

## Theme Session R

### Potential changes in the EU common fishery policy: implications for science

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#### ICES CM 2009/R:01

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##### A fishery management system in crisis—the EU common fishery policy

Jesper Raakjær

The crisis in EU fishery management has prevailed almost since the Common Fisheries Policy (CFP) was first implemented in 1983. Despite tremendous effort and resources having been invested in improving the performance of the CFP, the crisis worsens year by year. The Commission has clearly expressed the shortcomings of the CFP both in connection with its revision in 1992 (CEC 1991) and its reform in 2002 (CEC 2001) and will repeat them again in the upcoming issue paper reviewing the CFP (CEC 2009). The current paper synthesizes the complex social, economic, and political system influenced by—or perhaps defined by—the CFP, and the interaction of many explanatory factors. Different theoretical and analytical perspectives are applied to highlight the various factors and processes that influence the CFP. The aim is to uncover the main factors influencing the CFP and to provide some direction on how to improve the CFP for the future. The paper concludes by proposing that the CFP is revised to enhance regionalization and devolution of management responsibilities to the fishing industry in conjunction with a results-based management approach. In particular, the institutional structure of the CFP should be transformed into a suite of *de facto* ecoregion fishery policies to overcome the present problems of having a common policy that attempts to manage almost all aspects of a very fragmented sector across very different ecosystems that in reality have very few commonalities.

Keywords: Common Fisheries Policy, regionalization, devolution of management responsibilities, policy reform and ecosystem management.

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#### ICES CM 2009/R:02

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##### Are we in the position of understanding marine ecosystem-based management? A literature review

Richard Curtin and Raúl Pallezo

Ecosystem-based management takes into account the interconnectedness and interdependent nature of ecosystem components and emphasizes the importance of ecosystem structures and functions that provide us with a range of services. The concept has now been adopted by many international agreements and national governments and is in the process of being implemented. This paper seeks to review the literature on the subject and to analyse our understanding of the subject. The term is defined and its implementation in fisheries and for all marine uses is analysed. To conclude, some of the main aspects of EBM are revisited, whereas the importance of learning from other institutions and reducing costs are highlighted. Finally, the need for reducing the consumption of fish is considered.

Keywords: ecosystem-based management, complex adaptive systems, integrated management, zoning, integrated ecosystem assessment.

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**ICES CM 2009/R:03**

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**TAC allocation and catch-quota balancing in mixed fisheries: a bioeconomic modelling approach applied to the Channel flatfish fisheries**

Paul Marchal and Rich Little

The respective merits of management strategies combining various quota allocation and catch-quota balancing mechanisms have been compared in the case of mixed fisheries. The modelling framework has been applied to the Channel flatfish mixed fisheries. The results were sensitive to the fleet dynamics. When fleet behaviour depends on both traditions and expected economic returns, allocating quota based on previous-year catch history would ensure some level of quota share, activity, and profit for the different fleets (netters, beam trawlers and other vessels' fleet), but would also put the plaice and Western Channel sole at risk of recruitment overfishing. I suggest that this strategy should be implemented only if supported by a reduction in the sole total allowable catch (TAC) or a substantial increase in the plaice deemed value (i.e. tax paid for landing fish above quota). When quota are allocated based on economic efficiency, the risk of overfishing is considerably reduced, but only the netters would make a profit out of the Channel flatfish fishery. Using the deemed value as a TAC compliance tool in a mixed fisheries context would more effectively achieve its purpose if quota transfers built on economic efficiency.

Keywords: individual quotas, catch-quota balancing, métiers, fleet dynamics, Channel flatfish fisheries, mixed fisheries.

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**ICES CM 2009/R:04**

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**The past, present, and future of technical measures in the Common Fisheries Policy**

Stuart A. Reeves, Andrew S. Revill, and John, K. Pinnegar

Technical conservation measures such as closed areas and mesh regulations form a major part of EU fishery legislation. Their importance as management measures is likely to increase with greater stakeholder involvement in fishery management. As background to the reform of the Common Fisheries Policy (CFP) we review the technical measures currently in place in EU legislation and discuss their effectiveness in achieving policy objectives. We also compare the implementation of technical measures in EU waters with implementations in other areas. We then draw on the findings from these reviews to identify a set of features that would contribute to an effective implementation of technical measures in EU waters. The implementation of such a system would also have implications for the role of scientists, particularly in relation to the evaluation of the effectiveness of technical measures, and these implications are also discussed.

Keywords: technical measures, Common Fisheries Policy.

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**ICES CM 2009/R:05**

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**Importance of regionalization: policy, enforcement, and culture as evidence of the north/south divide in the European Union fish catching sector**

Maria Hadjimichael, Gareth Edwards-Jones, and Michel Kaiser

With the upcoming reform of the Common Fisheries Policy, the framework must essentially remain an integrated Community policy. However, there are many reasons why the reform needs to consider a major shift towards more regionalized policies. This paper considers this need for regionalization, taking into account the current number of reported obligations, enforcement, and compliance culture and the general differences in the way of life in the Member Countries of the European Union. The work focuses on key differences between northern and southern coastal

states of the Community. Through analysis of the fishery regulations in the Community directive last updated in January 2008, the number of regulations affecting the northern and southern EU coastal areas are identified and presented as maps, stratified by sector, species, and geographic division. In addition, from national and EU data, the level of enforcement by the authorities and the level of compliance by the fishers themselves in the northern and southern EU states are put side by side. Qualitative data on cultural differences between stakeholders are also presented.

Keywords: regionalization, fishery management, compliance, regulations.

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## ICES CM 2009/R:06

### Potentials and challenges in fleet- and métier-based approaches for fishery management in the CFP

Clara Ulrich, Bo S. Andersen, Francois Bastardie, José Castro, Jørgen Dalskov, Rikke B. Jacobsen, Stéphanie Mahévas, Christos Maravelias, J. Rasmus Nielsen, Stuart Reeves, Marina Santurtun, Alex Tidd, and Doug Wilson

The inconsistency of single-species objectives in a mixed-fisheries context has repeatedly been highlighted as a key issue in the current Common Fisheries Policy (CFP), and it has long been recognized that this issue would be better addressed through fleet (group of vessels) and métier (type of activity)-based approaches. Since the late 1980s, when such approaches were first introduced, there have been substantial developments in this area of science to the point where the concepts of fleet and métier now underpin the whole EU Data Collection Framework. However, although fleet-based approaches are in theory valuable improvements to the single-species approaches, in practice their implementation in the management system has been slow. Substantial improvements have been made, but a number of intrinsic issues still remain, hampering the practical implementation of fleet-based approaches. The FP6 AFRAME research project, in cooperation with FP6 EFIMAS and other research projects, has developed a quantitative fleet-based framework for addressing these issues, and has provided an operational tool for delivering robust mixed-fisheries advice. Its application to contrasting European case studies has given valuable experience in the use of fleet-based approaches in practice and the challenges in their implementation, such as the fuzziness of fleet/métier definitions and the poor linkages between fishing effort and fishing mortality. This manuscript summarizes the current fleet-based approaches ongoing in EU fishery management, and discusses the potential application of such approaches in future CFP based on our practical experience.

Keywords: CFP, fishery management, fleets, métiers, mixed fisheries, TAC.

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## ICES CM 2009/R:07

### Towards an MSY-based management of Barents Sea capelin in an ecosystem context

Ingolf Røttingen and Sigurd Tjelmeland

The Barents Sea capelin is a short-lived, one-time spawner that at present is managed using a harvest rule where the probability for the spawning-stock biomass to be smaller than 200 000 tonnes shall not exceed 5%. This is implemented by carrying out probabilistic simulations from the time of stock measurement (1 October) to time of spawning (1 April), where the consumption by cod in the prespawning period January–March is accounted for. In the present paper, the long-term properties of this harvest rule are tested with probabilistic simulations using the multispecies simulator Bifrost. Properties investigated include long-term mean catch, long-term mean economic benefit, and extinction probability for capelin, as well as the influence of the capelin stock on the cod stock. Also, an alternative rule is investigated by using the spawning-stock biomass

corresponding to maximum sustainable yield (MSY) as a basis. Comparisons between present and an MSY-based harvest-control rule (HCR) are made in a coastal ecosystem context, mainly including the value of capelin eggs and post-spawning (dead) capelin as food for other organisms, mainly king crab and haddock.

Keywords: pelagic fish stock, MSY management, probabilistic simulations, ecosystem considerations.

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## ICES CM 2009/R:08

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### Some scientific challenges related to the Common Fisheries Policy

Sakari Kuikka

In this position paper, I discuss methodological, organizational, and practical issues influencing the chance of new aspects of the Common Fisheries Policy (CFP) being adopted. The improvement of socio-economic advice and the use of an ecosystems approach to fisheries management are the main elements in this paper. From a methodological point of view, whereas the strong empirical attitude of biologists has dominated fisheries advice, the economic sciences have partly failed to bring in practical economic advice. Some of these difficulties seem to be related to the current interest in normative advice and optimization, leading to models that biologists consider too simple from a biological point of view. In the case of sociological research, the scientific traditions are closer to those of biology. From the organizational and practical points of view, the main problem has been that there is no organization for socio-economic research fulfilling the role that ICES provides for biologists. The ICES advisory system is well adapted to EU decision-making time schedules and vice versa. The current system does not provide enough time or resources for socio-economic analysis, although this has been requested in the CFP legislation. The ecosystem approach to fishery management creates new methodological challenges for fisheries advice which currently relies mostly on stock-specific data. We need a methodology that also allows risk assessment for poorly studied bycatch species with much less data. The information may be based on the more effective use of databases, published papers, and/or expert knowledge.

Keywords: fisheries advice, socio-economics.

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## ICES CM 2009/R:09

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### From management to science: a review of existing tools to support the implementation of the MSFD and the challenges that remain

Robert Scott, Hans-Joachim Rätz, Hendrik Doerner, and Thomas Barbas

The pressures on seas within the European Union are affected by many activities and are subject to multiple national as well as European policies and initiatives. The effective protection of the marine environment therefore requires a comprehensive, integrated approach to activities at both the national and European level. The Marine Strategy Framework Directive (MSFD) aims to help integrate environmental protection issues into European policy, including, among others, the Common Fisheries Policy, and to assist Member States and the Community to fulfil their obligations under international conventions for the protection of the marine environment. The main target of the MSFD is to reach good environmental status in European waters by 2020. For commercial fisheries this requires that populations of all commercially exploited fish and shellfish should be within safe biological limits and exhibiting a population age and size structure indicative of a healthy stock. This review considers the tools and methodologies that currently exist to support the implementation of the MSFD with specific regard to commercial fish stocks.

Keywords: fisheries, environmental assessment, CFP, MSFD.

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**ICES CM 2009/R:10**

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**EU Common Fisheries Policy reform: co-production of science and policy**

R. Aps and H. Lassen

The scientific knowledge that EU Common Fisheries Policy (CFP) reform needs for its purposes is frequently unavailable until the political process itself creates the incentives for generating it. This regulatory or policy-oriented science has a specific goals, tasks institutions, time-frames, and accountability. EU CFP reform serves as incentive for producing new knowledge. Building on the theory of hybrid management this paper attempts to explore the role of ICES in co-production of science and policy relevant to EU CFP reform needs. The concept of co-production developed by the social sciences explains how scientific knowledge both embeds and is embedded in social identities, institutions, representations, and discourses. To maintain productive and dynamic relationships, ICES as a boundary organization needs to be able to put scientific and political elements together. In doing so, ICES contributes to the maintenance of a productive tension between science and politics.

Keywords: EU CFP, ICES, co-production of science and policy, boundary organization, boundary work.

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**ICES CM 2009/R:11**

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**What should be the role of the RACs in future? A case study of the Pelagic RAC—lessons learned and future directions**

Aujke Coers

Regional advisory councils (RACs) were introduced as part of the 2002 reform of the Common Fisheries Policy (CFP) to increase stakeholder participation in fishery management in the EU. In the upcoming reform of the CFP the role of the RACs and lessons learned so far will be evaluated, and their future role is up for discussion in the reform process. This paper reflects on the lessons learned through the Pelagic RAC and these will be compared with the thoughts presented in the Green Paper (CEC 2009). The current paper analyses and discusses different roles the RACs could have in future (e.g. becoming a regional management council, RMC, as recently indicated by Commissioner Joe Borg). This idea is likely to be a reaction to the finding that the consultative processes are not always driven by the responsible behaviour of participants. Transforming RACs into RMCs is seen as a way to encourage responsible behaviour among the involved stakeholders. It is not straightforward to transform RACs into RMCs, however, and it will inherently lead to a radical institutional change in the mode of operation for RACs. Based on the experiences of the Pelagic RAC, the paper will assess whether a changed role for the RACs from being purely advisory to becoming a body holding management authority is feasible and/or desirable. In addition, the paper will explore alternative roles for the RACs in the context of increased regionalization and devolution of management responsibilities in the post-2012 CFP.

Keywords: Common Fisheries Policy, RACs, devolution of management responsibilities and policy reform.

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**ICES CM 2009/R:12**

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**From science to management: the conceptual roles of European and national institutions under CFP and MSFD regarding living marine resources**

Hendrik Dörner, Hans-Joachim Rätz, Robert Scott, and Thomas Barbas

The Joint Research Centre supports the efforts of the Directorates General Environment (DG ENV) in implementing the Marine Strategy Framework Directive (MSFD) and of Maritime Affairs and Fisheries (DG MARE) towards an Integrated Maritime Policy for the EU (IMP). The MSFD is the environmental pillar of the IMP. The CFP (last reformed in 2002) aims to integrate an ecosystem approach to fishery management. The Joint Research Centre supports the implementation of the MSFD by contributing to work on the development of criteria and methodological standards for “good environmental status” of the marine environment in Europe. The present comparative review refers to the regulatory frameworks by focusing on the integration of the Common Fisheries Policy and the MSFD and their institutional commitments. Specifically, in addition to other studies on MSFD indicators, this review concerns Descriptor 3 on exploited resources (i.e. “populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock”).

Keywords: fisheries, marine environment, political framework, CFP, MSFD.

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### **ICES CM 2009/R:13**

#### **Stakeholders’ participation in the decision-making process: Scottish inshore fishers’ perceptions of involvement**

C. Pita, G. J. Pierce, and I. Theodossiou

Public participation is a key ingredient of good governance and there are many advantages of involving stakeholders in the decision-making process. The involvement of the fishing industry in decision-making results in a significant increase in the industry’s responsibility and accountability, and, ultimately, increased acceptance of management arrangements and compliance. The European Commission identified the lack of stakeholder involvement as one of the major weaknesses of the Common Fisheries Policy (CFP). As such, the 2002 reform of the CFP aimed at improving its system of governance by increasing the involvement of stakeholder in decision-making. Over the last decade, Scottish inshore waters have seen an increase in management measures focused on involving fishers, delegating responsibilities, and decentralizing management. The present document aimed at gauging inshore commercial fishers’ perceptions of involvement in management and the acceptance of a new compulsory regional management measure, implemented in 2008, which will cover all inshore waters—the Inshore Fisheries Groups (IFGs)—and is aimed at improving the management of inshore fisheries and giving commercial inshore fishers a strong voice in wider marine management developments. A survey was conducted, through face-to-face interviews, and the factors that influence fishers’ perceptions identified. The present analysis concluded that five years subsequent to the reform of the CFP, the majority of fishers perceive not to be involved in the decision-making process. Nonetheless, most fishers have a positive attitude towards the new IFGs, being of the opinion that they will improve fishery management in their local area.

Keywords: fishers, perceptions, decision-making, Inshore Fisheries Groups, involvement, participation.

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### **ICES CM 2009/R:14**

#### **Assessing impacts of commercial fishing on selected ecosystem services in European waters—results of a scoping study**

Søren Anker Pedersen, Hans Frost, and Hans Lassen

Current knowledge, data, and/or methodologies for the identification, quantification, and economic valuation of ecosystem goods and services linked to marine biodiversity is considered to

lag behind that for other biomes (e.g. wetlands, forests). The presented study has investigated key issues of concern and stressors that management and policy should address with regards to “Exploiting the marine environment”. The study focused on the direct and indirect impacts of fishing on the Atlantic cod (*Gadus morhua*) as well as on the ecosystem goods and services related to cod and affected by cod fishing. The Atlantic cod is one the most important commercial fish species in the European Atlantic seas. Cod has been and still are an important food for people all over Europe. The study was based on four building blocks framing the European Ecosystem Assessment (EURECA 2012): (i) assessing impacts of commercial fishing on selected ecosystem goods and services (“Identifying and quantifying” them); (ii) analysing consequences of context changes: “Quantifying and valuing the observed trends/changes of the relevant goods and services”; (iii) exploring resilience/sustainability issues; (iv) exploring management measures to address the observed and future trends/changes in the goods and services, and assess economic costs and benefits of these measures as well as associated policy options for their implementation, in particular under a reformed Common Fisheries Policy (CFP). Thus, the study aims at providing relevant information to support the 2012 reform of the CFP.

Keywords: marine ecosystem services, CFP, Atlantic cod, fishing impacts.

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## ICES CM 2009/R:15

### **More blocks in the box: integrated science for new maritime policies. The example of the Doggerbank**

M. A. Pastoors

One of the aims of maritime policies is the integration of the different uses of the marine environment (e.g. shipping, wind energy, fishing, tourism, etc.). An aspect of the proposed European Maritime Policy is integration of marine and maritime research. How could this work out in practice? What types of scientific knowledge would be required for such an integrated approach? The Doggerbank area in the North Sea provided a focal point in a workshop organized by the Wageningen UR Centre for Marine Policy (2–4 September 2009). The Doggerbank area hosts many activities, actors, stakeholders, and Nation States who are all involved in devising a management approach for that area and underpinning that approach with appropriate knowledge claims. For example, Marine Protected Areas (MPAs) are being established on the North Sea Doggerbank as an implementation of the Natura 2000 requirements, which is an EU policy implemented within the national jurisdictions. This provided a challenging opportunity to further develop the concepts of integrated scientific inputs for maritime policy. The aim of the paper is to synthesize the results of the workshop and to discuss the implications of integrated science for the Common Fisheries Policy.

Keywords: none.

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## ICES CM 2009-943/R:16

### **Opening up the box: governance and the evaluation of fishery policy**

M. A. Pastoors and L. J. W. van Hoof

In the process leading up to the revision of the EU Common Fisheries Policy (CFP), a number of evaluation documents have been produced in Europe that attempt to evaluate the current fishery management approach. Starting a policy revision with an evaluation seems a logical path to follow. However, in this paper we will demonstrate that to a large extent the papers produced to date do not take on the task of an ex post evaluation of fishery policy. Instead, they are often discussion papers based on what appears to be a common perception of the failures of fishery management

rather than evaluations of the goals, means, and results of the fishery policy. We argue that systematic evaluations of fishery policy are missing, and furthermore that we miss them. With an increase in use of the marine resources and with an increase in the stakes and stakeholders, a systematic evaluation of policy throughout all steps of the policy cycle could enhance the legitimacy of the fishery policy. The box of fishery policy needs to be opened up, by taking into account more stakes and stakeholders' perspectives of objectives and achievements of marine resource management. This will also affect the position of scientific support to policy, which will then be less predictive and more evaluative and transparent.

Keywords: Common Fisheries Policy, evaluation of policies, governance, mode II science.

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## ICES CM 2009/R:17

### Addressing uncertainty to facilitate participatory governance

Marion Dreyer, Kjellrun Hiis Hauge, and Martin Pastoors

The Common Fisheries Policy reform in 2002 has already started a process of strengthened participation in fishery governance. The recently released Green Paper on the CFP further explores avenues to increase participatory decision-making. Regardless of whether this increased stakeholder involvement will take place in the knowledge production, the advisory phase, or in decision-making, there will be a need to present “science for policy” in a way that stakeholders understand it. Stakeholders should be able to evaluate the relevance, strengths, and limitations of the scientific approach. Communication of uncertainty is a key element in such a process. So far, discussions on uncertainty have mainly focused on technical uncertainty (i.e. uncertainty that can be quantified through some kind of statistical or mathematical model). In this paper we review the literature on ways of categorizing the *sorts* of uncertainty (as opposed to the *origin* of uncertainty). We present an overview of tools that have been developed to assess and communicate different sorts of uncertainty and we discuss the relevance and applicability of these tools to fishery management situations. Although tools that cover technical and to some extent epistemic uncertainty already exist within the domain of fishery science for policy (like Bayesian methods and simulation techniques), we conclude that tools from other research areas that cover broader aspects of uncertainty are available and could very usefully be applied in the fisheries domain. For example, tools to reflect whether the policy problem has been addressed adequately.

Keywords: none.

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## ICES CM 2009/R:18      **Withdrawn**

## ICES CM 2009/R:19      **Poster**

### Integration of scientific inputs to assist sustainable management in Portuguese coastal fisheries: a perspective

Aida Campos, Victor Henriques, Paulo Fonseca, and Joaquim Parente

Current changes in the EU Common Fisheries Policy towards ecosystem-based management strongly rely on the development of fishery management tools requiring integration of environmental, operational, and economic aspects of fisheries. Within this context, the importance of innovative research to widen the scientific scope of fishery management is of primary importance. Marine habitat characterization through the acquisition of information on both physical seabed and water characteristics and existing fish assemblages along the fishing areas is a

fundamental step towards integrated management. Understanding of spatial and temporal dynamics of the fishing activity has, on the other hand, been recognized as having major importance in assisting fishery management. Fleet segmentation is a fundamental step towards understand fishing patterns, allowing us to critically address bycatch and discards and mitigations to these; to estimate species-directed effort; and to understand fishers' (economic) motivations behind their decisions on how, what, and where to fish. Within this context, geographical information systems are efficient tools to assist fishery management in its multiple complexities. A practical application is suggested for coastal Portuguese fisheries, integrating diversified information on the above-mentioned aspects considered relevant to assist sustainable fishery management.

**Keywords:** Common Fisheries Policy, sustainable management, habitat characterization, fishery dynamics, fleet segmentation, geographical information systems.

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**ICES CM 2009/R:20      Poster**

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**Developing a management plan for the anchovy fishery in the Bay of Biscay**

A. Uriarte, P. Abaunza, O. Guyader, L. Ibaibarriaga, S. Sanchez, L. Pawlowski, R. Prellezo, B. Roel, I. del Valle, Y. Vermard, and B. Villamor

In recent years there has been a movement in Europe away from management based on the precautionary approach principle to that based on maximum sustainable yield, basically through the development of long-term management plans for different fish stocks. Recent development of management strategy evaluation tools is facilitating the testing of alternative harvest control rules to identify the most suitable rule for each stock. In this paper we summarize the development of a management plan for the Bay of Biscay anchovy stock led by the European Commission in consultation with the South Western Waters Regional Advisory Committee. The failure of the fishery since 2005 made evident the unsuitability of previous management strategies and the need for such a plan. Three candidate harvest control rules have been tested by the Scientific, Technical and Economic Committee for Fisheries. Uncertainties in various population dynamic models have been evaluated and economical indicators have been incorporated into the decision-making process. In addition, political considerations such as total allowable catch (TAC) allocation between countries and seasons have also been taken into account. The process of dissemination of the evaluation of harvest control rules and associated levels of risks is discussed. Finally, participation and communication among stakeholders, managers, and scientists through the process of definition of the long-term management plan is discussed.

**Keywords:** anchovy, participation, harvest control rule, long-term management plan, management strategy evaluation, risk.

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