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PRIMO 17: Pollutant Responses in Marine Organisms takes place from 5–8 May 2013 at the University of Algarve, Faro, Portugal. The deadline for abstract submission and early registration is 5 February 2013.

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Developing a new fishery

Collaboration is the key to success

In recent years, TAC reductions in many of the main pelagic stocks and an ever-shortening fishing season have led the fishing industry to explore new opportunities. A notable example is that of Northeast Atlantic boarfish. The development of this fishery over the past 6 years has been dramatic, with landings increasing from approximately 3,000 tonnes in 2006 to 82,000 tonnes in 2011. Such an expansion is always a cause for concern. However, from the outset, due to collaborative efforts between science and industry, the development of the fishery has been accompanied by a rapid development in scientific knowledge. This has allowed science to keep pace with the fishery and to provide sound and well founded advice for the stock. This is not always an easy thing to achieve as there are many instances of fisheries that developed too quickly for the science to catch up.



Boarfish. © Edward Farrell.

The boarfish story began in the early 2000s when the Irish pelagic fleet noticed dense aggregations of boarfish off the south coast of Ireland. Prior to this, there were no recorded landings and almost nothing was known about the basic biology of boarfish. In response to the development of the fishery, the [Marine Institute](#) in Ireland proposed that age estimates of the fish were urgently required. [Trinity College Dublin](#) conducted a preliminary study in collaboration with the Marine Institute and [Killybegs Fishermen's Organisation](#) (KFO), the results of which suggested that boarfish may be a slow growing long lived species. These preliminary results raised questions about the future sustainability of the fishery and prompted the KFO to commission a comprehensive study on boarfish in collaboration with the Marine Institute, [DTU Aqua](#), and the [Danish Pelagic Producers Organisation](#). This proactive step and the establishment of a science-industry collaboration resulted in rapid progress in understanding the scientific background needed for sustainable management of the fishery.

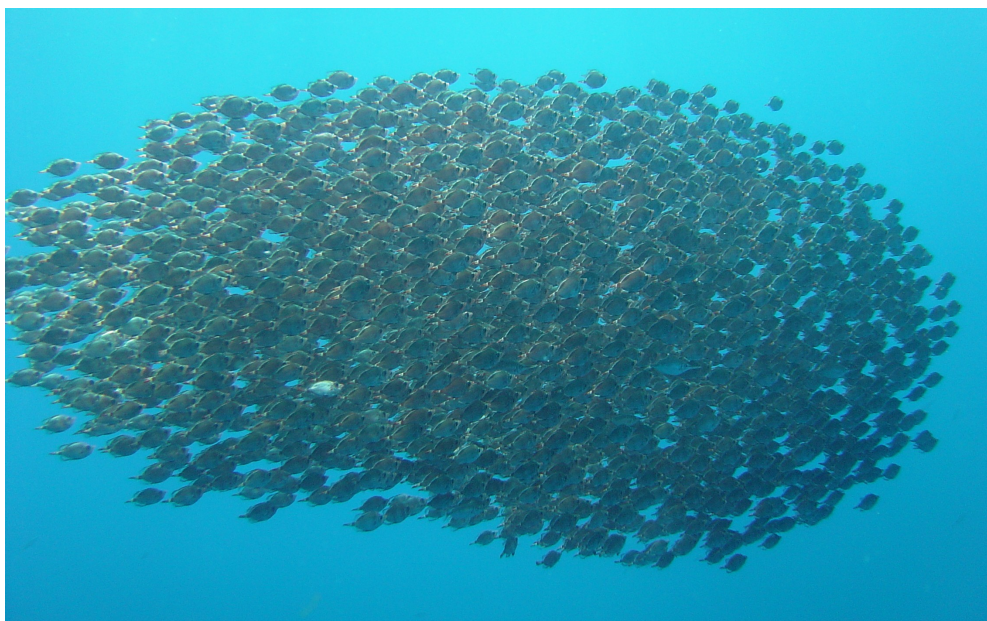
The project initially focussed on establishing the basic life history characteristics of boarfish including reproduction, age, and growth, the results of which have now been published in the [ICES Journal of Marine Science](#). In summary, boarfish are a relatively long lived species with a maximum recorded age of 31 years at 18 cm. This longevity is not unusual for a previously unexploited pelagic species and should not be confused with age-at-maturity. Boarfish grow rapidly in the first three years prior to reaching maturity at 3.4 years and 9.7 cm, after which growth slows considerably as energy is allocated to reproduction. The high abundance of older fish in the commercial catches suggests a somewhat lightly exploited stock. It also implies that the boarfish is not a "boom and bust" species like the snake pipefish but more likely it has been accumulating biomass over quite a number of years.

In 2011, the industry also initiated and funded the first specific boarfish acoustic survey, designed to extend the Malin Shelf herring acoustic survey, conducted aboard the RV "Celtic Explorer", southwards. This increased the range of continuous coverage from approximately 58.5°N to 47.5°N, making it one of the largest acoustic surveys in the Northeast Atlantic area. Not only did the survey provide important insights into the spawning biology and behaviour of boarfish but it also enabled the collection of samples, which were used for the determination of a specific acoustic target strength (TS) for boarfish. This state-of-the-art study utilised Magnetic Resonance Imaging (MRI) to derive a

boarfish TS based on the three dimensional shape of their swimbladder. When applied to the acoustic data collected during the 2012 survey, it resulted in a stock size estimate of approximately 820,000 tonnes marking boarfish as a significant and important stock.

In 2011, boarfish was considered by ICES for the first time and was assessed by the Working Group on Widely Distributed Stocks (WGWIDE). Though the data presented in 2011 was preliminary, it was agreed that the boarfish stock was large and not overexploited. In 2012, a qualitative assessment strengthened the conclusion that Northeast Atlantic boarfish was a large and lightly exploited stock. This information has not all been incorporated in the scientific advice yet. At present, [ICES advice](#) is based on a precautionary harvest rate ($F_{0.1}$), applied to the 2012 acoustic survey estimate.

There is still work to be carried out on boarfish but what has been achieved to date has illustrated the importance of good working relations between science and industry. By working in close collaboration and promoting stakeholder involvement, rapid progress can be made. Hopefully the case of boarfish will not be a one off and the established working relationships will continue to develop. If so, the future looks bright for science-stakeholder interactions.



Boarfish shoal in the Azores © Maurizio Caddia.

Further reading

Farrell, E.D., Hüsey, K., Coad, J.O., Clausen, L.W. & Clarke, M.W. 2012. [Oocyte development and maturity classification of boarfish \(*Capros aper*\) in the Northeast Atlantic](#). ICES Journal of Marine Science, 69: 498-507.

Hüsey, K., Coad, J.O., Farrell, E.D., Clausen, L.W. & Clarke, M.W. 2012. [Sexual dimorphism in size, age, maturation and growth characteristics of boarfish \(*Capros aper*\) in the Northeast Atlantic](#). ICES Journal of Marine Science, 69: 1729-1735.

Hüsey, K., Coad, J.O., Farrell, E.D., Clausen, L.W. & Clarke, M.W. 2012. [Age verification of boarfish \(*Capros aper*\) in the Northeast Atlantic](#). ICES Journal of Marine Science, 69: 34-40.

White, E., Minto, C., Nolan, C. P., King, E., Mullins, E., and Clarke, M. 2011. [First estimates of age, growth, and maturity of boarfish \(*Capros aper*\): a species newly exploited in the Northeast Atlantic](#). ICES Journal of Marine Science, 68: 61-66.

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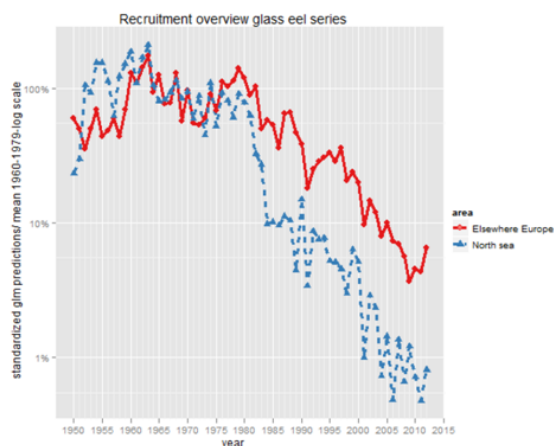
The curious case of the European eel

European eel stock status remains critical

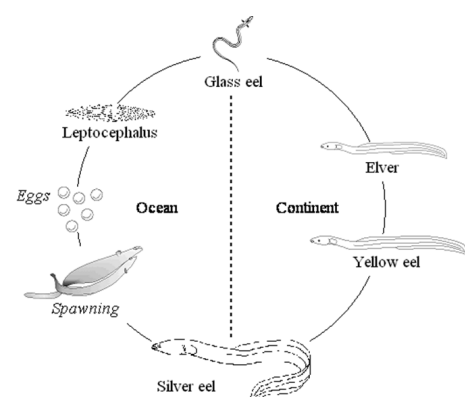
In November, [ICES advice on European eel](#) reiterated that the stock status remains critical and urgent action is needed. ICES advises that all anthropogenic activity affecting the stock, such as recreational and commercial fishing, hydropower, and pollution, should be reduced to as close to zero as possible, until there is clear evidence that both the juvenile and the adult eel stocks are increasing.

The abundance of juvenile eels has been declining continuously since the 1950s. ICES scientists have concluded that the eel recruitment index (a measure of recent spawning success) is currently at a historical low at around 5% and less than 1% for the North Sea compared to 1960–1979 (see graph).

Reasons behind the critical stock status are manifold and scientists have not been able to determine a single, obvious cause for the crash of eel stock. Suggestions for possible causes include overextended fishing pressure for human consumption as well as for aquaculture (glass eels are caught for use in aquaculture, as the eel has not been successfully bred in captivity). Other causes include inland habitat loss due to the damming of wetland, climate and ocean current changes, diseases, predation by cormorants, and pollution.



WGEEL recruitment index: mean of estimated (GLM) glass eel recruitment for the North Sea and elsewhere in Europe.



The life cycle of the European eel. The names of the major life stages are indicated; spawning and eggs have never been observed in the wild and are therefore only tentatively included.

The many stages of the eel

Let's take a closer look at the curious life of the European eel. The beginning remains a bit of a mystery. No one knows exactly where eels spawn, but the smallest larvae have been found in the Sargasso Sea, south of Bermuda, suggesting that spawning occurs nearby. The larvae are then transported by the Gulf Stream northeast, reaching European river mouths in early winter. Once eel larvae arrive in coastal waters, they transform into eel-shaped transparent juveniles, called glass eels.

Glass eels migrate up the rivers to inland waters where they stay for 4–15 years as so-called yellow eels. In these lakes and rivers, eels undergo one final transformation maturing into silver eels. They are then ready to start their final journey, back out to the Atlantic Ocean and Sargasso Sea to spawn.

The [current ICES assessment of the eel stock](#) is based on national fish stock surveys and indications from commercial catches. In the recent past, monitoring the abundance of juvenile eels has been the main tool for assessing the eel stock status. In the future, new analyses and compilations of data on the adult eel stock may be available, which is expected to improve the assessment in 2013.

ICES Data Centre has just launched a new eggs and larvae dataset which features work from EIFAC/ ICES Working Group on Eels (WGEEL). To read more please follow [this link](#).

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New ICES CRR published

Monitoring chemicals and their effects

Many European maritime countries have marine environmental monitoring programmes that include the measurement of chemical contaminants and related biological effects. How best to integrate these two types of monitoring data into meaningful assessments has been the subject of much recent effort by a number of ICES expert groups, including the ICES/OSPAR Study Group on the Integrated Monitoring of Chemicals and their Effects (SGIMC) and ICES Working Group on Biological Effects of Contaminants (WGBEC).

The process has culminated in [draft OSPAR guidelines](#) and the recently published *ICES Cooperative Research Report (CRR) No. 315 Integrated marine environmental monitoring of chemicals and their effects*.

ICES CRR 315 contains a substantial body of advice, describing a core set of techniques that can be used across maritime areas. The report provides guidelines for integrated monitoring, background documents, and technical annexes following the OSPAR pattern.

Most importantly, the output of the work has defined assessment criteria for biological effect measurements and suggests how these measurements can be used in an integrated manner together with chemical contaminant measurements in biota, sediments, and water.

The OSPAR guidelines were adopted earlier this year on a 3-year trial basis in order to establish their practical applicability. National and international case studies have recently demonstrated the usefulness of the approach and the value that it can add to environmental assessments.

The approach is also considered to provide a potential tool for EU member states to determine whether [Good Environmental Status](#) (GES) for Descriptor 8 of the Marine Strategy Framework Directive (MSFD) is being achieved (concentrations of contaminants are at levels not giving rise to pollution).

Read the full report online: [ICES Cooperative Research Report \(CRR\) No. 315 Integrated marine environmental monitoring of chemicals and their effects](#).

Find all online ICES CRRs [here](#).

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ICES CRR 315 Integrated marine environmental monitoring of chemicals and their effects .

Introducing ICES new president

Inside Out sits down with Paul Connolly

When ICES Council appointed Paul Connolly as ICES President at the 100th Council meeting in October, he became the third Irishman to be elected to the position. Connolly hails from Galway, Ireland, where he has served as Director of **Fisheries Ecosystems Advisory Services** (FEAS) at the **Marine Institute** since 1999 – the same year he was appointed as Ireland’s delegate to ICES. Working with stakeholders is a key area for FEAS along with the provision of advice to the Irish government on a broad range of issues and, as Connolly points out, “Working with the ICES community is critical to the provision of this advice”.



ICES President Paul Connolly.

Connolly is enthusiastic in taking over the presidency. “This is a very exciting time for ICES. Public awareness on the use of our oceans has increased and there will be a greater policy demand for impartial marine science and advice. There are great opportunities for ICES in the coming years”.

A new ICES Strategic Plan

Looking forward to some of the key priorities for ICES in 2013, which include the renewal of the **ICES Strategic Plan** (ISP), defining a role for ICES in Arctic science and advice, and the identification of future work related to the MSFD, Connolly commented on his immediate concerns within ICES.

A draft strategic plan for 2014–2018 will be presented to Council for approval in October 2013. “The ICES Strategic Plan will set a clear direction for the organization over the next five years”, states Connolly, “there is a lot of on-going work and discussion that will feed into the ISP including ICES role in Arctic science, aquaculture, the Marine Strategy Framework Directive (MSFD), the external review of ICES advisory services, and the science plan review”. The ISP will highlight collaborations and identify societal needs for scientific advice, as well as guide the associated science, advisory, data, and secretariat plans.

A living “horizon scanning” document will first map out the current policy and research landscape in which ICES operates, acting as a benchmark and critically informing the ISP and associated plans.

New horizons

One discussion that will feature in the renewal of the ISP is that of ICES becoming more involved in aquaculture. Connolly feels the newly created working group on aquaculture (WGAQUA) will help to define a clear position for ICES in the network of aquaculture science organizations.

The Arctic is another new challenge for ICES. SCICOM has been mandated to promote scientific activities in Arctic waters (e.g. changes in hydrography and warming of the Arctic Ocean, exposure of formerly ice covered shelf areas to fisheries, oil and fuel spills). Connolly is aware that while the Council has decided to make the Arctic a priority area for ICES, the organization must establish a niche for itself. “ICES must be sensitive to the fact that there are many players in the Arctic arena and cooperation and partnership will be key”.

Successful initiatives

Connolly would like to build on the continuing success of the various ICES programmes. One of these is the ICES training programme, which has seen over 500 participants from 30 different countries

participate in 22 courses since 2009. “The feedback from those who have participated in the courses has been very positive and new training courses will continue to be developed to meet emerging needs, for example the MSFD and Marine Spatial Planning”.

Connolly is also impressed with the work of ICES strategic initiatives and is looking forward to the [World Conference on Stock Assessment Methods for Sustainable Fisheries](#), a conference on state-of-the-art stock assessment methods used around the world, in Boston in July 2013. “The outputs from this conference will significantly contribute to the toolbox of methods available to ICES”.

External Review of Advisory Services

An important job for the coming year will be following up on the recommendations of the [External Review of Advisory Services](#). Council welcomed the report and Connolly notes that it comes at “a very opportune time in terms of the renewal of the ISP”. The recommendations can be divided into operational issues (to be dealt with by ACOM) and strategic issues (to be dealt with in the ISP).

MSFD

Finally, Connolly points out that the identification of future work in relation to the MSFD, that meets the needs of member countries, stakeholders, and clients will be a key task for ICES. Outreach and communications focused on the potential of ICES to meet these needs will be crucial.

We welcome Paul Connolly as ICES President and wish him the best for his three year term.

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WKECOVER and ecosystem overviews

A step towards understanding human impacts on the seas



WKECOVER will focus on human impacts on the ecosystem.

In 2008, the efforts of ICES Working Group on Regional Sea Descriptions (WGRED) led ICES to produce a number of ecosystem overviews that provided descriptions of the various regional seas. This January, ICES will revisit the ecosystem overview when the Workshop on Ecosystem Overviews (WKECOVER) takes place from 7–11 January. Continuing the process began by WGRED and building on recent work by ACOM Vice-Chair Han Lindeboom, WKECOVER will reconsider what an ecosystem overview should be, how it should be structured, and who are the main audiences for these descriptions (including both the impacts of humans on and the state of our regional seas). The meeting will advance the previous process by both formalising the structure of the overviews as well as considering how to maintain up-to-date references and keeping them operational.

The process of creating ecosystem overviews takes its starting point from the assumption that ecosystems are in a constant state of change. The rates of change may vary, but no ecosystem is static. Additionally, the overviews will focus on human impacts on the system. These overviews will highlight current gaps in information for the provision of future ICES advice.

WKECOVER is part of a larger initiative to make the ecosystem advice operational in ICES. The process begun by WKECOVER will improve the synthesis of knowledge for integrated advice. As we move towards management targets for the marine environment, the ecosystem overviews will qualitatively consider the effects of different sectors (fishing, aquaculture, energy) and supplement the modelling carried out by the ICES integrated assessment groups.

To some extent, it is acknowledged that the perfect ecosystem overview can never be achieved. However, by making the WKECOVER process iterative, with a number of phases, it is hoped that the relevance, impact, and quality of the ecosystem overviews will increase. Oceanography and ecosystem modelling groups are also invited to contribute to the process. The ecosystem overviews will be reviewed and adapted by the integrated assessment groups, ICES Working Group Ecosystem Effects of Fishing (WGECO), and the specialist ecosystem groups in ICES (e.g. plankton, oceanography, sea mammals, etc.).

It is envisaged that participants of WKECOVER will come from a range of disciplines, including fisheries impacts, marine chemistry, environmental variability, and biodiversity. As the workshop is closely linked to both fisheries and environmental assessments, it is of great benefit that OSPAR will be taking part. WKECOVER will be another step towards understanding the impact of humans on regional seas and learning how to manage our sustainable exploitation of the marine ecosystem. How should ICES create regional sea descriptions? Those who feel that they have something to offer are encouraged to contact [Simon Jennings](#) (WKECOVER Chair) or [Anna Davies](#) (ICES Secretariat).

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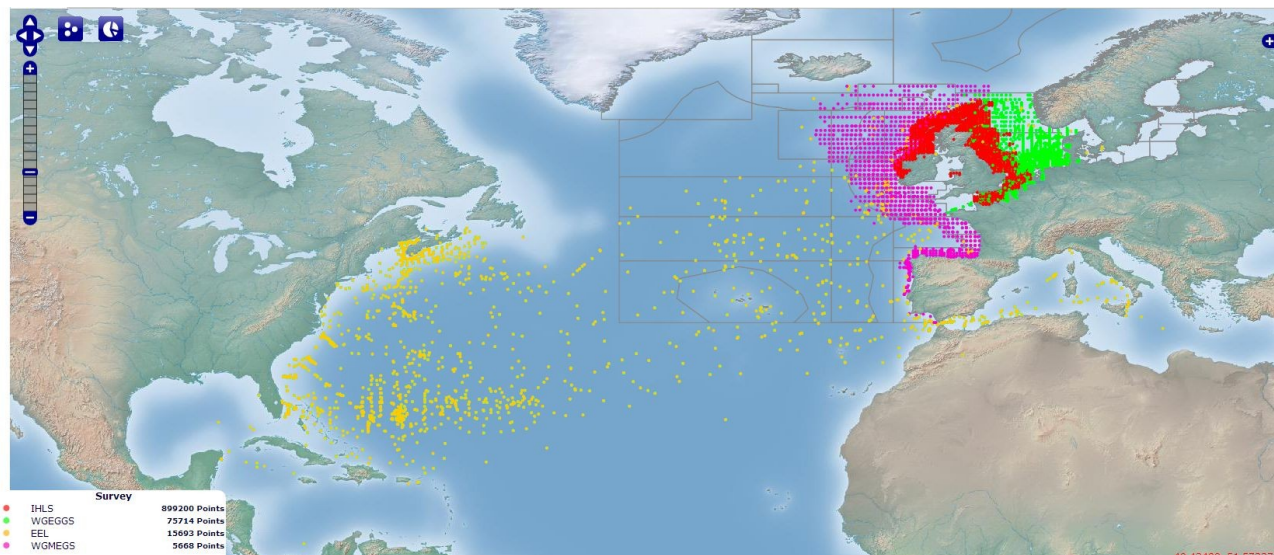
ICES Data Centre hatches a new dataset

Eggs and larvae now online

ICES has just released a new online dataset: eggsandlarvae.ices.dk. The new system has been under development for the past eighteen months as ICES Data Centre has actively collaborated with ICES Working Group on Mackerel and Horse Mackerel Egg Surveys (WGMEGS), ICES Working Group on North Sea Cod and Plaice Egg Surveys in the North Sea (WGEGGS), EIFAC/ICES Working Group on Eels (WGEEL), and the International Herring Larvae Surveys (IHLS) to develop a database capable of accommodating the different datasets.

The Data Centre's aim is to create an accessible eggs and larvae dataset that allows users to perform spatial queries and visualize the distribution of the data, as well as enabling them to download data in a text file.

Contained within the database are data from several ichthyoplankton surveys, each with different target species and coverage, both spatial and temporal.



Distribution of the Eggs and Larvae dataset.

An example of the functionality provided by the new website can be seen in the image above. This interactive map provides a spatial overview of all the available ichthyoplankton survey data contained within the new database, colour coded according to each dataset.

Survey datasets currently available are:

- North Sea cod and plaice egg surveys (2004, 2009, WGEGGS)
- Atlantic Anguilla surveys (1863–2007, WGEEL)
- The International Herring Larvae Surveys (1967–2012)
- Mackerel and horse mackerel eggs (1968–2012, WGMEGS)

The new eggs and larvae website is available at: eggsandlarvae.ices.dk

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Strengthening European research

COFASP project launched

“Strengthening cooperation in European research on sustainable exploitation of marine resources in the seafood chains – ERANET” (COFASP ERA-NET) is a new four-year project in the [European Research Area](#) and was officially launched on 13 December. The [ERA-NET](#) scheme, aimed at national and regional programme managers, will focus on the coordination and cooperation of national and regional research and training programmes. COFASP ERA-NET begins as a partner group consisting of 26 partners from 15 European Union member states and associated countries but the COFASP partnership will remain open for new funders to enter.

European bioeconomy

COFASP ERA-NET seeks to strengthen the implementation of specific segments of the overall [Europe2020 Strategy](#), specifically bioeconomy. [European Commissioner for Research, Innovation, and Science](#), Máire Geoghegan-Quinn outlined the importance of this element of the European Research Area in 2010: “The bioeconomy is multidisciplinary in nature and it pushes us to be interdisciplinary in our approach and to overcome the segmentation of research and innovation into narrow themes. It is therefore well placed to show how we can work together to build an Innovation Union where we avoid duplication of efforts and tackle the fragmentation that undermines the efficiency of European research”.

The European Commission has issued a European Strategy “[Innovating for sustainable growth: a bioeconomy for Europe](#)” paving the way to a more innovative, resource efficient, and competitive society that reconciles food security with the sustainable use of renewable resources, while ensuring environmental protection.

Within the European flagship initiatives “[Innovation Union](#)” and “[Resource-efficient Europe](#)”, the following actions are envisaged in the field of fisheries, aquaculture, seafood and blue biotechnology:

Enhancement of scientific knowledge and innovation reinforcing advice on fisheries management supporting decision making and strengthening an ecosystem-based fisheries management as central principle of the revised Common Fisheries Policy.

Implementation of the EU Strategy for the Sustainable Development of Aquaculture through development of strategic guidelines and implementation of national strategic aquaculture plans.

Promotion consumption of safe, nutritious, and healthy European seafood and ensure traceability of seafood from net and cage to plate.

Boosting the development of innovative none-food products and services derived from aquatic living resources to stimulate blue growth.

COFASP: water-to-table issues

COFASP will directly address these actions planned within fisheries, aquaculture, and seafood. The project is based on the earlier [ERA-NET MariFish](#) and the on-going [ERA-NET SEAS-ERA](#) and aims to strengthen cooperation and synergies between major European funding agencies that support research on sustainable exploitation of marine renewable resources by filling gaps in research programmes. To achieve this a common research programme will be agreed upon and three calls for research projects will be organized. This process will also help to:

- lay the basis for exploitation according to the precautionary principles and to enhance innovation in and competitiveness of the primary sectors fisheries and aquaculture as well as subsequent seafood processing and distribution to the consumer;
- define the science, information and data necessary to underpin the revision of the CFP and to ensure its successful implementation by designing complementary national research programmes and outlining monitoring and information/data sharing systems needed.

COFASP and ICES

COFASP is organised into five work packages:

1. Inventory and Strategy for strengthened cooperation.
2. Towards common programmes.
3. Joint calls on applied research and on support to advice.
4. Dissemination and capacity building.
5. Coordination and management.

ICES Secretariat will lead two COFASP tasks:

Work package 2.2: Elaboration of contents of common programmes

WP2.2 consists of an analysis of potential common programme contents. The contents will be elaborated separately for the three pillars (fisheries, aquaculture, and seafood processing) and compiled together into one document. Areas of common interests, gaps, possible duplications, possibilities for joint calls with other parallel initiatives, and cooperation with other projects will be identified.

Work package 4.4: Training for Human Capacity Building

WP4.4 involves investigating training needs and skill gaps for the sustainable development of European fisheries, aquaculture, and seafood processing. The goal will be to give advice on training needs and to develop and provide needed training in the future.

For more information on COFASP and ICES role in the project, please contact [Søren Anker Pedersen](#) or [Wojciech Wawrzynski](#).



Participants at the official COFASP launch on 13 December at Charlottelund Castle, Copenhagen.

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Take a look at the new ICES Journal of Marine Science

A letter from the Editor-in-Chief

Howard Browman, Editor-in-Chief of *ICES Journal of Marine Science* (IJMS), has made some new additions to the editorial board and would like to fill you in on improvements to the production process.



Howard Browman.

Dear Colleagues,

We invite you to take note of important changes to the editorial board of the [ICES Journal of Marine Science](#).

We are creating a truly interdisciplinary Journal that covers fisheries and marine science from all angles, including history, social science, economics, law, policy, governance, risk assessment, spatial planning, and the diplomacy and negotiations surrounding trade of marine products. We are also expanding our coverage of fisheries, marine science, and oceanography subject areas, with a focus on productivity-determining processes, climate change and impacts of anthropogenic activities. We will also be publishing carefully selected themed sets of articles, commissioned reviews, and provocative essays. These changes have already introduced a new dynamism to the Journal.

We have also made great efforts to streamline manuscript processing – without compromising quality control - such that the average time from submission to first decision is about 40 days. We are making every effort to reduce this to 30 days. Time from final acceptance to appearance in “advance access” is 4–5 weeks. These are very competitive handling times.

In case you were not aware, all articles published in the IJMS become “free access” 12 months after publication. This is a much shorter embargo period than that applied by most journals. Articles can be accessed via the [Oxford University Press archive](#).

We hope that you will join us on our journey to make the IJMS the most important publication in its field!

Sincerely,

Howard Browman

Editor-in-Chief

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ICES marine symposia 2013

What's in store for the upcoming year

ICES, with its many global partners, provides a range of occasions for scientists, stakeholders, and policy-makers to enter into dialogue. ICES symposia play an important role in the ICES work programme, and provide an arena for expanding the ICES community as the wide range of issues addressed invites broad participation.

In upcoming symposia, topics essential to the science component of *ICES Strategic Plan* are addressed, including understanding the physical, chemical, and biological functioning of marine ecosystems; understanding and quantifying human impacts on marine ecosystems, as well as living marine resources, and evaluating options for sustainable marine-related industries, particularly fishing and mariculture.

The **7th International Fisheries Observer and Monitoring Conference** will be held from 8–12 April 2013 in Viña del Mar, Chile. Convener: Oscar Guzman (Chile).

PRIMO 17, the 17th international symposium on “Pollution Responses of Marine Organisms” will be held 5–8 May 2013 in Algarve, Portugal. Conveners: Maria Bebianno, Lucia Guilhermino, Leonor Cancela (Portugal), Matthew Gubbins (UK) and Katrin Vorkamp (ICES).

A conference on “**Acidification of the Arctic Ocean and Northern Seas: Trends and Consequences**” will be held 6–8 May 2013 in Bergen, Norway. Conveners: Arctic Council’s **Arctic Monitoring and Assessment Programme** (AMAP) and Jon Ólafsson (Iceland) and Matt Gubbins (UK) for ICES.

The **World Conference on Stock Assessment Methods for Sustainable Fisheries** will be held in Boston, USA, 15-19 July 2013. Conveners: Steve Cadrin (USA), Mark Dickey-Collas (the Netherlands) and Rick Methot (USA).

ICES Annual Science Conference will be held in Reykjavik, Iceland, 23–27 September 2013.

A symposium on “**Gadoid Fisheries: the Ecology and Management of Rebuilding**” will be held 15-18 October 2013 in St. Andrews, Canada. Conveners: Edward Trippel (Canada) and Fritz Köster (Denmark).

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Season's greetings from all at ICES Secretariat

Best wishes for 2013



SEASONS GREETINGS FROM THE ICES SECRETARIAT
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