



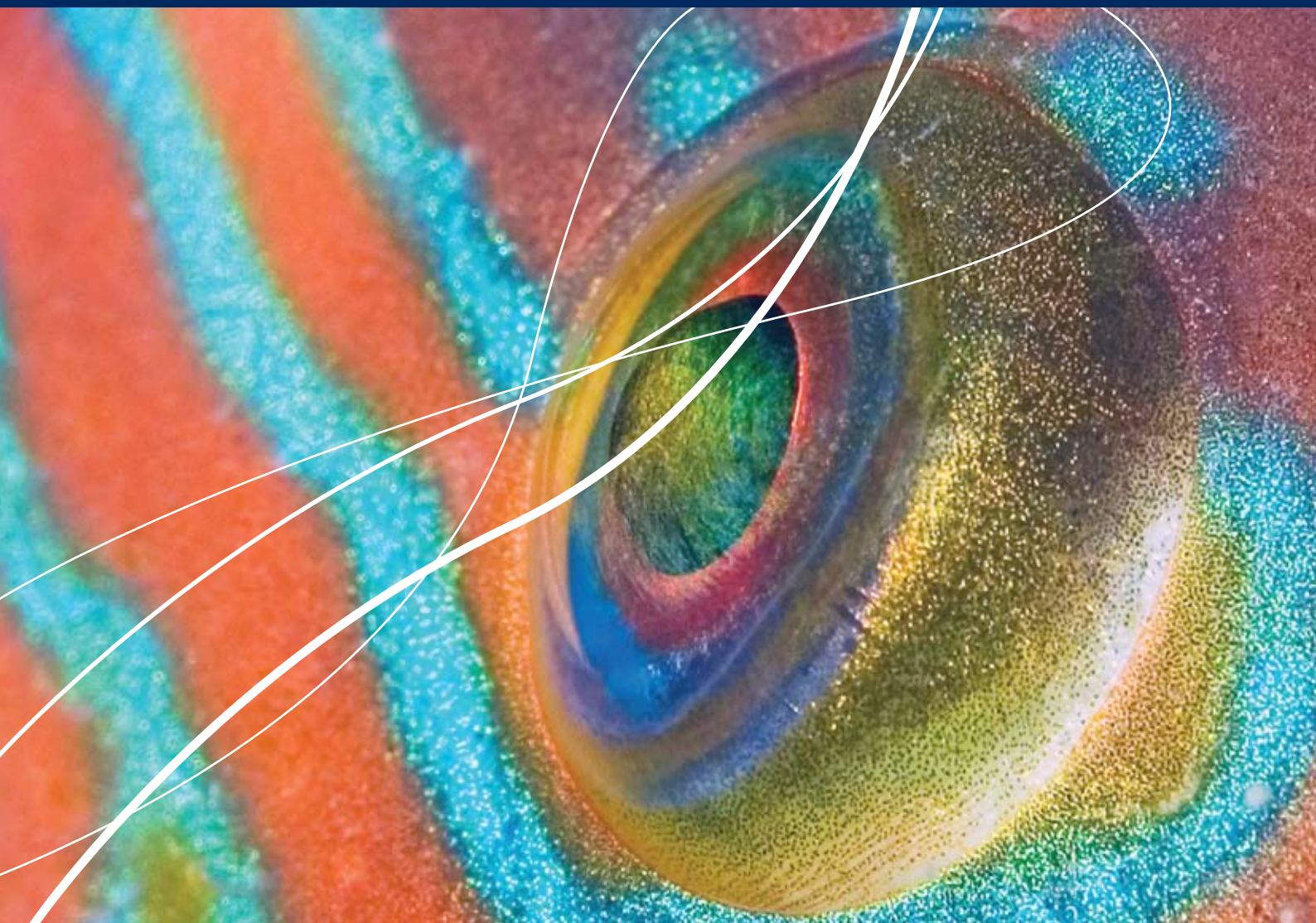
ICES

International Council for
the Exploration of the Sea

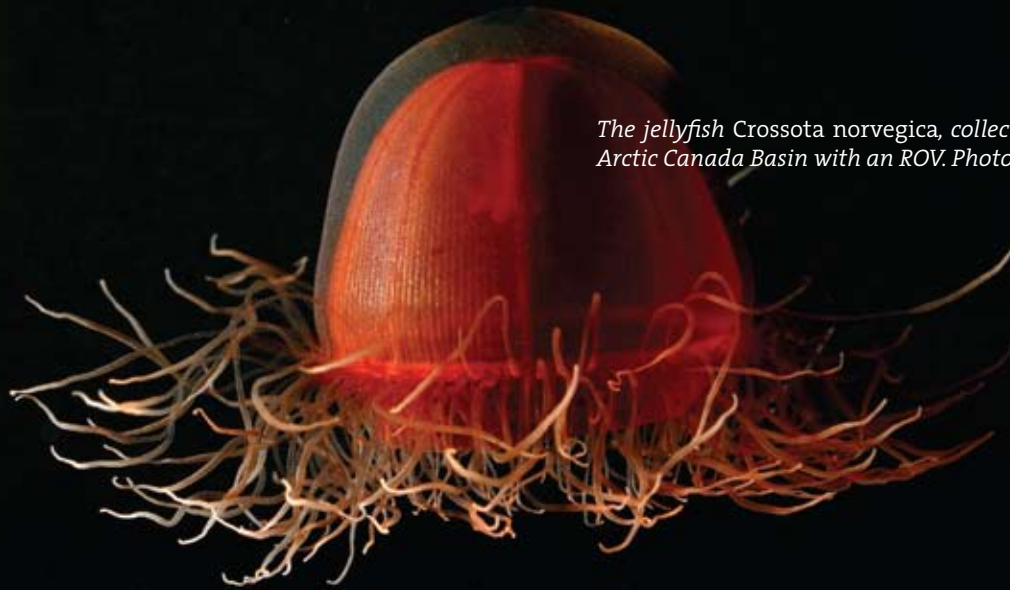
CIEM

Conseil International pour
l'Exploration de la Mer

ANNUAL REPORT 2010



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The jellyfish Crossota norvegica, collected from the deep Arctic Canada Basin with an ROV. Photo by Kevin Raskoff.

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The International Council for the Exploration of the Sea (ICES) coordinates and promotes marine research on oceanography, the marine environment, the marine ecosystem, and on living marine resources in the North Atlantic. Members of the ICES community now include all coastal states bordering the North Atlantic and the Baltic Sea, with affiliate members in the Mediterranean Sea and southern hemisphere.

ICES is a network of more than 1600 scientists from 200 institutes linked by the ICES Convention to add value to national research efforts.

Scientists working through ICES gather information about the marine ecosystem. Besides filling gaps in existing knowledge, this information is developed into unbiased, non-political advice.

It is ICES vision to be an international scientific community that is relevant, responsive, sound, and credible concerning marine ecosystems and their relation to humanity. ICES mission is to advance the scientific capacity to give advice on human activities affecting, and affected by, marine ecosystems.

ICES was established on 22 July 1902 in Copenhagen, Denmark, by eight founding nations, as the result of a concern growing during the late 19th century over the well-being of fish stocks in the North Sea coupled with efforts by different groups of scientists in neighbouring countries to promote and encourage international scientific marine cooperation.

Photos in ICES Annual Report 2010

Our cover photo features the eye of a sleeping corkwing wrasse (Symphodus melops) taken by Tobias Dahlin in the Gullmarsfjorden, on the west coast of Sweden. The corkwing wrasse is one of the most beautiful fish in the northeastern part of the Atlantic Ocean. More photos of the corkwing wrasse are found on pages 24 and 79.

The other photos in this Annual Report were taken in the course of the research done for the Census of Marine Life. We thank the Census of Marine Life and its Education and Outreach Team for kind permission to reproduce them.



A new species of Lysianassoid, an amphipod crustacean sampled near Elephant Island, Antarctic Peninsula, during the Polarstern cruise ANTXXIII-8. Photo by Cédric d'Udekem d'Acoz.

CONTENTS

Welcome	4
Secretariat Administration	6
Advisory Programme	8
Science Programme	12
Data Centre	18
ICES Council	19
Contents of the ICES Annual Report 2010 Supplementary DVD	20
ICES Budgets 2010–2011	22
ICES Interviews	26
Jane Lubchenco	
Philippe Cury	
Myriam Sibuet	
Peter Herman	
ICES Network Directory	37

WELCOME!

A few words from the General Secretary

Business as usual. Even as I write this, it occurs to me that there is no “business as usual” at ICES. Each year brings its own exciting challenges and opportunities. Even without the great developments and displacements that occurred during the years of the Advice and Science programme reorganizations, there were many activities that set 2010 apart.

Negotiations with the European Commission to renew the Memorandum of Understanding were intensive, owing to a set of new tasks and responsibilities for ICES that will be built into this cooperation agreement. ICES has provided scientific advice to develop the descriptors for the European Marine Strategy Framework Directive (MSFD) and has created an internal structure between ICES Advisory Committee (ACOM) and ICES Science Committee (SCICOM) to deliver the future tasks related to scientific activities under the MSFD.

In this context, it’s a pleasure to be able to write about ICES significant activities in the Baltic, which are now under the new SCICOM Regional Sea Programme, and which have led to a revitalization of our relationship with HELCOM and to an active cooperation with the Baltic BONUS network. This fruitful liaison will sharpen our focus on Baltic science at ICES Annual Science Conference 2011 in Gdańsk, and it will open the door for a joint endeavour to make the Baltic Sea a model region for integrated ecosystem monitoring and management, based on best scientific advice provided by ICES.

In the first year of operation since it reorganized its structure and profile, SCICOM has extended its reach

into new areas of science and, together with ACOM, has created a series of strategic initiatives that puts it on track to deal with longer-term strategic issues. (Read more about the initiatives in the Science Programme section.)

ICES Training is progressing full speed ahead. When envisioning this programme, we could hardly have imagined its immediate success or estimated the actual size of the market. It has drawn responses from around the world as well as invitations to join forces with other international organizations on training.

MARCOM+ is providing ICES with access to many new areas of discussion and cooperation with maritime as well as marine stakeholders. It is too early to anticipate the many ramifications of this wide-ranging project.

A Communications Strategy was approved, allowing for a two-year trial during which a communications department will be implemented. It will provide the mechanism to share information about ICES many activities with scientists and the general public alike. As in years past, ICES Publications delivered an unprecedented number of issues in ICES two reports series while maintaining its high level of scientific and editorial quality.

With these investments in training, scientific cooperation, and communication, ICES has accepted its responsibility as the leading intergovernmental marine science organization in the North Atlantic area and will continue as the first address for marine science and advice for our Member Countries and partner commissions. You might call this business as usual.

Dr Gerd Hubold



Gnathopausia sp. caught in a net trawl at 2600 m. These red mysid shrimp inhabit the deep sea worldwide. Photo by David Shale.

SECRETARIAT ADMINISTRATION

During the year, representatives of the Secretariat participated in and contributed to several national and international meetings, and logistic and secretarial support was provided as usual for many expert group meetings. In 2010, 1360 participants attended 81 in-house meetings for a total of 6103 person days. The increasing number of participants, often at simultaneous working groups, and the increased demand for break-out workspace for subgroups stretched ICES meeting-room capacity to the limit.

ICES Bureau met in February, June, September, and October. The 98th Statutory Meeting of the ICES Council was held in Copenhagen, 27–28 October. The Finance Committee met in June.

Memoranda of Understanding with the partner organizations continued during 2010, and collaboration with these partners was actively developed, for example, through the Meeting with ICES Client Commissions (MICC), ICES participation in Regional Advisory Council (RAC) and European Fisheries and Aquaculture Research Organisation (EFARO) meetings, and bilateral contacts through the Science Programme and Advisory Services.

Scientific cooperation was active *inter alia* through participation in the PICES Annual Meeting, strengthening of links with the EurOceans network, meetings of ERANETS, and the MARCOM+ partnership.

The Secretariat cooperated with national and international programmes and projects such as FIMPAS (NL), KNOWSEAS, UNCOVER (FP 7 projects), MariFish, BONUS EEIG, and others.

The Secretariat, with the Chair of ACOM, contributed a commitment to the Baltic Sea Action Summit held in Helsinki, which led to productive discussions with HELCOM and a review of cooperative activities. The General Secretary participated in the HELCOM ministerial meeting in Moscow and reported to the ministers on ICES involvement in the Baltic. Three new areas of cooperation were developed with HELCOM on eel, flatfish, and salmon in the Baltic, and a “roadmap” for further cooperation was tabled by HELCOM.

In June, a strategy meeting was organized by the Secretariat with representatives from EC-DG Research on closer cooperation on science planning and future ICES services for DG Research. This led subsequently to the inclusion of future services for DG Research in the renewed ICES-EC MoU 2011.

Discussions were held with DG Mare regarding an increased role for ICES in the Commission’s scientific advice and cooperation between each organization’s training activities. New tasks were included in the MoU for 2011.

Links with the Large Marine Ecosystems programme were established for future scientific cooperation in ecosystem research, monitoring and management advice, advanced training, and logistic support.

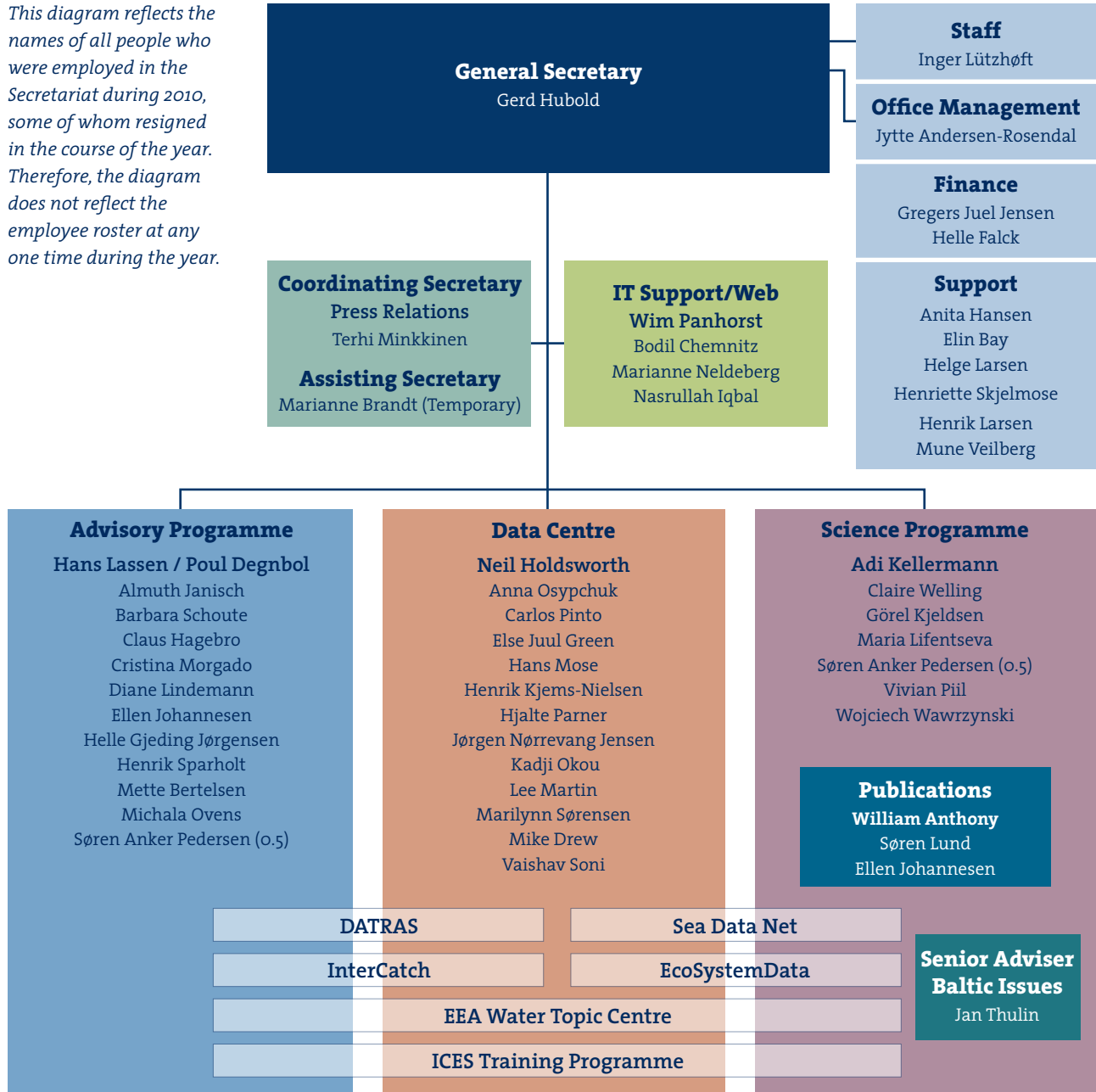
On the ICES Annual Report 2010 Supplementary DVD

Secretariat Administration

The following report related to Administration can be found under the heading Secretariat.

- *ICES Progress Report*
-

This diagram reflects the names of all people who were employed in the Secretariat during 2010, some of whom resigned in the course of the year. Therefore, the diagram does not reflect the employee roster at any one time during the year.



ADVISORY PROGRAMME

ICES Advisory Services produced advice about the marine environment and management of fisheries for intergovernmental commissions and governments in charge of marine environmental and fishery policies in the Northeast Atlantic, including the Baltic Sea and the North Sea. The advice covered monitoring of marine pollutants, environmental interactions of wave and tidal energy generation, evaluations of national management plans for eel, the effects of marine aquaculture on wild fish, management advice for 140 fish stocks in the Northeast Atlantic, and advice regarding rebuilding and management plans for several fish stocks.

The advice is based on data and analysis provided by the more than 50 expert groups, in which scientists from research institutes in ICES Member Countries assemble available data and scientific knowledge, and analyse it in order to lay the foundations for policy-relevant advice, based on the best available science.

So-called benchmarks, thorough reviews of the data and methodologies used to provide the basis for advice, were conducted for a number of roundfish and flatfish stocks, and for sandeel and deep-sea species. Such benchmark workshops, which involve independent reviewers and stakeholders in addition to the ICES experts normally involved in the analysis of the stocks concerned, provide an opportunity to delve deeper into methodology and discover new perspectives outside the pressure and short deadlines of the annual assessment updates.

The advice for fisheries emphasized the objective of achieving maximum sustainable yield (MSY), agreed to by ICES Member Countries in various international agreements, including the UN Law of the Sea and the

World Summit on Sustainable Development in 2002. A dialogue with governments, commissions, and stakeholders was initiated in late 2009, and continued through 2010, on the interpretation and implementation of this approach; a transition to MSY by 2015 (as stipulated in the World Summit on Sustainable Development) was included as an option in the advice. It is apparent from the resulting dialogues that public authorities and stakeholders view the increased emphasis on the MSY approach as helpful in moving towards sustainable fisheries, although opinions vary on how to achieve this and what advice is required.

In 2008, the ICES advice structure was changed from one based on three separate advisory committees doing internal peer reviews to a system with one advisory committee and a separate peer-review process. This was done to facilitate advice that integrates environmental, ecosystem, and fishery advice, and to ensure that the advice is based on analysis, which is quality checked through independent review. The first years have seen a transition to consolidate this setup and took place under the leadership of Michael Sissenwine (USA), who completed his last year as Chair of the ICES Advisory Committee (ACOM) in 2010. Jean-Jacques Maguire (Canada) was elected to take over as ACOM Chair, effective January 2011.

In recent years, the advisory process has developed from being one limited mainly to scientists appointed by ICES delegates to one that pursues dialogue with stakeholders and has opened most of the process to direct participation or observation by stakeholders, including staff from public authorities, industry, and environmental NGOs. On the European Union side, Regional Advisory Councils (RACs) have served as important partners in dialogue with stakeholders. ICES supports this by regularly sending ICES scientists to

attend RAC meetings, where they present and discuss the advice, and by opening advisory-process meetings to RAC participation or observation.

These interactions have included a strong element of mutual education, helping ICES scientists understand the issues important to stakeholders and explaining to stakeholders the basis for the advice, as well as clarifying the technical concepts used in advice reports. This has been useful for both sides, and the next logical step was to arrange a specific training course (“Opening the Box”) about the process of producing advice and its concepts. The course was well received by stakeholders and the recipients of ICES advice, and will be the basis for further such initiatives.

Examples of advice provided in 2010 include:

The advice to the North East Atlantic Fisheries Commission (NEAFC) on vulnerable deep-water habitats illustrates the kind of environmental advice that ICES provides to intergovernmental fishery commissions. The request asked ICES to continue to provide all available new information on distribution of vulnerable habitats in the NEAFC Convention area.

New data and information provided further confirmation of the presence of vulnerable habitats inside closed areas within the NEAFC regulatory area. There were also new records of vulnerable marine ecosystems (VME) outside the closed areas, sufficient to suggest a revision of closure boundaries. ICES provided advice on the expected efficiency of proposed closed-area boundary revisions on reducing risk of adverse impacts caused by bottom fisheries in specific areas.

Advice to the European Commission on the management plans for eels. The Council Regulation (EC) No. 1100/2007 of 18 September 2007 established measures for the recovery of European eel and, as a part of that, EU Member States had to submit national plans. In 2009 and 2010, ICES worked with EC-DG MARE to provide a technical evaluation of these national eel management plans. Over the course of the project, more than 5000 pages of reports were reviewed.

Advice to the European Commission on bycatch of small whales. The Regulation on cetacean bycatch (Regulation 812/2004) calls for the reporting of bycatch and preventive measures in some fisheries. ICES delivered advice that reviewed the reports and information on incidental catches of small cetaceans in European waters, and provided information on the population status, distribution, and density of small cetaceans since 2004. Cetacean incidental catch mitigation measures were also identified, where appropriate.

Advice to the European Commission for the Marine Strategy Framework Directive (MSFD). The MSFD prescribes that good environmental status (GES) must be established in European seas, based on 11 descriptors of GES including, for instance, biodiversity, the status of commercially exploited fish stocks, seabed integrity, and underwater noise. ICES provided scientific support to the European Commission as background to the preparation of the Commission decision on criteria and methodological standards on GES. The work was accomplished in close cooperation with the EU Joint Research Centre (JRC) in Ispra, Italy.

The advice was provided as Task Group reports relating to eight of the descriptors of GES listed in Annex I of the Directive.

ICES has also been a partner in projects to support policy implementation. An example is the **FIMPAS (Fisheries Measures in Protected AreaS)** project, which will develop a proposal for fishery measures in three designated areas in the Dutch EEZ in the North Sea. ICES advice on the appropriateness of this proposal will be published in 2011. The FIMPAS project brings industry stakeholders, NGOs, and scientists together to develop this regulatory proposal. Two workshops in 2010, chaired by Paul Connolly (Ireland), considered data availability and conflict analysis. Additionally, economists were invited to evaluate possible scenarios for proposed measures in the various Natura 2000 sites.

Another example of project involvement to bring research results forward to inform policy is the **Fish Behind the Net** project. In cooperation with the European Environment Agency (EEA), the Fish Behind the Net (FBtN) study provides input to the EEA's 2012 European Ecosystem Assessment (EURECA), which aims to assess the state of ecosystems in Europe in 2010 and their possible development beyond 2010. The study will assess the impacts of commercial fishing on selected ecosystem goods and services, quantify and value the observed trends and changes of the relevant goods and services, explore resilience and sustainability issues, and finally explore management measures to address the observed and future trends and changes in the goods and services. The study assesses 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 provides relevant information to support the 2012 reform of the CFP.

On the ICES Annual Report 2010 Supplementary DVD

Advisory Services

The following report related to Advisory Services can be found under the heading Advisory Committee.

- *Report 2010*
-

Antarctic male pycnogonid, a distant marine relative of spiders, bearing its eggs. Sampled in the Larsen A area, Antarctic Peninsula, during the Polarstern expedition ANTXXIII-8. Photo by Pablo J. Lopez-Gonzalez.



SCIENCE PROGRAMME

In addition to expanding the range of its activities in the context of its new structure, ICES Science Programme (SCIPRO) continued to develop relationships with other international organizations.

The five SCICOM Steering Groups (SSG) deepened the cooperation of the Expert Groups under their umbrellas. (For an explanation of how steering groups fit into ICES structure, see pages 36 and 37.) Three SSGs focused on the overarching themes of *ICES Science Plan*.

- **Steering Group on Ecosystem Functions** (SSGEF) introduced a system that tracks terms of reference of individual groups in relation to *ICES Science Plan* and its implementation.

- **Steering Group on Human Impacts on Ecosystems** (SSGHIE) largely carried out the work of the ACOM and SCICOM Strategic Initiative on Area-based Science and Management (SIASM), but also combined work in social and economic sciences with ecological sciences, by studying the socio-economic dimensions of aquaculture. Additionally, the group worked on contamination, eutrophication, and habitat change, and further explored integrated assessments and research on ecosystem health.

- **Steering Group on Options for Sustainable Use of Ecosystems** (SSGSUE) focused on four areas of research: (i) operational modelling, combining oceanography, ecosystem, and population processes; (ii) marine living resource management tools; (iii) marine spatial planning, including the effectiveness of management practices; and (iv) contributions to socio-economic understanding of ecosystem goods and services.

Cross-boundary SSGs made progress too. For example:

- **Steering Group on Ecosystem Surveys Science and Technology** (SSGESST) emphasizes the development, standardization, and advancement of assessment surveys, focusing on the application of advanced technologies for observing, monitoring, and surveying marine ecosystems, which will encourage the evolution of current capabilities to address information needs that support the ecosystem approach to management. Technological innovation will be essential to this evolution, and SSGESST EGs with expertise in advanced technology are already working closely with EGs responsible for survey design and planning, on approaches for expanding the capabilities of routine stock assessment surveys.

- **Steering Group on Regional Sea Programmes** (SSGRSP) instituted additional programmes to complement the Baltic model in the North Sea, the West European shelf sea, and the Northwest Atlantic. The group continued to develop integrated assessment tools and procedures. A workshop on introducing coupled ecological–economic modelling and risk assessment into management tools explored the integration of economics, stock assessment, and fishery management.

After the establishment of SCICOM steering groups in 2009, strategic initiatives developed quickly in 2010.

- Climate Change (began in 2007)
- Biodiversity (began in 2010)
- Area-based Science and Management (began in 2010)
- Stock Assessment Methods (began in 2010)

Strategic Initiative on Climate Change approached its final stage in 2010. A Cooperative Research Report, “Climate Variability and Change in the North Atlantic”, and an ICES position paper on climate change will be released in mid-2011.

The objective of the **SCICOM and ACOM Strategic Initiative on Biodiversity Science and Advice (SIBAS)** is to develop a clear link between marine biodiversity science and advice, and to position ICES as an effective and reliable source of biodiversity advice. SIBAS will ensure that ICES will be proactive in matters relating to biodiversity, by monitoring policy development and coordinating its expert groups.

ACOM and SCICOM Strategic Initiative on Area-based Science and Management (SIASM) held the Strategic Initiative Group on Marine Spatial Planning workshop, which produced a concrete work programme. Working closely with the ICES Data Centre and other relevant groups, SIASM aims to define and quantify viable ecosystem features necessary to deliver goods and services, and to define and quantify its vulnerability, cumulative impacts, and synergies. SIASM will translate this capacity into advice, and communicate it to clients, Member Countries, stakeholders, and the scientific community.

ACOM and SCICOM Strategic Initiative on Stock Assessment Methods (SISAM) will carry out a review of state-of-the-art stock assessment methods used worldwide. The products will include a number of review publications and/or a conference and an online repository of codes, manuals, and working datasets.

International cooperation

Among the many examples of ICES international cooperation, several stood out.

As a follow-up to the 2009 International Nutrients Scale System (INSS) International Workshop, sponsored by ICES and Intergovernmental Oceanographic Commission (IOC), the joint ICES/IOC Study Group on Nutrient Standards (SGONS) met at UNESCO/IOC headquarters in Paris. The handbook *Comparability of Nutrients in the World's Ocean* was subsequently published. The return of ICES to the IOC General Assembly was called for by the new Head of Ocean Science. ICES had attended the IOC General Assembly until the early 2000s, when the blue-water oceanographers left the ASC and other ICES activities.

A letter of agreement was signed between ICES and the International Arctic Science Committee (IASC), linking SCICOM with the IASC Working Group on Marine Sciences. Both parties will explore the integration of surveys and observational technologies into operational ecosystem surveys. The agreement encourages collaboration on workshops, data exchange, project development, and reporting.

The digitization of historical ICES plankton survey data (SAHFOS) is on track. Further data were entered and quality checked, species names resolved, and data explored. Publication in a peer-reviewed journal is planned after the project's completion in 2011.

A meeting of the PICES/ICES Study Group on Strategic Cooperation discussed the development of a formal framework for cooperation between the organizations' science plans and longer-term strategic planning. An PICES/ICES theme session was held at the ASC on global climate change.

ICES Annual Science Conference 2010

Most Annual Science Conference (ASC) participants were from ICES Member Countries, but participants also attended from other European countries, as well as Australia, Asia, and South America. In all, 782 participants (plus 38 accompanying persons) from 39 countries attended the conference in Nantes, France. The scientific programme included 286 oral presentations and 161 posters.

Travel funds were granted to 20 early career scientists from ICES Member Countries. Funds were also made available for eight young fishers, also from ICES Member Countries, to attend the conference.

Under the ICES Recognition Programme, the Chair of the Awards Committee, Ed Houde gave the "Outstanding Achievement Award" to Harald Loeng (Norway), during the opening ceremony.

On the ICES Annual Report 2010 Supplementary DVD

The following documents can be found under the heading 2010 Annual Science Conference.

- *Conference Handbook*
 - *ASC Brochure with programme*
 - *Opening Session addresses*
 - *Wendy Watson-Wright, Executive Secretary Intergovernmental Oceanographic Commission of UNESCO*
 - *Maurice Héral, ICES Delegate*
 - *Ed Houde, Outstanding Achievement Award to Harald Loeng*
 - *Jane Lubchenco, Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator*
 - *Plenary Lectures*
 - *Phillipe Cury*
 - *Peter Herman*
 - *Myriam Sibuet*
 - *The Closing Session: Awards*
 - *Index of Papers and Posters Presented at the ASC*
 - *Index of Theme Session Reports*
 - *List of participants*
-

MARCOM+

In addition to overall coordination, ICES main task in the MARCOM+ initiative has been implementation of the Communication Plan, which included dissemination of the project findings and/or ICES views during major marine and maritime science events (e.g. the EU Maritime Day, the EU Green Week, the International Conference on Coastal Conservation and Management, and the Sustainable Ocean Summit). Meetings and workshops organized under the MARCOM+ umbrella included the first MARCOM+ Open Forum and the MARCOM+ Workshop on New Partnerships in Maritime Transport and Blue Biotechnology. The project's website was launched (www.MarineMaritimeScienceForum.eu), and a video describing the initiative was produced (http://www.youtube.com/watch?v=ponJiOyEr4k&feature=player_embedded#).

The work of MARCOM+ is connected with related initiatives, for example, the European Maritime Stakeholders Platform and the Venice Platform, the SEAS-ERA (the European Network of Marine Science Funding Agencies), and EMAR2RES (Cooperation Between the Communities of European Marine and Maritime Research and Science).

ICES Training

The ICES Training programme offered five training courses held at the ICES Secretariat and one joint ICES-ICCAT training course held at Centro Tecnológico del Mar-Fundación (CETMAR), Vigo, Spain.

- **Stock Assessment (Introduction; was run twice in 2010)**
Instructors: Steve Cadrin (SMAST, University of Massachusetts Dartmouth, USA) and Iago Mosqueira (Cefas, UK)
- **Stock Assessment (Advanced)**
Instructors: Chris Darby (Cefas, UK), James Ianelli (NOAA/AFSC, USA), and Richard Methot (NOAA/NWFSC, USA)
- **Ecosystem Modelling for Fishery Management (Ecopath-Ecosim-Ecospace)**
Instructors: Villy Christensen (FC, University of British Columbia, Canada) and Steven Mackinson (Cefas, UK)
- **Joint ICES-ICCAT course on Management Strategy Evaluation (incl. FLR)**
Instructors: Laurence Kell (ICCAT, Spain) and Iago Mosqueira (Cefas, UK)
- **Introduction to Bayesian Inference in Fishery Science**
Instructors: Ray Hilborn (SAFS, University of Washington, USA) and Samu Mäntyniemi (University of Helsinki, Finland)

- **Opening the Box: Stock Assessment and Fishery Advice for Stakeholders, NGOs, and Policy-makers**
Instructors: Martin Pastoors (Wageningen UR Centre for Marine Policy, The Netherlands), Christopher Zimmermann (VTI/Institute of Baltic Sea Fishery, Germany), and Ciaran Kelly (Marine Institute, Ireland)

ICES Publications Group

As usual, the *ICES Cooperative Research Report* (CRR) series and *ICES Techniques in Marine Environmental Sciences* (TIMES) series took the lion's share of ICES Publications Group's resources, while work continued on ICES many other publishing projects. Seven CRRs and two TIMES were published. Worthy of note for its unusually great length of 371 pages was CRR 301 "Resolving climate impacts on fish stocks", which appeared in May. The titles are below, and they are freely available on the Publications page of ICES website.

It was a successful and productive year for *ICES Journal of Marine Science*, based on the quality and number (more than 320, a new annual record) of standard issue manuscripts. In addition, the 2010 citation index resumed its upward trajectory.

Seven issues of the *ICES Journal of Marine Science* contained articles on mixed topics (the standard issues), and two carried the proceedings of ICES Symposia, "Cephalopod life history, populations, and environment. Selected papers of CIAC '09", and "Rebuilding depleted fish stocks: biology, ecology, social science, and management strategies".

ICES Inside Out, ICES electronic newsletter, continues to be well received. The number of active subscribers rose

to more than 600. Six issues were published in 2010. A breakthrough was achieved with Issue 2, when a new design in a PDF format was introduced with increased content. An issue was devoted to a preview of the ASC, and an issue reviewed ASC activities.

As in the three previous years, a dedicated ASC web page was set up. It was updated daily during the conference with reports and interviews from the theme sessions and events. Real-time webcasts of open meetings were broadcast for the first time.

Issue 47 of *ICES Insight* appeared at the beginning of September, with 44 pages and nine articles. It has become a primary tool in ICES public relations in the Secretariat and at external meetings.

The following numbers in the *ICES Cooperative Research Report* series were published in 2010.

- **No. 300.** Proceedings of the "Joint ICES/CIESM Workshop to Compare Zooplankton Ecology and Methodologies between the Mediterranean and the North Atlantic (WKZEM)"
- **No. 301.** Resolving climate impacts on fish stocks
- **No. 302.** Integrated ecosystem assessments of seven Baltic Sea areas covering the last three decades
- **No. 303.** Cephalopod biology and fisheries in Europe
- **No. 304.** ICES Report on Ocean Climate 2009
- **No. 305.** Cod and future climate change
- **No. 306.** Life-cycle spatial patterns of small pelagic fish in the Northeast Atlantic

A sort of series-within-a-series developed in the *ICES Techniques in Marine Environmental Sciences*, beginning with TIMES 44 and continued through TIMES 48. It originated in response to requests for advice from clients (in these cases, OSPAR). In the past, this information could only be found in the EG reports and *ICES Advice*. Publishing the information in the TIMES series makes it readily available, while adding another level of quality control.

The newly published reports include guidelines for the analysis of the flame retardants hexabromocyclododecane (TIMES 44), polycyclic aromatic hydrocarbons (TIMES 45), polybrominated diphenyl ethers (TIMES 46), organotin compounds (TIMES 47), and perfluoroalkyl compounds (TIMES 48).

ICES Symposia

Four ICES Symposia or ICES co-sponsored symposia took place in 2010.

- ICES/PICES/FAO Symposium on “Climate Change Effects on Fish and Fisheries: Forecasting Impacts, Assessing Ecosystem Responses, and Evaluating Management Strategies”; Sendai, Japan, 26–29 April
- Third International Symposium on Research and Management of Eutrophication in Coastal Ecosystems; Nyborg, Denmark, 15–18 June
- ICES Symposium on the Collection and Interpretation of Fishery Dependent Data; Galway, Ireland, 23–26 August
- 26th Lowell Wakefield Symposium on “Ecosystems 2010: Global Progress on Ecosystem-based Fisheries Management”; Anchorage, Alaska, 8–11 November

Proceedings of the first and third symposia will be published, with ICES support, in the *ICES Journal of Marine Science*. Symposia reports are available on the ICES Annual Report 2010 Supplementary DVD.

On the ICES Annual Report 2010 Supplementary DVD

The following reports related to the Science Programme can be found under the heading Science Committee.

- *September Report 2010*
 - *SCICOM Progress Report 2010*
 - *Symposia Reports 2010*
-

*The jewelled squid, *Histioteuthis bonnellii*, swims above the Mid-Atlantic Ridge at depths of between 500 m and 2000 m. Photo by David Shale.*



DATA CENTRE

The Data Centre continued to pursue the three key areas outlined in 2009: (i) increase the GIS capabilities at the Secretariat, (ii) support and provide expertise for relevant externally funded data projects, and (iii) participate in the development of marine data standards at regional and international levels.

Interaction with the ICES expert groups showed a marked increase through such activities as the stomach data rescue and by providing GIS facilities to the Working Group on Marine Habitat Mapping (WGMHM).

The Working Group on Data and Information Management (WGDIM), with input from the Data Centre, formulated a new ICES Data Strategy that was approved by SCICOM in September. Among others, a stronger interaction with HELCOM through the year led to a number of positive outcomes, not least a renewed data handling contract. The Data Centre continued to focus on partner organizations, such as OSPAR and the EEA, and the EMODNET pilot projects began to show the first draft of their data portals and information, with our support and input.

The release of EcoSystemData v2.0 rounded off the year as a significant advancement for the Data Centre. A simpler, larger, and more understandable map facility, map legends, as well as ICES, OSPAR, and HELCOM map overlays; an enhanced inventory with taxonomic breakdown; and a new dataset: Year of the Stomach, were some of the highlights from this version 2 release. Visit the data portal at <http://ecosystemdata.ices.dk>.

On the ICES Annual Report 2010 Supplementary DVD

The following report can be found under the heading Data Centre.

- *Report of the Working Group on Data and Information Management (WGDIM)*
-

ICES COUNCIL

The Council met at ICES Headquarters in Copenhagen on 27–28 October.

Council appointed Jean-Jacques “JJ” Maguire from Canada as the new Chair of the Advisory Committee (ACOM) for a three-year term (2011–2013).

Council accepted the report of the Finance Committee and approved the budgets for 2011 and 2012.

During the meeting, the Delegates were invited to a reception held by the Canadian Ambassador Peter Lundy.

The Council Working Group on Economics and Social Sciences in ICES (CWG ESS) and the Council Working Group to Review the Transition of Advisory Services in ICES (CWG RTAS) met to develop the strategies for the inclusion of socio-economics in ICES work and for the further development of Advisory Services. The working groups presented their reports to Council at the October meeting.

On the ICES Annual Report 2010 Supplementary DVD

The following reports of the ICES Council can be found under the heading ICES Statutory Meeting.

- *Meeting 27–28 October*
- *Index of Resolutions*

The following reports of the Finance Committee can be found under the heading ICES Statutory Meeting.

- *June Report*
 - *Final Accounts*
-

CONTENTS OF THE ICES ANNUAL REPORT 2010 SUPPLEMENTARY DVD

Documents relating to ICES work are collected on the ICES Annual Report 2010 Supplementary DVD, found on the inside back cover. The Index has two sections, ICES Statutory Meeting and Annual Science Conference 2010. Insert the disc in your DVD player. The Index should appear automatically. If it doesn't, right click the icon representing your DVD drive and choose "Explore". Double click the file named "Index.htm". The Index provides links, in green, either directly to the document or to a further index. Click the ICES logo to go to the ICES website.

ICES Statutory Meeting

Secretariat – ICES Progress Report.

Advisory Committee – Report 2010.

Science Committee – September Report 2010; SCICOM Progress Report 2010; Symposium Reports 2010.

Data Centre – Report of the Working Group on Data and Information Management (WGDIM).

Council – Meeting 27–28 October; Index of Resolutions.

Finance Committee – June Report; Final Accounts.

Annual Science Conference 2010

Conference Handbook – In addition to abstracts of papers presented at the ASC, the Handbook includes general information about the Conference, abstracts of plenary lectures, a list of expert group reports for 2010, agendas and orders of the day, and a list of exhibitors and sponsors.

ASC Brochure with programme – The original ASC brochure with the complete programme of theme sessions and social events.

Opening Session Addresses – Wendy Watson-Wright, Executive Secretary, Intergovernmental Oceanographic Commission of UNESCO; Maurice Héral, ICES Delegate; Ed Houde, presenting Outstanding Achievement Award to Harald Loeng; Jane Lubchenco, Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator.

Plenary Addresses – Addresses by Phillipe Cury; Peter Herman; Myriam Sibuet.

The Closing Session – Merit award recipients.

Index of Papers and Posters Presented at the ASC – An index of papers presented at the Annual Science Conference 2010, arranged numerically by Theme Session. Click the Theme Session at the top of the Index to jump to the papers from that session. Links to the papers are in green.

Index of Theme Session Reports – An index of Theme Session final reports.

List of participants – A list of all ASC participants.



"New" Dumbo (Grimpoteuthis sp.), a cirrate or finned octopod, which flaps a pair of large ear-like fins to swim, photographed over the Mid-Atlantic Ridge. Photo by David Shale.

ICES BUDGETS 2010–2011

(All amounts in Danish Kroner)

	Budget 2010	Budget 2011
INCOME		
Price for one share	402,000	410,000
1. National Contributions		
Belgium	804,000	820,000
Canada	1,206,000	1,230,000
Denmark	1,206,000	1,230,000
Estonia	402,000	410,000
Finland	603,000	615,000
France	1,608,000	1,640,000
Germany	1,608,000	1,640,000
Iceland	1,206,000	1,230,000
Ireland	804,000	820,000
Latvia	402,000	410,000
Lithuania	402,000	410,000
The Netherlands	1,206,000	1,230,000
Norway	1,608,000	1,640,000
Poland	1,206,000	1,230,000
Portugal	804,000	820,000
Russia	1,206,000	1,230,000
Spain	1,206,000	1,230,000
Sweden	1,206,000	1,230,000
United Kingdom	1,608,000	1,640,000
USA	1,206,000	1,230,000
Total National Contributions	21,507,000	21,935,000
Contributions from Affiliates	180,000	0
Contributions from Faroe Islands and Greenland	402,000	410,000
Total Contributions	22,089,000	22,345,000
2. Income from Commissions		
Contribution from NEAFC	2,118,521	2,177,492
Contribution from Russia for Baltic Sea Advice	73,880	0
Contribution from OSPAR (Advice)	645,300	323,594
Contribution from OSPAR (Data handling)	483,975	529,225
Contribution from HELCOM (Advice)	153,581	0
Contribution from HELCOM (Data handling)	480,103	489,705
Contribution from NASCO	495,143	498,458
Contribution from EC	6,050,803	6,091,314
Total Income from Commissions	10,501,306	10,109,788

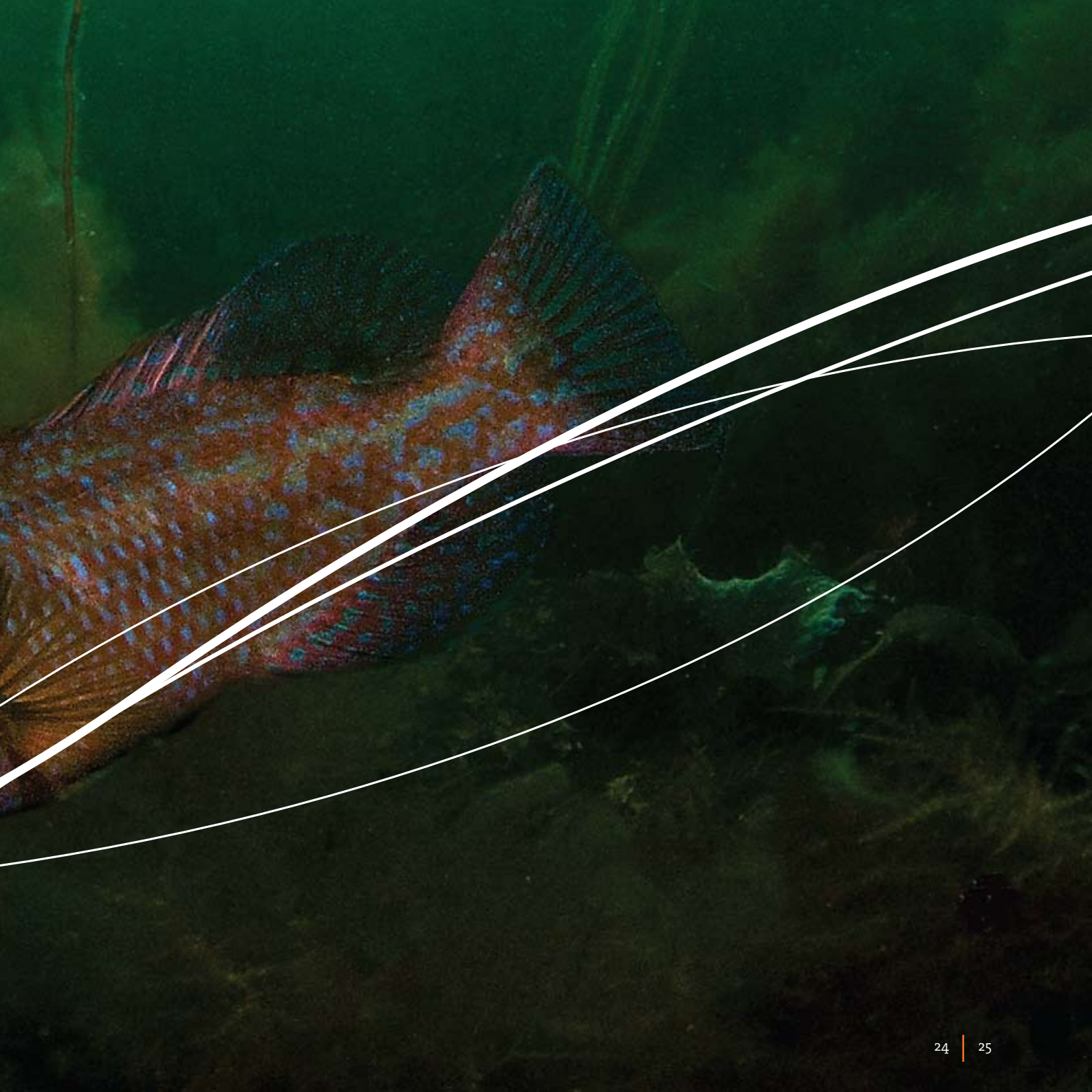
	Budget 2010	Budget 2011
3. Other Income		
Once off advice	1,500,000	1,000,000
Income from <i>ICES Journal of Marine Science</i>	250,000	590,000
Sale of Publications	25,000	25,000
ASC Income (Fees)	400,000	408,000
Miscellaneous income	0	27,000
Total Other Income	2,175,000	2,050,000
Total Income	34,765,306	34,504,788

EXPENDITURES

Salaries and stipends	26,351,569	27,380,223
Office Expenses excl. Projects	2,365,292	2,405,000
IT Expenses excl. Projects	2,555,429	2,665,000
Expenses for ASC & Statutory Meetings	1,273,000	1,208,000
Travel and meetings	5,256,123	4,770,000
Publications and Communications	1,032,500	1,030,000
Total Expenditures	38,833,913	39,458,223
Transfer from SIF for stable National Contribution	645,210	0
Transfer from SIF for Advisory Reform	1,939,081	0
Transfer from SIF for Science Reform	750,680	736,078
Transfer from former years	333,636	3,283,879
Transfer from Projects	0	500,000
Interests	400,000	433,478
Balance for the year	0	0

Corkwing wrasse (Symphodus melops). Photo by Tobias Dahlin.





ICES INTERVIEWS

Jane Lubchenco



The Honourable Dr Jane Lubchenco is Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator, the first woman Administrator of NOAA. She has studied marine ecosystems around the world and championed the importance of science and its relevance to policy-making and human well-being.

In her ICES Annual Science Conference 2010 Opening Lecture “Managing Marine Biodiversity: An Emerging Consensus”, she argued that the management paradigms we have employed heretofore are insufficient both because of their failures to adequately protect marine biodiversity, and because risks and trade-offs have not been adequately considered when making decisions about marine activities. Further, serious demands are being placed on scientists to provide the types of decision-support tools, monitoring, research, and the insightful advice that these institutions will require.

What is sustainability? The word is self-explanatory, but what concepts are behind it?

It concerns the intimate connections between the diversity of life on earth and human well-being. Plants, animals, and microbes interact with one another and in so doing provide a suite of benefits to people: food, shelter, the oxygen that we breathe, moderation of climate, control of floods, protection from the elements; these benefits are called ecosystem services. Recently, scientists, in looking globally at the different types of ecosystem services, realized that we are inadvertently losing many of them because we haven't really appreciated the trade-offs implied by the decisions that we're making.

In cutting down forests, we gain the service of timber, but we lose the services of carbon sequestration, flood control, and water replenishment in deep aquifers. In filling wetlands to build airports, we lose the wetlands that provide nursery habitat for many economically important fish species. Because we have not really appreciated these trade-offs, we have been making decisions in ignorance, and many of those decisions are foreclosing future options. Sustainability is simply thinking about the future and utilizing the earth, utilizing the land, utilizing the oceans in ways that don't limit the possibilities of using them in the future.

What gave you the interest in sustainability?

Growing up in Colorado, my five sisters and I spent a lot of time hiking, camping, and fishing in the Colorado mountains. We were intrigued by natural history and about people's relationship with the land. In college, I took a summer class in invertebrate zoology at the Marine Biological Laboratory in Woods Hole, Massachusetts, and discovered a whole world that I didn't even know

existed. I found the magnificent biodiversity beneath the seas endlessly intriguing, and decided then that I really wanted to spend more time learning about it.

I enjoyed the intellectual fun of discovery, figuring out why things lived where they did, why some places were more diverse than others, trying to understand natural patterns and processes. But through time, I became increasingly aware that many of the places that I had studied were being transformed very rapidly and, in most cases, were becoming significantly more degraded. Over time, I became increasingly concerned that much of what was happening before our eyes was not more broadly appreciated by society. I realized that scientists had an obligation to communicate not only about what was happening, but what the likely consequences of our choices might be.

I feel very strongly that science should not dictate to society what an outcome should be, but science should be available to inform decision-making and understanding. That suggests that, when people make decisions whether individually or institutionally, science should be at the table. It should be understandable; it should be relevant. If science isn't there, if people don't understand it, if they don't believe the process by which it's generated, then it's irrelevant and the world doesn't have the benefit from it. So, I became more and more engaged in bringing science to decision-makers and communicating it to the public.

Describe the transition from being a working scientist to the world of politics.

When I was in academia, I was very fortunate in being able to spend a fair amount of time translating science for decision-makers, actively communicating science, being a champion for science and scientific inquiry, both nationally and globally. As a result, I've interacted a lot with members of the US Congress, with many different key players in the state scene, the federal scene, and the international scene. So, the world of politics was not something that was completely new to me.

I do wear a different hat now, and I take that responsibility very seriously. I have deep respect for the many talented people at NOAA, so it's an honour to be leading that wonderful agency. The role of an agency like NOAA is very much to bring science to the table and to use that science in making decisions. Because NOAA is a science agency, and because our focus is science services and stewardship, it's a very natural fit for what I deeply believe in.

So, it's not a sort of night-and-day transition, like being thrown to the wolves. It was not something that I had actively sought or had ever seriously considered doing, but when President Obama said, "Will you do this?", I thought, "Okay, this seems like the right thing at the right time", and he's a hard guy to say no to.

Previously, an interview with Jane Lubchenco appeared in issue number 5 of *ICES Inside Out* 2010, available on the ICES website at <http://www.ices.dk/InSideOut/No5%202010/Insideout2010-No.5main.pdf>

Philippe Cury



Philippe Cury is a senior Scientist at IRD (Institut de Recherche pour le Développement), Director of the Exploited Marine Ecosystems 212 at IRD-Ifremer and University Montpellier 2, and Scientific Coordinator of the European Consortium Eur-Oceans.

In his plenary lecture “Building Scenarios for Marine Ecosystems Under Anthropogenic and Natural Forcing in the 20th Century: Are We Getting Ready?”, he considered what scenarios can do for ecosystem management and the place they should take in our future marine research.

What are scenarios?

Scenarios are coherent, plausible stories devised to address complex questions about the uncertain future of our marine ecosystems. They are not forecasts, projections, predictions, or recommendations. There are two kinds of scenarios: projection scenarios and pathway scenarios.

In scenarios, we account for all of the global constraints that are facing us at the moment, such as climate change, the overexploitation of fisheries and global demand for seafood, the profitability of fisheries, the evolution of subsidies, employment, of course, and so on. From models based on these constraints, we try to build scenarios.

Examples of projection scenarios might include those describing increasing global temperatures and their effects on catch, ocean acidification, and the changing biochemical structure. Projection scenarios have trajectories with uncertainty, like the kind of scenarios that the IPCC is delivering. This allows for an endless number of scenarios on different topics covering different impacts in all the marine environments. It will require a more definite vision of the future in marine ecosystem.

If we can't actually know the future, at least we can assign objectives to our future. In fact, those objectives have already been defined at the international level through, for example, the ecosystem approach to fishery management. The question is, how do we get there knowing the projection scenarios built on the constraints? This is where pathway scenarios come in.

Pathway scenarios are more about policy and how we define the kind of development we want. We supplement those scientific scenarios with more social and economic views of the future. According to our vision of the future, we must decide what to put first. Policy? Security? Sustainability? So, pathway scenarios are built for long-term perspectives, not on five- or ten- year time frames. The view is more on the scale of 50 years. It is easier to discuss long-term issues than it is to target something in five years, because you have many more constraints in the short term.

It might be better to know what we don't want to happen than to know what we want to happen.

So, it is difficult to consider all of the constraints together related to short-term issues. When you say 50 years, we are talking about future generations and, for the first time, we have these long-term considerations because we are scared by the realization of what might happen in the long term. Without scenarios, we won't confront those changes.

Scenarios must be based on the best science available. We need the best projection models, but we need to couple those with policy, and when you talk about policy and different trajectories, then you combine human nature with constraints that are derived from scientific knowledge. The newly launched Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) is urging scientists to deliver those plausible stories in the context of global change, and we are not totally ready to produce them.

Today's challenge is to assemble all our knowledge in a way that we never have before: for example, scientific output coupling physical, biochemistry, and ecosystem models. Science is based on theory, experimentation, and observation. Now, more and more, you will have growth simulation, like projection scenarios, and this is a real new challenge for scientific studies. In a sense, this will constitute a new pillar of scientific study.

We need to think about a common currency to facilitate exchange between model outputs. For example, now you are launching these ten ecosystem models that coupled three-dimensional hydrodynamic models with biochemistry, with fish ecosystem models, and so on, but they don't have any common currency, so sometimes it's

very difficult to couple them or simply to get an output from one model to feed another one. They don't have the same taxonomies, the same standardized spatial resolutions, and the time frame is not always the same. We need models that are tested and calibrated in a universal way. We need a common currency to be able to exchange model outputs, because this is not now the case. We need a coordinated approach.

Simulation is going to be a major issue for science. It will stimulate us and help us to envision our future. It will help us link science to management, and management needs long-term perspectives. Scenarios give us a way to envision them.

Do you feel there is a danger in this?

We can practice laissez-faire, but that is a terrible mistake. There are global changes that are putting a tremendous pressure on marine ecosystems and causing irreversible changes, so we'd better hurry up and produce new policies. We cannot say that we are waiting for better science. I think science is producing incredible research right now, and we had better introduce it into management rather than ignoring it.

Myriam Sibuet



Myriam Sibuet, retired from Ifremer, has been senior scientist at l'Institut Océanographique de Paris – Fondation Albert I, Prince de Monaco since 2006. After a career as deep-sea biologist at Ifremer, where she was Director of the Deep-sea Environment Department and Science and Technology Adviser, she remains involved in marine biodiversity projects. For the Census of Marine Life, she acted as co-project leader of the Continental Margin Ecosystems project and as vice-chair of the International Scientific Steering Committee.

Ordinarily, a census taker knocks on people's doors and asks them how old they are and how many children they have. How is a census of marine life conducted?

To understand the diversity of marine species from all faunal categories and all sizes, we took two approaches in the Census of Marine Life: (i) to go to sea and perform sampling, which led to the discovery of new species, and (ii) to review the literature and discover what information is available in laboratories and search for existing databases in each region of the world. From this, we built a unique database, gathering all of the information from approximately 800 existing databases. This provided us with species names and their locations and depths.

The Census of Marine Life was organized around three grand questions: What did live in the oceans? What does live in the oceans? What will live in the oceans? The programme lasted ten years, and attempted to develop the first comprehensive assessment of life in the ocean, from bacteria to large animals, to assess and explain the diversity, distribution, and abundance of marine life.

The programme received funding for ten years. What will happen in the future?

I would like to point out that the Sloan Foundation provided US\$70 million for initial funding for the international infrastructure, but participating institutions, through the donated use of their vessels, crews, and other infrastructure, contributed to the approximately US\$650 million total funding.

Over the project's lifetime, a network of more than 2700 scientists from more than 80 countries and territories was created. We would hope that the scientists will see the advantage of this programme and continue their work together. The OBIS (Ocean Biogeographic Information System) database will be maintained by the IOC (Intergovernmental Oceanographic Commission). Also, the magnificent images will be made permanently available at the Census website (www.coml.org).

Part of the project dealt with the historical aspect of the census: What lived in the oceans? For example, you studied historical photos and paintings to develop an idea of what kind of human activity affected things in the past. What other sources were used?

The History of Marine Animal Populations (HMAP) project is the group whose work concentrated on this aspect. It used historical and environmental archives to

analyse marine population data from the past, before and after human impacts on the ocean became significant. It involved scientists from many fields – ecologists, marine biologists, historians, anthropologists, archaeologists, palaeo-ecologists, and palaeo-oceanographers. They studied data from many sources, such as colonial fisheries and monastic records, modern fisheries statistics, ship logs, tax documents, sediment cores, and other environmental records. They were able to piece together changes in specific marine animal populations throughout history, creating a long time-series that reveals the effects of human activities and environmental factors, such as climate, currents, and salinity, on marine ecosystems.

That group worked closely with the group on Future of Marine Animal Populations. Their interaction helps us understand how past changes will influence the future, if our behaviour at sea remains the same.

Of course, it would seem that fish receive the most focus, but the Census was interested in whole faunal components of marine ecosystems. This is reached by having information about all of the marine life, from the microbe to the whale. Although there are about 250 000 known marine species, in some areas less than 50 per cent of the species are known. Assuming that in the ocean, from coastal water to the deep, there are more than one million species, we do not have enough knowledge, and exploration is important to support as well as to identify species richness, because of the important role it plays in the ocean.

Were there any new findings that especially interested you?

The sea-going projects covered everything from the coast to the deep ocean. Many new species were discovered

in the Arctic, Antarctic, and deep seas. These extreme environments provided the most discoveries in terms of species as well as new habitats. For example, on oceanic ridges, new hydrothermal vents were discovered. On the Mid-Atlantic Ridge south of the equator, on the southwest Indian Ridge (the hottest and deepest vent sites ever discovered), and along continental margins, new cold seeps off Chile and New Zealand were discovered. Many new species were discovered in these extreme environments.

What do you, personally, take away from the Census?

The Census programme was unique in its organization and in its achievement on a global scale, which created links with new colleagues from many countries. For the deep-sea project on Continental Margin Ecosystems (COMARGE), I was able to work with new colleagues from India and South America together with long-time friends from Europe and the US. Sharing data and ideas during all of our Census workshops increases our scientific achievements and trust between colleagues. I was privileged to participate as a member and then as vice-chair of the Scientific Steering Committee. The quality of this group is exceptional, and we have developed scientific links based on great friendship. Both science and human exchanges were a pleasure to me. It's good to keep learning, and it's good to keep giving at any time in our life, but especially when you are retired from your professional activities. Therefore, I still enjoy science and discovery. The Census involved more than 2700 scientists, and all of the reports and talks given during the CoML meetings increased my knowledge in other fields of marine biology and also other geographic areas. So much has been learned through CoML. To begin my retirement with such a large perspective of global marine biodiversity is like a gift to maintain my curiosity.

Peter Herman



Peter Herman is Head of the Department of Spatial Ecology, the Netherlands Institute of Ecology. In his plenary lecture, “From Conflicts to Solutions: The Role of Science in Dutch Coastal Planning Issues”, he emphasized that “natural” reference conditions, when defined as the condition without human influence, are impossible to specify for the Dutch coast, probably the most engineered coast in the world. The strong urge to “restore”, or at least rehabilitate natural values in the Dutch coastal ecosystem, results in societal conflicts on current use and spatial organization of the coast.

He argued that, despite its name, the urge for “nature restoration” does not aim at reducing the degree of coastal engineering but at redirecting it towards different goals, serving different values, and changing the power distribution in society. Lacking objective criteria, scientific advice is likely to reflect values shared by the researchers, who thereby are liable to become a party to the debate rather than a referee.

Can you say a bit more about the so-called new exploiters, people that have learned to get their own way simply by spreading more money around?

I mentioned this in my lecture because I am frustrated with the classical approach taken by integrated coastal zone management. When you make a list of stakeholders and an inventory of what the stakeholders want, assuming they are all equal, a large diversity of management options seems to be possible. However, in practice, some are more equal than others, and the outcome is usually quite predictable. Power is an essential concept in management of the coastal areas, as it is in all other aspects of policy.

In the past decades, the Wadden Sea belonged to the classical exploiters: farmers, fishermen, shellfisheries. They had a traditional natural right to the area. They were doing what they had always done and nobody questioned it. They were the ones who really determined issues of coastal defence and exploitation.

Then, the ownership shifted from them to the NGOs. EU legislation was essential for this shift. It is symbolically expressed by declaring the Wadden Sea a UNESCO World Heritage Site: the world as a whole has proclaimed “the Wadden Sea belongs to us, not to the fishermen. If they behave well, they can do little tiny things, as long as we approve”.

Moral ownership of the sea and land – the same is true for farmers – has changed in a very short time, and it coincides with the decrease in profitability of this classic exploitation. The power has shifted towards the well-educated middle class represented by NGOs, and increasingly from them to multinational corporations, who are much wealthier than the fishermen or farmers. For instance, if you look at the farmland surrounding a

city, you see only horses and no cows. One earns much more money with a desk job in the city than by raising cattle. City people buy out the farmers and turn the farms into places to house their horses. The balance of income has shifted, and with it, the power to determine what happens on the farmland.

The current legal instruments reflect the shift of power from classical exploiters to the middle class. I think, however, that this is only a transient situation. In my lecture, I introduced what I called the “new exploiters”, multinational companies engaging in wind farming, gas and oil exploitation at sea, harbour expansion, and so on. Their attention focuses more and more on the coastal sea, whereas traditionally most were land-based. These companies are very wealthy and profitable and easily able to overtake anybody else who is trying to claim moral ownership of the coast.

In addition to having more money than the classical exploiters, they have more flexibility in accounting for nature as one of their production costs. They have no emotional link to it, whereas the fishermen and farmers have great difficulty losing their classical ownership of the land and coast, but also retain a strong emotional link to the landscape. The new exploiters have a different mentality and different strategies. As I showed with several examples in my lecture, they tend not to argue if they can solve it with money. Buying out a problem is a consecration of the buyers' power, but rarely a real solution to a management problem.

So clearly, the new exploiters that you describe, namely the multinational corporations, are not only active in the developing nations but also in the EU.

Wherever there is, for example, an interest in oil or gas exploitation, I don't know any country where the

government is really opposed to the interests of the multinational organizations. Related to the problems that I described on gas exploitation and harbour development, you do not see a very large divergence in points of view of the government and the exploiters. In the case of harbours, you don't know whether you're talking to the government or to the harbour developers; it's one coalition.

The argument would be that it is creating jobs for the population.

Obviously! It's not that this new exploitation is pointless. The reason they are so powerful and rich is because their activity is judged important for society. I am not denying that they are employing people or contributing to the wealth of society. But there is a democratic problem in the sense that they should not get all the power for that reason. There must be counter voices if you want to have rational management in the long term.

We believe, at this time in history, that democracy is probably the best system and that everybody should have a voice. But human beings are endlessly capable of being manipulated and endlessly selfish. What is the danger to democracy?

If you want to preserve democracy, also in complicated matters, you cannot be afraid of convincing the public of your ability to produce sensible arguments. Scientists must be able to create trust in the public. We cannot do that by disregarding or underestimating the public. We cannot do it by lowering our level of communication to match our perception of the public's ability to understand; the public is, fortunately, much more intelligent than some people think.

It's important, even when conveying a difficult message, to be honest in your communication and to generate trust by explaining clearly what you understand well and where the uncertainty or divergence of opinion is. It is the responsibility of the democratic decision-making system to evaluate the quality of the arguments brought forward by different parties. If the system fails to do so, it will favour populist argumentation and simplicity.

For decision-making to be democratic, it must be able to consider different arguments. That is why scientific debate and divergence of opinion is so important. If the government only allows one voice to be heard, one study to be done without alternative studies with different views, not all arguments will be thoroughly weighed. The government will tend to follow the one argument that they have paid for themselves. That decreases the trust in the quality of their decision-making. They must actively foster the discussion and, at the same time, show that they are able to put an end to it where it starts repeating itself.

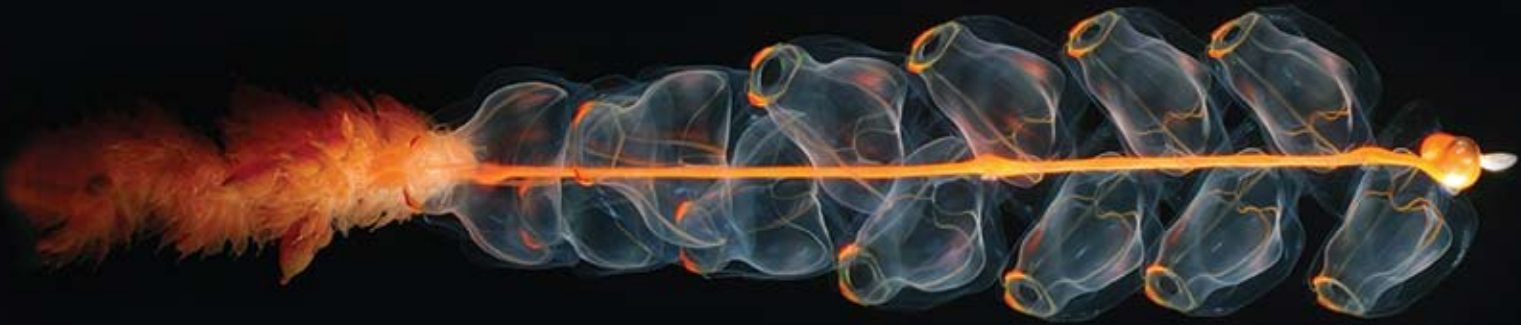
You seem to be encouraging the scientists to simply present the facts and let the discussion take its course.

Yes, except that I fundamentally disbelieve in the existence of "the facts". There are many facts, but before you have data, you have to decide what data to collect. There is far more data than anyone can work with in a lifetime, so you have to be very selective and you choose those data that you think will create a better understanding of how something in the natural world works. There is not an objective external world from which every scientist returns with exactly the same story. The stories are different because scientists investigate things from different angles. That must be recognized.

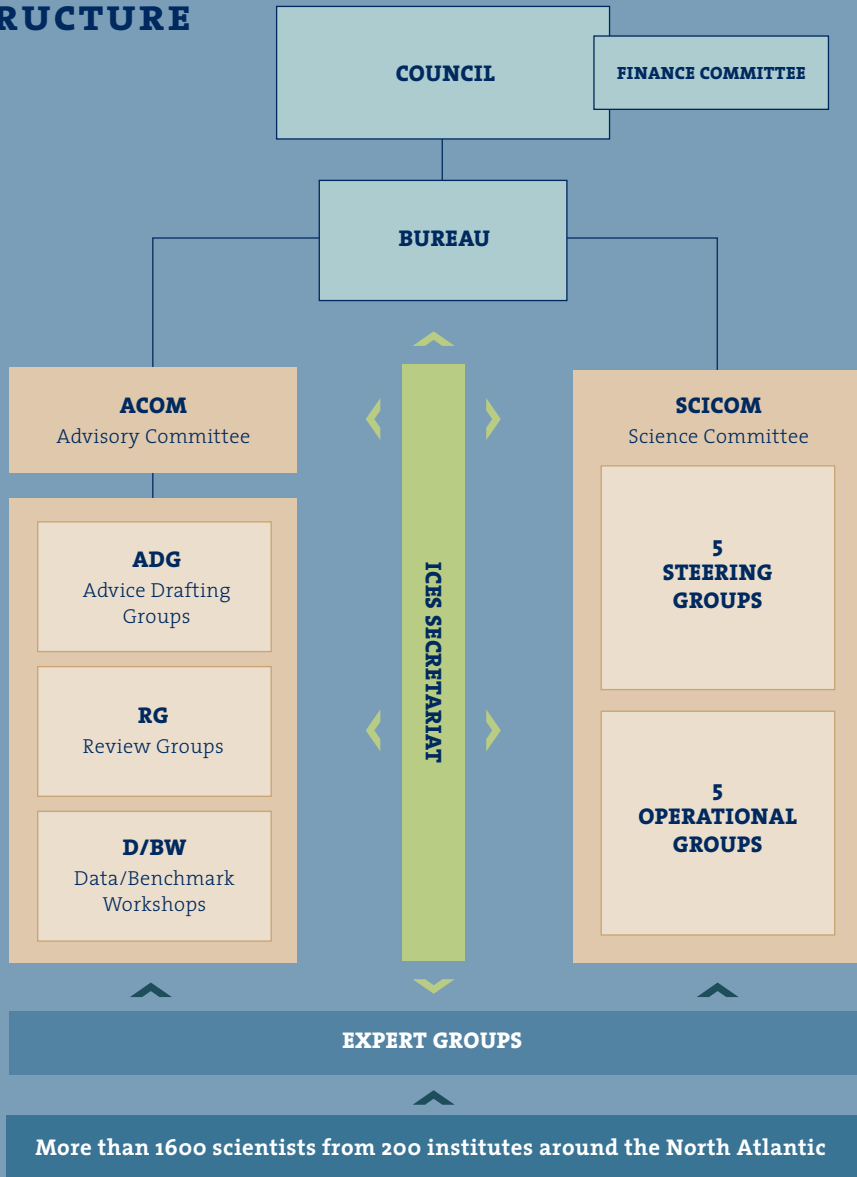
Scientists come back with a model, an abstraction, one way of describing something in the outside world, but it's not the only possible blueprint of the world. And that means that you must be prepared to enter into discussion with people who have discovered other facts. It will not always be obvious how these correspond to one another or what the next stage of interpretation will have to be.

Scientists have developed methods to foster this divergence while also converging on well-tested theories and laws of nature. Debate, disagreement, and critical testing are essential aspects of this methodology. That is also what we can and should bring to the public debate: our knowledge, our diversity of opinion and approach, our art of debate and criticism. By doing so, we will be active participants in the public debate, but not the ones who decide, nor the only ones who have a voice in the debate.

Marrus orthocanna, a physonect siphonophore, photographed during NOAA's Hidden Ocean Expedition. The colonial animal is made up of many repeated units, which include tentacles and multiple stomachs. Many specimens were observed at depths of between 300 and 1500 m. Photo by Kevin Raskoff.



ICES STRUCTURE



ICES DIRECTORY

Overview of ICES membership and organization

The diagram on the left illustrates ICES structure.

The **Council** is the principal decision and policy-making body of ICES, consisting of a President and two Delegates from each of ICES 20 Member Countries. Delegates elect the President, First Vice-President, and five additional Vice-Presidents to form the Bureau, which is the Council's executive committee. The **Bureau** is responsible for carrying out the Council's decisions, preparing and convening Council meetings, formulating Council budgets, appointing key Secretariat staff, and performing other tasks as assigned by the Council. A **Finance Committee** consisting of five Delegates from Council provides oversight to the Council's fiscal matters. Delegates also appoint a General Secretary, who serves as the Council's chief executive officer and is charged with managing the ICES Secretariat facilities and staff, finances, meetings, reports, publications, and communications.

ICES work is accomplished by various committees, expert groups, and workshops. During ICES long history, the structure has changed periodically to reflect the needs of the time. Currently, there is an Advisory Committee (ACOM) that provides advice to clients on fisheries and marine ecosystem issues and a Science Committee (SCICOM; formerly the Consultative Committee as established in the ICES Convention) that oversees all aspects of the scientific work.

Working under ACOM are Advice Drafting Groups, Review Groups, Expert Groups, and Data/Benchmark workshops.

SCICOM is made up of five steering groups: Ecosystem Functions (SSGEF), Human Interactions on Ecosystems (SSGHIE), Sustainable Use of Ecosystems (SSGSUE), Regional Sea Programmes (SSGRSP), and Ecosystem Surveys Science and Technology (SSGESST); and five operational groups: Working Group on Data and Information Management (WGDIM), ICES Publications and Communications Group (PUBCOM), ICES Training Group, Annual Science Conference Group, and the Awards Committee.

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American lobster, Homarus americanus, in shallow water off eastern Canada in a protective habitat that also provides home for many other invertebrates. Photo by Mike Strong and Maria-Ines Buzeta.



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ICES Identification Leaflets for Plankton	Steve Hay <i>S.Hay@marlab.ac.uk</i>
ICES Identification Leaflets for Diseases and Parasites of Fish and Shellfish	Stephen Feist <i>s.w.feist@cefasc.co.uk</i>
ICES Journal of Marine Science	Andrew I. L. Payne, Editor-in-Chief <i>andy.payne@cefasc.co.uk</i> Editors: Emory D. Anderson <i>emoryanderson@comcast.net</i> Audrey J. Geffen <i>audrey.geffen@bio.uib.no</i> Sarah B. M. Kraak <i>sarah.kraak@marine.ie</i> Pierre Pepin <i>pepinp@dfo-mpo.gc.ca</i> John W. Ramster <i>jamster@lineone.net</i> Rochelle Seitz <i>seitz@vims.edu</i> Verena Trenkel <i>verena.trenkel@ifremer.fr</i> William Turrell <i>b.turrell@marlab.ac.uk</i>
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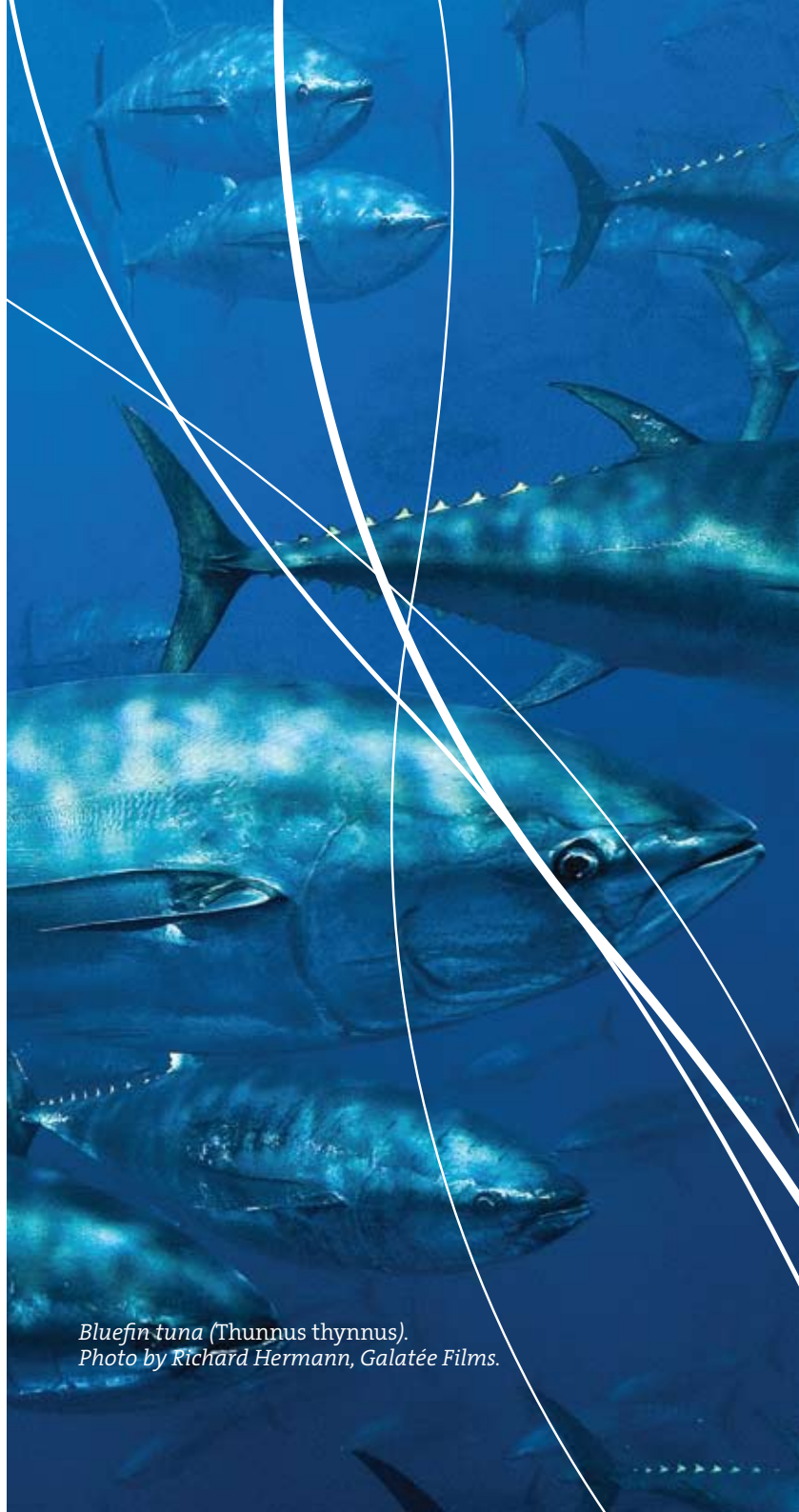
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*Bluefin tuna (Thunnus thynnus).
Photo by Richard Hermann, Galatée Films.*

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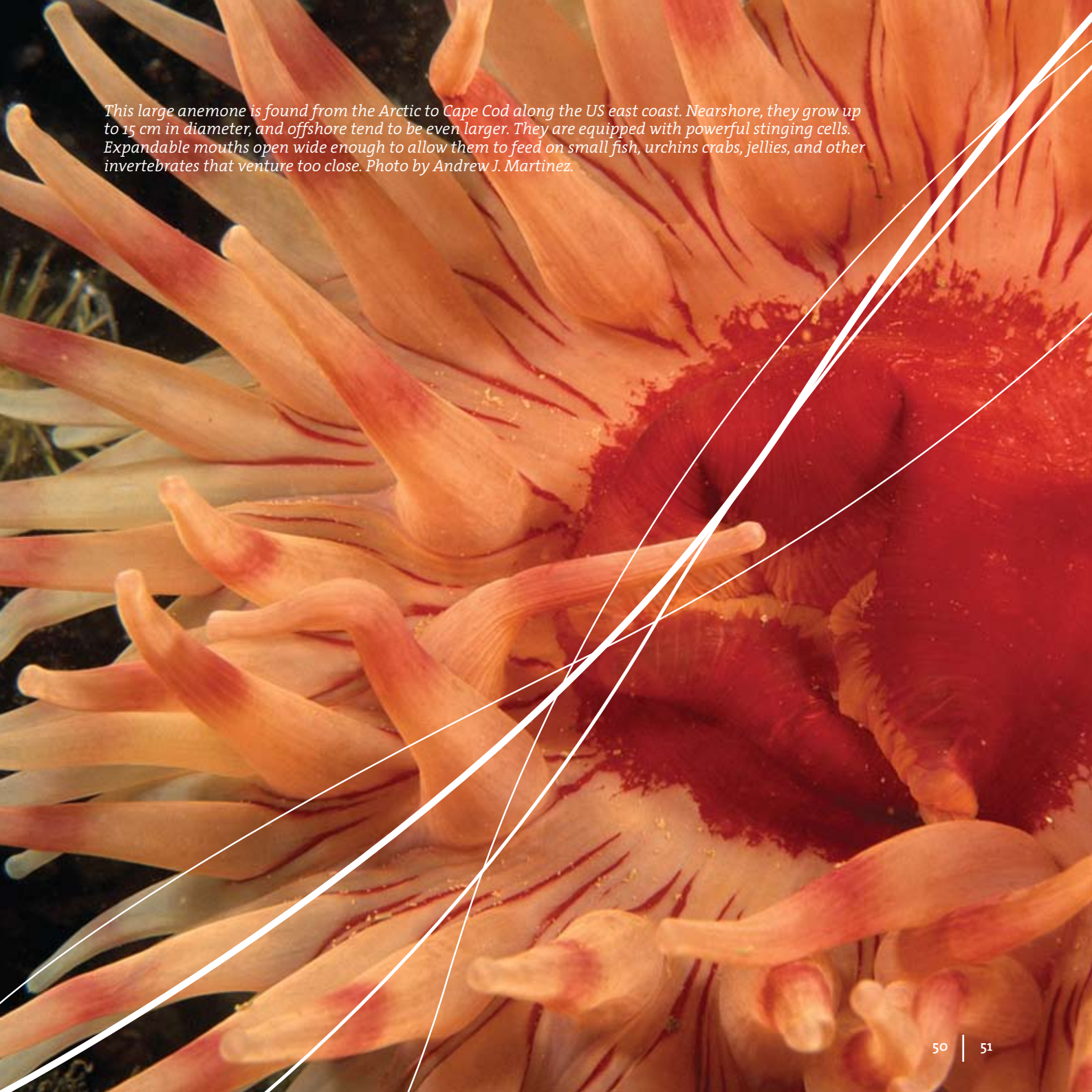
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<p>Workshop on Sexual Maturity Staging of Sole, Plaice, Dab, and Flounder (WKMSSPDF)</p>	<p>58 Ingeborg de Boois (The Netherlands) Wageningen IMARES, IJmuiden <i>ingeborg.deboois@wur.nl</i></p> <p>58 Cindy van Damme (The Netherlands) Wageningen IMARES, IJmuiden <i>cindy.vandamme@wur.nl</i></p>
<p>Workshop on the Age of Mackerel (WKARMAC)</p>	<p>16 Lotte Worsøe Clausen (Denmark) DTU Aqua – National Institute of Aquatic Resources, Section for Fisheries Advice, Charlottenlund <i>law@aqu.dtu.dk</i></p>
<p>Workshop on the Application of the Advisory Framework to Data-Poor Stocks (WKFRAME)</p>	<p>45 Ciaran Kelly (Ireland) Marine Institute, Oranmore <i>ciaran.kelly@marine.ie</i></p>
<p>Workshop on the Implementation of the Common Open Source Tool (COST) (WKCOST)</p>	<p>28 Joël Vigneau (France) IFREMER, Port-en-Bessin Station <i>joel.vigneau@ifremer.fr</i></p>
<p>Workshop to Evaluate Aspects of EC Regulation 812/2004 (WKREV812)</p>	<p>93 Simon Northridge (United Kingdom) The Gatty Marine Laboratory, St Andrews <i>spn1@st-andrews.ac.uk</i></p>



This large anemone is found from the Arctic to Cape Cod along the US east coast. Nearshore, they grow up to 15 cm in diameter, and offshore tend to be even larger. They are equipped with powerful stinging cells. Expandable mouths open wide enough to allow them to feed on small fish, urchins crabs, jellies, and other invertebrates that venture too close. Photo by Andrew J. Martinez.

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Fredrik Arrhenius, Sweden

SCICOM members:
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Pierre Pepin, Canada
Ólafur Astthórsson, Iceland

ASC Group

Composed of the local host SCICOM Delegate (Dariusz Fey, Poland) and eight SCICOM members tasked to review and recommend to SCICOM the ASC Theme Sessions for 2011.

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Daniel Duplisea, Canada
Simon Jennings, UK
Oleg Lapshin, Russia
Brian MacKenzie, Denmark
Christian Möllmann, Germany
Niall O'Maoileidigh, Ireland
Einar Svendsen, Norway

The Antarctic ice fish has no red blood pigments (haemoglobin) and no red blood cells. This is an adaptation to the low temperature. The blood becomes more fluid and, as a consequence, the animal saves energy to pump blood through its body. Interestingly, the brittlestars are overgrown by a yellow sponge.
Photo by J. Gutt AWI/Marum, University of Bremen.



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Joint ICES and Pelagic RAC Workshop on Pelagic Fisheries within the Marine Ecosystem: Tradeoffs and Potential Benefits of the Ecosystem Approach (WKPELECO)

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*The Arctic copepod Euaugaptilus hyperboreus uses the elongated setae on its mouth to ensnare struggling prey.
Photo by Russ Hopcroft, University of Alaska, Fairbanks.*

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Working Group on Biodiversity Science (WGBIODIV)

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Working Group on Integrating Surveys for the Ecosystem Approach (WGISUR)

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<p>Working Group on Large Marine Ecosystem Program Best Practices (WGLMEBP)</p>	<p>45 Michael O'Toole (Ireland) Marine Institute, Oranmore <i>michael.otoole@marine.ie</i></p> <p>17 Jan Thulin (Denmark) International Council for the Exploration of the Sea, Copenhagen <i>jan@ices.dk</i></p>
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<p>Working Group on Quantifying All Fishing Mortality (WGQAF)</p>	<p>87 Philip MacMullen (United Kingdom) Fishgate, Kingston upon Hull <i>p_macmullen@seafish.co.uk</i></p>
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Working Group on Zooplankton Ecology (WGZE)

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Workshop on Anchovy, Sardine, and Climate Variability in the
North Sea and Adjacent Areas (WKANSARNS)

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Workshop on Cataloguing Data Requirements from Surveys for the EAFM (WKCATDAT)

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Workshop on How Models Help Us to Understand Climate Change Evolution
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Workshop on Including Socio–Economic Considerations into the Climate–Recruitment Framework developed for Clupeids in the Baltic Sea (WKSECRET)

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Workshop on Introducing Coupled Ecological–Economic Modelling and Risk Assessment into Management Tools (WKIMM)

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Workshop on Reviews of Recent Advances in Stock Assessment Models Worldwide “Around the World in AD Models” (WKADSAM)

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Workshop on the Determination of Acoustic Target Strength of Redfish (WKTAR)

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**Workshop on Understanding and Quantifying Mortality in Fish Early-Life Stages:
Experiments, Observations, and Models (WKMOR)**

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Workshop to Assess the Ecosystem Effects of Electric Pulse Trawls (WKPULSE)

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A new species of hydromedusae, Bathykorus bouilloni, common below 1000 m. Hundreds of Bathykorus bouilloni were observed by a remotely operated vehicle in the Arctic, showing that a new species can be common in a known habitat. Photo by Kevin Raskoff.



Institutes – Addresses

Names in the preceding directory are associated with the specific address of an institute through the numbers that are cross-referenced below.

These are the addresses of scientists involved in the work of ICES expert groups, so the list does not represent a complete list of all institutes associated with ICES.

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2
International Institute for
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Fisheries Research (ILVO)
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71

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74

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Fishgate
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William Wright Dock
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Joint Nature Conservation
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Aberdeen AB11 9QA
www.jncc.gov.uk

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Marine Scotland Science
Marine Laboratory
375 Victoria Road
PO Box 101
Aberdeen AB11 9DB
www.scotland.gov.uk/topics/marine

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National Oceanography
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Waterfront Campus,
European Way
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Plymouth Marine Laboratory
Prospect Place, The Hoe
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www.pml.ac.uk

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Sir Alister Hardy Foundation
for Ocean Science
The Laboratory, Citadel Hill
Plymouth PL1 2PB
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Scottish Oceans Institute
The Gatty Marine Laboratory
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St Andrews KY16 8LB
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Cambridge, MA 02139
<http://seagrant.mit.edu/>

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National Marine
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1315 East West Highway
Silver Spring, MD 20910-6233
www.nmfs.noaa.gov

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National Marine
Fisheries Services
NMFS RTR Unit at
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114 Cheatham Hall
Blacksburg, VA 24061-0321
www.nmfs.vt.edu

100

National Marine
Fisheries Services
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www.swfsc.noaa.gov

101

National Marine
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Sandy Hook Laboratory
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Sandy Hook Highlands,
NJ 07732
<http://sh.nefsc.noaa.gov/>

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National Marine
Fisheries Services
Northwest Fisheries
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2725 Montlake Boulevard East
Seattle, WA 98112-2097
www.nwfsc.noaa.gov

103

National Marine
Fisheries Services
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Center, Woods Hole Laboratory
166 Water Street
Woods Hole, MA 02543-1026
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woodshole](http://www.nefsc.noaa.gov/nefsc/woodshole)

104

National Marine Fisheries
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National Marine
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108

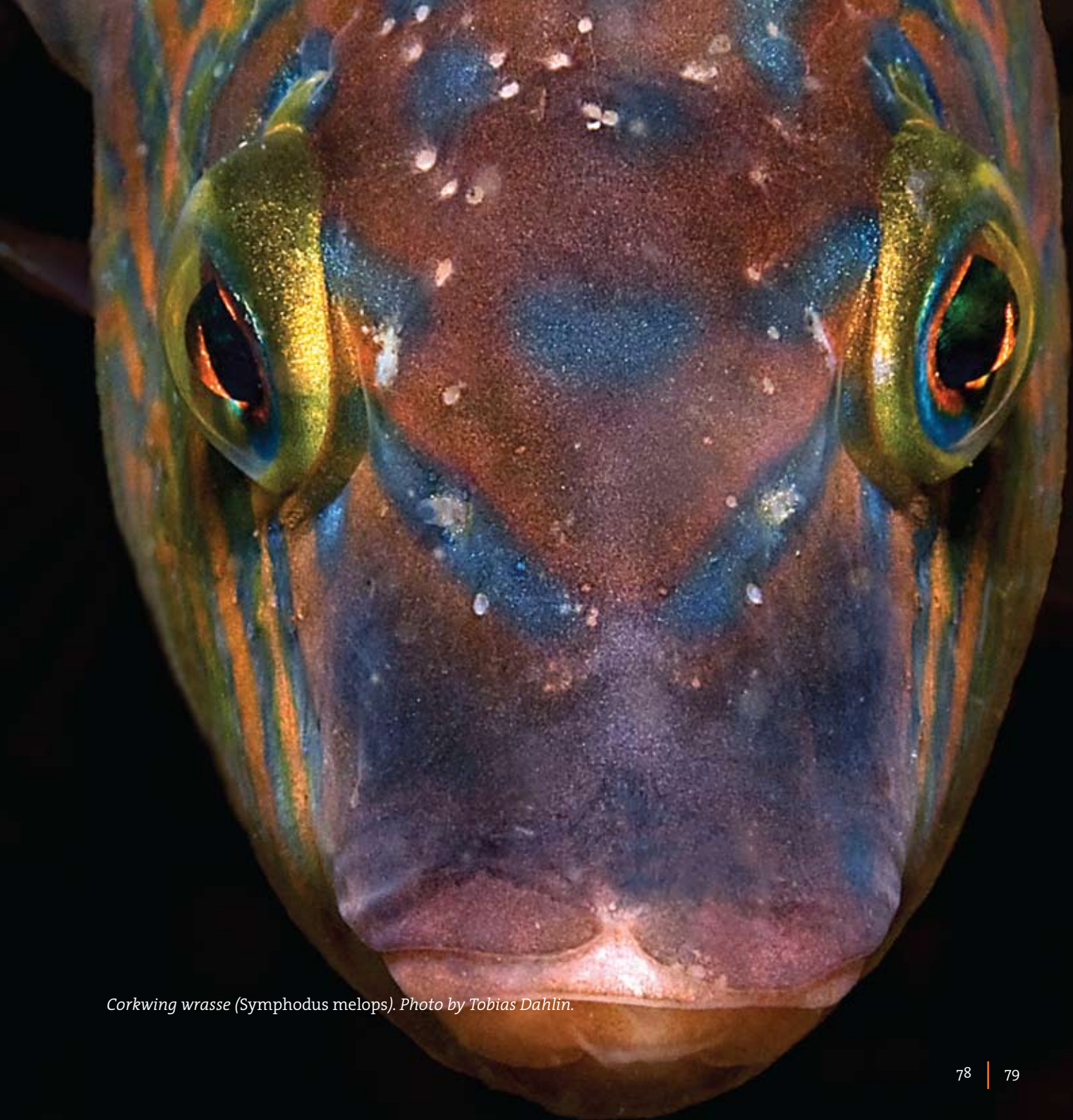
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109

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110

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Corkwing wrasse (Symphodus melops). Photo by Tobias Dahlin.



ICES

International Council for
the Exploration of the Sea

CIEM

Conseil International pour
l'Exploration de la Mer

