

NEAFC 20th Annual Meeting

Note on the implications of the precautionary approach for the management of stocks regulated by NEAFC

Introduction

Extensive discussions on the precautionary approach (PA) have taken place in a number of agencies and organisations, mostly on the technical-scientific level. Reports have been issued by ICES, especially the reports of the ‘Working Group on Precautionary Approach Terminology and CWP Sub-group on Publication of Integrated Catch Statistics for the Atlantic’ (ICES February 2000) and the ‘Study Group on the Further Development of the Precautionary Approach to Fishery Management’ (ICES April 2001). NASCO and NAFO have also discussed the precautionary approach.

Internationally FAO has contributed to the discussion of the precautionary approach. In the 1995 Code of Conduct for Responsible Fisheries, reference is made to the 1982 UN Convention, relevant provisions of the 1995 Fish Stocks, the 1992 Rio Declaration on Environment and Development, and Agenda 21 adopted by the United Nations Conference on Environment and Development (UNCED), in particular Chapter 17 of Agenda 21. Thus the precautionary approach is linked to the concept of sustainable development

The following note attempts to draw attention to different aspects of the precautionary approach beyond ecological considerations.

The Framework

Reference is usually made to Article 6 of the 1995 Fish Stocks Agreement and the guidelines set out in Annex II. It is obvious that here the focus is on biological and environmental concerns and, to a much lesser extent, on other concerns, although Article 6 (c) mentions that socio-economic conditions, inter alia, should be taken into account. This has led to extensive discussion on precautionary reference points, which take into account the risk involved in management measures with regard to stock levels. This ecological angle is clearly seen in the reports from ICES mentioned above, which also report on similar discussions in NAFO and ICCAT.

FAO, in its recent report on ‘the state of world fisheries and aquaculture’, discusses sustainable development and the precautionary approach in marine capture fisheries in a broader context. A list of ‘indicators for the main dimensions of sustainable development’ are presented in the report:

Dimension	Indicator
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Economic	Harvest and harvest value Fisheries contribution to GDP Income Value of fisheries exports (compared with value of total exports) Investment in fishing fleets and processing facilities
Social	Employment/participation Demography Literacy/education Fishing traditions/culture Gender distribution in decision- making
Ecological	Catch structure Relative abundance of target species Exploitation rate Direct effects of fishing gear on non-target species Indirect effects of fishing: trophic structure Direct effects of gear on habitats Change in area and quality of important or critical habitats
Governance	Compliance regime Property rights Transparency and participation

The precautionary approach and NEAFC management measures

The annual advice from ICES on the five main stocks (redfish, blue whiting, Norwegian spring spawning herring, mackerel and Rockall haddock) is based on biological reference points especially B_{pa} and B_{im} . The advice shows management scenarios with a high probability that the spawning stock biomass does not fall below a certain level, B_{im} , where the recruitment is thought to be impaired or the dynamics of the stock are unknown. To ensure this, a precautionary spawning stock biomass level, B_{pa} , is calculated. If the spawning stock biomass stays above B_{pa} , the probability of falling below B_{im} , should be low. In this there are implicit assumptions on the levels of probability and risk in the biological dimension. ACFM further issues statements to the effect that management is consistent, or not consistent, with the precautionary approach.

Accepting that the only advice available is on the ecological dimension, the main interest of managers should be to assess the probabilities and risks involved.

Probabilities and risk can be calculated with respect to stock under various assumptions on fishing mortality, but probabilities and risk are also involved for fishermen and communities on many levels. .

If we use Norwegian spring spawning herring as an example, managers have agreed that the risk of going below B_{pa} should be low by setting B_{pa} as 50 % of B_{im} . Of course other percentages could be (and are) used with different probability and risk profiles. It would seem appropriate that managers (and other stakeholders) take a look at probabilities and risk, although this is a highly technical issue.

Other considerations of probabilities and risk decisions are illustrated below

Probability check list		Probability
Ecological		%
	Spawning stock biomass will be below B_{pa}	10, 20, 30?
	Spawning stock biomass will be below B_{lim}	0, 5, 10?
Microeconomic Returns from investments		
Vessel/factory	Total catches reduced short term/long term	
Vessel	Catch rates reduced short term/long term	
Vessel/factory	Fisheries closures	
Vessel	Fishing area reduced; area closures	
Macroeconomic Maximisation of the flow of benefits from the resources over time		
	Contribution to regional economy reduced; short term/long term	
	Contribution to national economy reduced; short term/long term	
	Overall profits reduced; short term/long term	
	Employment reduced; short term/long term	

Short term losses and long term gains

NEAFC in its first years, and its predecessor the Permanent Commission, dealt mainly with advice on mesh sizes. In the advice on changes in mesh sizes short term losses and long term gains were calculated, often for individual fishing fleets.

Probabilities of different events could give the same kind of information and could be calculated for the short-, medium- and long term. This would give managers the possibility of evaluating more fully the consequences of different management measures.

The state of NEAFC stocks for which management measures have been established

The tables below summarise the basis of the advice from ICES.

Two stocks are managed consistent with the precautionary approach, two can be rebuilt to sustainable levels inside 4-10 years and for one data do not allow any assessment of compliance with the precautionary approach. For deep sea fisheries no management measures have been recommended so far.

Stock (fishery)		Norwegian Spring Spawning (Atlanto-scandian Herring)	
		Comments	
Assessment		Robust	
Conservation reference points		B _{lim} = 2.5 mill. t	B _{pa} = 5.0 mill t
2001 Situation		F ₂₀₀₁ 0.135	B ₂₀₀₂ = 5.7 mill t
2002 Situation			
	Landings _{.2002} 853,000 t	F ₂₀₀₂ 0.125	B ₂₀₀₃ 7,0 mill t
	Landings _{.2002} 1002,000t	F ₂₀₀₂ 0.15	B ₂₀₀₃ 6.9 mill t
Risk evaluation	5 and 10 years term	No risk of SSB below Blim, 7 to 13 % risk SSB below Bpa in 10 years with F =>0.125	
Management consistent with the precautionary approach			
Assessment 2001 compared to earlier assessments;		in accordance	

Stock (fishery)		Mackerel (Combined Southern, Western and North Sea)	
		Comments	
Assessment		Robust	
Conservation reference points		B _{lim} = No basis	B _{pa} = 2.3 mill t
		F _{lim} = 0.26	F _{pa} = 0.17
2001 Situation		F ₂₀₀₁ 0.1835	B ₂₀₀₂ = 4,0 mill t
2002 Situation			
	Landings _{.2002} 617,000 t	F ₂₀₀₂ 0.15	B ₂₀₀₃ 4.15 mill t
	Landings _{.2002} 694,000 t	F ₂₀₀₂ 0.17	B ₂₀₀₃ 4.06 mill t
Risk evaluation	5 and 10 years term	None	
Scenarios with F < 0.17 consistent with the precautionary approach			
Assessment 2001 compared to earlier assessments;		in accordance	

Stock (fishery)		Blue whiting Combined stock (Sub-areas I-IX, XII and XIV)	
		Comments	
Assessment		Problems	
Conservation reference points		B _{lim} = 1.5 mill. t	B _{pa} = 2.25 mill t
		F _{lim} = 0.51	F _{pa} = 0.32
2001 Situation		F ₂₀₀₁ 0.86	B ₂₀₀₂ = 1.51 mill t
2002 Situation			
	Landings _{.2002} 0	F ₂₀₀₂ 0	B ₂₀₀₃ 1.93 mill t
	Landings _{.2002} 410,000 t	F ₂₀₀₂ 0.32	B ₂₀₀₃ 1.55 mill t
Risk evaluation	5 and 10 years term	The stock will reach Bpa with a high probability at F= 0.15 or lower	
F= 0 in 2002 consistent with the precautionary approach			
Assessment 2001 compared to earlier assessments;		in accordance	

Stock (fishery)		Pelagic Fishery for <i>S. mentella</i> in the Irminger Sea	
		Comments	
Assessment		Uncertainty about stock structure	
Conservation reference points		None established, no analytical assessment	
Biomass changes monitored with		survey and fisheries data	
2001 Situation		Advice landings < 85,000 t	
2002 Situation		Advice landings < 85,000 t	
Risk evaluation	5 and 10 years term	None	
Management consistent with the precautionary approach		???	
Assessment 2001 compared to earlier assessments;		in accordance	

Stock (fishery)		Haddock in Division VIb (Rockall)	
		Comments	
Assessment		Fishing mortality estimates in the last year fluctuating	
Conservation reference points		$B_{lim} = 6,000$ t	$B_{pa} = 9,000$ t
		$F_{lim} = ?$	$F_{pa} = 0.4$
2001 Situation		$F_{2001} = 0.39$	$B_{2002} = 4,900$ t
2002 Situation			
	Landings ₂₀₀₂ 1,100 t	$F_{2002} = 0.16$	$B_{2003} = 6,900$ t
	Landings ₂₀₀₂ 1,300 t	$F_{2002} = 0.2$	$B_{2003} = 6,600$ t
Risk evaluation	5 and 10 years term	The stock will reach B_{pa} in 4 years at $F = 0.20$ or lower	
The spawning stock biomass is below B_{pa} , management not precautionary			
Assessment 2001 compared to earlier assessments;		not quite similar	