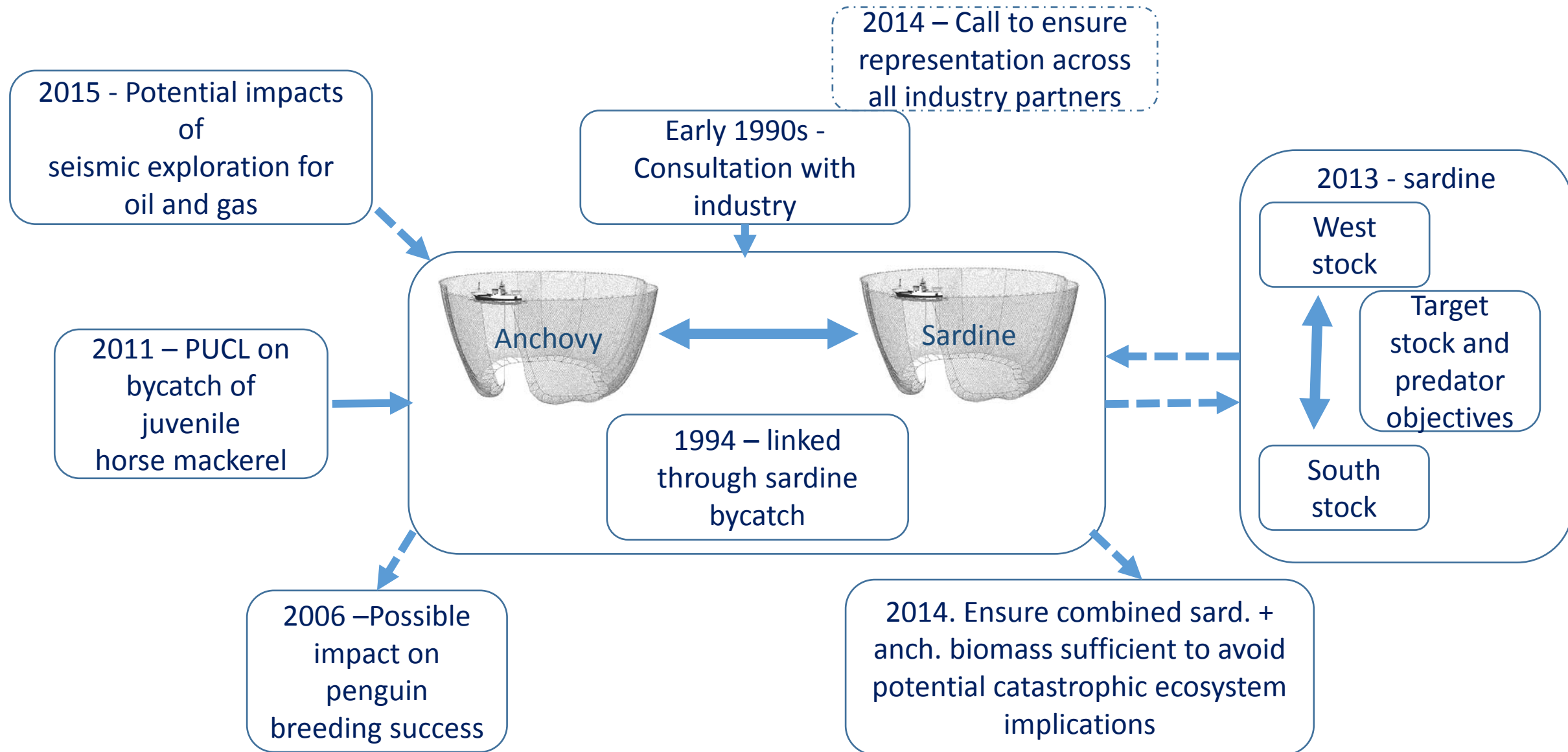


None of the principles that underlie the EAF are new. They can all be traced in earlier instruments, agreements, declarations.

EAF in practice: the SA small pelagics fishery pre-1994



EAF in practice: the SA small pelagics fishery



The SA small pelagics fishery: wider stakeholders

- Fisheries Management Authority (DEAT, DAFF)
- Large fishing companies with small pelagic rights
- Conservation interest groups: DEA, Birdlife, WWF
- Horse mackerel midwater trawl fishery
- Diverse rights holders
- Oil and gas industry
-

If EAF is common sense, why the problems in its implementation?

1) Fisheries management is no more nor less than “*an arena in which diverse societal, political, and market interests participate in an age-old struggle for the allocation and control of scarce resources*”

(McGoodwin, 1990).

2) The Cochrane principle of natural resource management (or life in general):

Unless human interactions are well managed and controlled, self-interest will almost always trump common sense in any conflict .

Economic value of SA's marine resources

Sector	Value	Source
Fisheries total sales by full commercial rights holders 2008	R4.2 billion	2009/10 DAFF Performance review of fishing right holders
Offshore oil and gas 2010 - upstream	R1.2 billion	Offshore Oil and Gas –Industry Profile. SAMSA, undated
Recreation and tourism	?	Boat-based whale watching ± R45 million in 2005 (DEA Green Paper)
Shipping and port activities	?	
Communication cables, etc	?	
Total	R120 billion	±4.5% of GDP in 2010 (Ocean Policy); GDP = 2 661 billion.

Additional Causes of the Problems*

- Conflict between short-term economic and social objectives and the longer-term sustainability objectives.
- Poorly or loosely defined management objectives.
- Biological and ecological uncertainty.
- Institutional weaknesses:
 - the absence, or weak or inappropriate systems, of user rights; and
 - predominance of top-down and centralised management approaches;
- Weak and frequently inadequate capacity in fisheries administrations;
 - Inadequate monitoring, control and surveillance systems (MCS) leading to high levels of IUU fishing.

* from Cochrane and Doullman (2005)

Implementation of EAF: are scientists part of the problem or part of the solution?

Francis Bacon (1561-1626) The mind of man “is not sincere but of an ill and corrupt tincture.”

Bacon's idols (biases)

- **Idols of the Tribe:** underlying ideas or perceptions, societal prejudices, of order, structure and simplicity.
- **Idols of the Market Place:** personal beliefs and biases based on our language, words and terms, often reflecting interpretations passed down through time.
- **Idols of the Cave:** personal biases or prejudices, unique to individuals, particular preferences or dislikes.
- **Idols of the Theatre:** errors in our scientific method or data that will, obviously lead to errors in our conclusions.



Science and scientists in fisheries management

- Under single-species management, science focused on sustainable use of stocks:
 - Specialities: fish biology, stock assessment, economics...
 - Biases affected e.g. degree of sympathy towards industry, interest in conservation, national biases (shared stocks).
 - Authorities make the call on trade-offs between biological and social-economic goals.
- Under EAF
 - Specialities: fish biology, stock assessment, economics, social sciences, ornithology, conservation/biodiversity, marine mammals, other sectors...
 - Biases often reflect specializations, grey area between advocacy and science easily blurred.

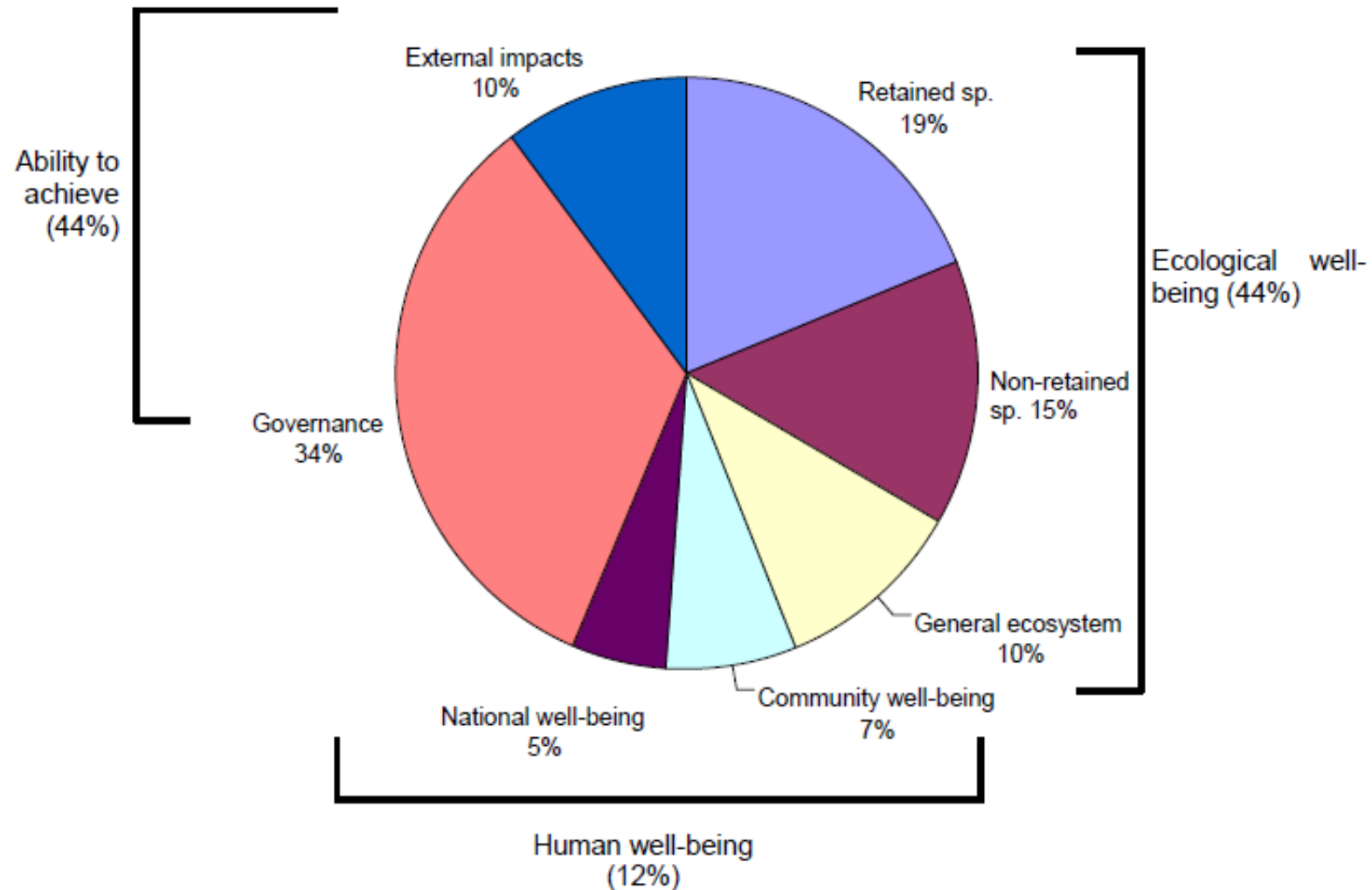
Scientific Working Groups: the ideal and the reality



Science and scientists in fisheries management

- Under single-species management, science focused on sustainable use of stocks:
 - Specialities: fish biology, stock assessment, economics...
 - Biases affected e.g. degree of sympathy towards industry, interest in conservation, national bias (shared stocks).
 - Authorities make the call on trade-offs between biological and social-economic goals.
- Under EAF
 - Specialities: fish biology, stock assessment, economics, social sciences, ornithology, conservation/biodiversity, marine mammals, other sectors...
 - Biases often reflect specializations, grey area between advocacy and science easily blurred.
 - Authorities should still make the call but uncertainties higher, trade-offs more difficult, science and scientists more complex and conflictual.

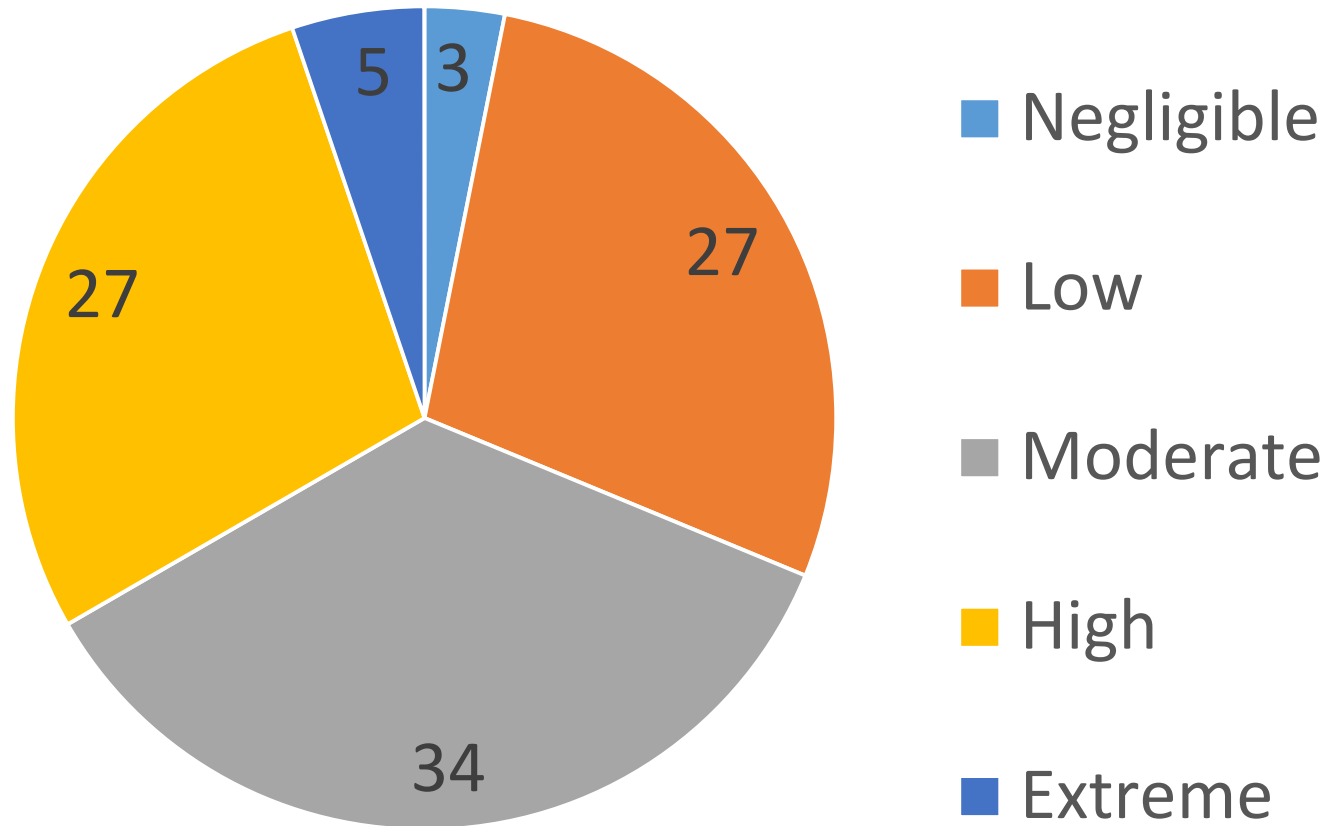
Classification of the 96 issues identified in the South African demersal hake trawl fishery (FAO, 2007).



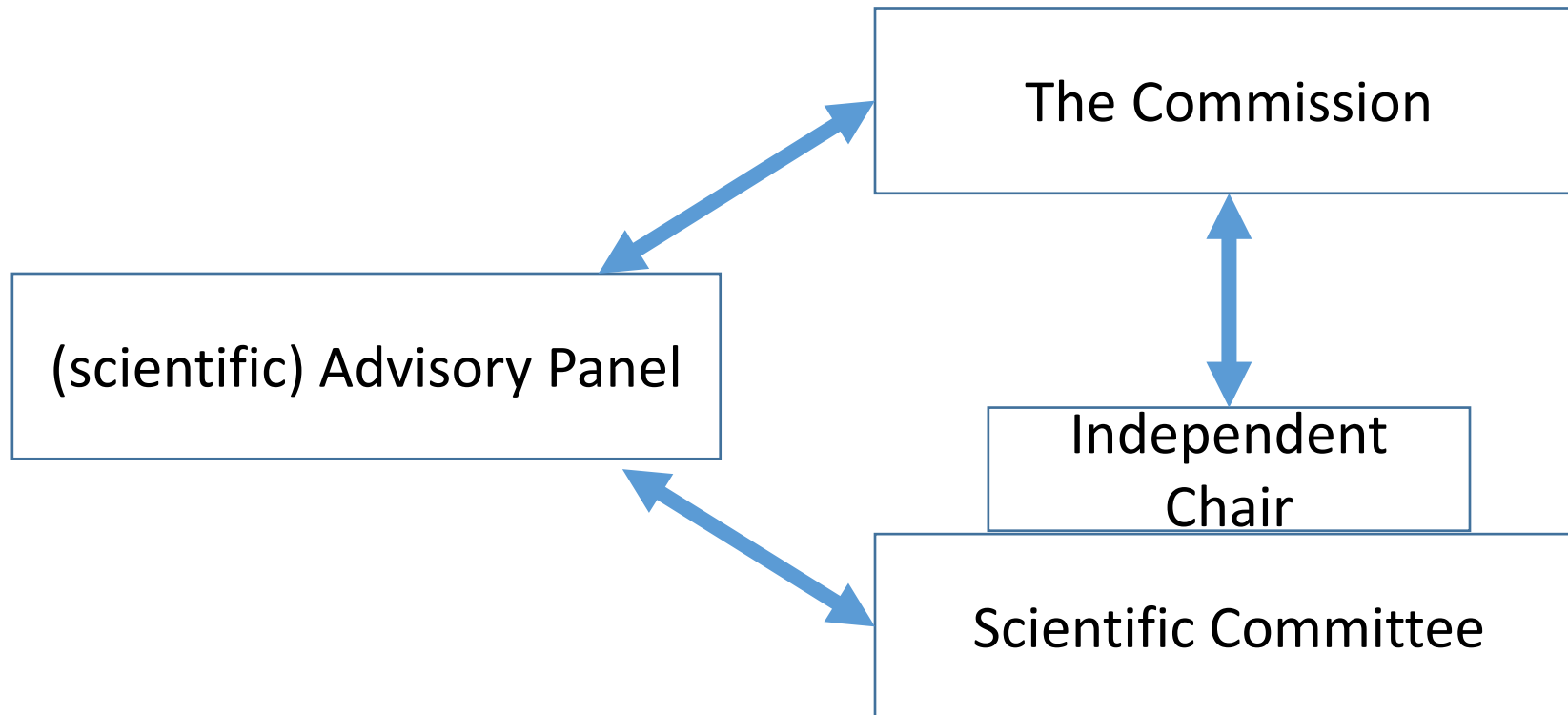
Some examples of issues raised (in 2005)

- Seals (protected species) are killed in trawling operations
- Impact of trawls on the benthic habitat and biota
- Bycatch of other sharks, rays and skates
- Shooting of seals interacting with gear
- Hake are a component of the diet of marine mammals and other top predators
- Overdependence on demersal fishery in certain coastal communities
- Conflict between sector users
- Inspector coverage is inadequate and possibly biased geographically and per sector
- There are no formal or informal lines of communication with industry bodies and other stakeholders

Priorities assigned to 96 issues in SA demersal hake trawl fishery (FAO, 2007)



Coping with scientific conflict: the Commission for the Conservation of Southern Bluefin Tuna (CCSBT)



From EAF to EA: principles underlying the White Paper on National Environmental Management of the Ocean

1. The sustainable use and management of ocean resources and ecosystem services in order to benefit present and future generations;
2. The protection of biodiversity in the ocean environment and the conservation of marine ecosystems;
3. The application of the precautionary approach...;
4. The prevention, avoidance and mitigation of pollution...;
5. The strengthening of human capacity to deal with a changing environment, including the impacts of climate change.....;
6. The identification of economic opportunities which contribute to the development needs of the poor and vulnerable.....;
7. The promotion of collaboration and cooperative governance; and
8. The promotion of an ecosystem and earth system approach to ocean management.

Conclusions

- EAF was not founded as something new, it was the inevitable consequence of a rapidly developing fisheries sector and growing, multi-sectoral use and pressures on marine ecosystems;
- EAF inevitably addresses and impacts on allocation of marine resources and will therefore be conflictual;
- EAF must recognize and address scientific uncertainty, frequently needing to make decisions on the basis of limited information;
- Lack of scientific certainty frequently makes it harder to resolve conflicts, adding to the difficulties of implementing EAF;
- Scientific advice is always prone to bias and the expanded scope of EAF expands the range and types of bias that may be encountered in provision of scientific advice;
- Strong leadership from management, coupled with mechanisms and structures to filter and reduce bias in scientific advice (e.g. impartial scientific advisory committee) would help to ensure best scientific information is used in decision-making;
- As influences and impacts of other sectors on fisheries increase, the need for multi-sectoral ecosystem approaches (EA) will intensify – as will the conflicts and the challenges.
- Without effective EAF and EA, there will be no possibility of ensuring sustainable use of marine resources for optimal benefits for the people of South Africa.

A scenic photograph of a sunset over the ocean. The sun is low on the horizon, casting a warm, golden glow across the sky and the water. The sky is filled with scattered, light-colored clouds. In the foreground, a large, dark log lies on a sandy beach, partially covered with seaweed. The overall mood is peaceful and serene.

Thank you