



ICES
CIEM


International Council for
the Exploration of the Sea

Conseil International pour
l'Exploration de la Mer

ANNUAL REPORT 2011



ANNUAL REPORT 2011

RV DARIUS	
COUNTRY	LITHUANIA
BUILT	1993
LENGTH	23 METRES
GROSS TONNAGE	117
CRUISING SPEED	9 KNOTS
ACCOMODATION	13 CREW & 25 SCIENTISTS
PHOTO	SARUNAS TOLIUSIS



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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 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.



***ICES Annual Report 2011* takes as its theme research vessels from ICES twenty Member Countries.**

At its foundation in 1901–1902, ICES sought an undertaking from the Member Countries that each should provide a dedicated ship to assist in implementing the agreed international research programme. This significant step demonstrated, from the outset, the far-sighted goals of the new organization and the commitment of its Member Governments.

Mindful of this, and of the desirability of giving it practical recognition within the ICES Centenary Programme, the former ICES Communications Officer, Neil Fletcher, took the initiative of organizing a gathering of research ships in Copenhagen during ICES Annual Science Conference in October 2002. The topic of research vessels was also allocated its own special theme session during the ASC, “The Use of Marine Research Vessels in ICES – Options for the Future”.

Ten countries kindly sent one or even two research vessels to Copenhagen to mark the ICES centenary: Belgium (*Belgica*), Denmark (*Dana*), Finland (*Aranda*), France/Spain (*Thalassa*), Germany (*Alkor*), the Netherlands (*Isis* and *Tridens*), Norway (*G. O. Sars*), Poland (*Baltica*), and Sweden (*Argos*). They berthed alongside the quay at Larsens Plads/Amaliehaven near Amalienborg Palace, the winter home of the Danish royal family, where they made a very impressive sight.

The cover photograph shows five ships of the assembled flotilla: *Argos*, *Belgica*, *G. O. Sars* (the older one, not the *G. O. Sars* launched in 2003), *Dana*, and *Thalassa*.

—David de G. Griffith

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WELCOME!

A few words from the General Secretary

Throughout my 35-year association with the International Council for the Exploration of the Sea, I have watched ICES continue to change and grow. (My first experience with ICES was the presentation, at the 1977 Aarhus symposium, of my first scientific paper “Variations in Growth Rate and Maturity of Herring in the Northern North Sea in the Years 1955–1973”.) During my six-year term as General Secretary, the changes, both in the Secretariat and in the overall organization, seem to have increased and accelerated, some of them the result of years of preparation and some having been born during my term. It has been six very exciting years.

In 2006, after a decade of preparation by my predecessors, ICES membership finally became complete when Lithuania joined the Council, making a total of twenty Member Countries. It was also the second year during which we experimented with separating the annual meeting of ICES Council from ICES Annual Science Conference. It presented huge organizational challenges to the Secretariat, of course, but finally I believe that holding the Council meeting in October benefits everyone concerned.

The years 2006 to 2008 saw the reform of ICES Advisory Committee (ACOM). This major reform was in response to increasing demands for advice by ICES clients (more, earlier, more integrated, more transparent) and criticism (ICES is not responsive, not transparent, not timely, not always correct). The reform was carefully developed over many years, starting with the activities of the MCAP group (Management Committee for the Advisory

Process), which I chaired from 2001 to 2003, and Paul Connolly chaired from 2003 to 2006.

That reform was barely in place when we began the process of reforming ICES Consultative Committee, the consequence of which was ICES Science Committee (SCICOM). It was a busy, even turbulent, time, but the result is two new and strong committees taking full responsibility for ICES advice and science and, in the short time of their existence, creating much of the integration, transparency, and efficiency that was our goal.

Beginning in 2008, we developed *ICES Strategic Plan “A Vision Worth Sharing”*, *ICES Science Plan (2009–2013)*, *ICES Advisory Plan (2009–2011)*, and *ICES Secretariat and Data Centre Plan*. A new shape started to form.

The *ICES Secretariat and Data Centre Plan* was important in reshaping the Secretariat to reflect the new structures in the ICES network, not to mention the growth of the Secretariat itself, expanding from 40 staff members to the current 50. As the new structure took shape, we changed and modernized many internal procedures and the staff rules, which took quite a bit of my time and energy over the years. These changes are, perhaps, not as visible as the dramatic changes to ICES structure, but I think they have prepared the Secretariat and its staff well for the future, creating a good infrastructure, a fine working spirit, and an effective line-management structure, with the Secretariat Management Group (SMG) in place.

The work during these years of change emphasized ICES position as a financially stable, even well-off, organization. After considering the budget reserves, Council created the Strategic Investment Fund (SIF), a wise decision in my opinion. The SIF made it possible

to carry out the reforms and changes by financing the necessary additional activities without relying on the Member Countries for additional contributions, as well as providing funds for some interesting and important projects.

In my view, the most important project was the creation of ICES Training Programme, an idea that, I'm proud to say, originated with Hans Lassen (former Head of Advisory Programme) and myself. After we developed a concept that required a substantial investment, Council approved it and contributed DKK 3 million to launch the Training Programme. I believe that, in future, this programme will be a key part of ICES work.

ICES Publications continued to grow, while maintaining its high level of scientific and editorial quality. A Communications Strategy was approved, allowing for a two-year trial, begun in 2011, during which a communications department will be implemented. It will share the richness of ICES history and vision, inside and outside the circle of ICES scientists.

This has also been a time of growth for ICES Data Centre, which now makes up approximately 25% of the Secretariat staff. While providing data services to the ICES network and relevant, externally funded data projects, it participates in the development of marine data standards at regional and global levels.

Also of great importance is the development of ICES relationships with other international organizations, leading to a more global approach, which has increased ICES relevance and influence in an international context. Our cooperation with, among others, PICES, FAO, and

several UN organizations has intensified, and the MARCOM+ (Integrating Marine and Maritime Science Communities) project raises our profile in the European environment. ICES re-entry into several of the global arenas from which it was absent is another welcome advance. ICES has established itself on the political stage, and I think this is an advantage for ICES.

All in all, I feel that the past years have been successful and that ICES future remains promising for another hundred years at least. I leave with optimism for ICES future and also with gratitude for the working relationships that have been deepened and the friendships that have been nurtured. Who knows but that we will meet again? Thank you all very much for six years of excellent cooperation and for the opportunity to steer this wonderful organization as your General Secretary.

Gerd Hubold

This diagram shows the names of all Secretariat employees during 2011, some of whom left employment in the course of the year. Therefore, this is not a reflection of the employee roster at any one point during the year.



SECRETARIAT ADMINISTRATION

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 2011, 1487 participants attended 86 in-house meetings for a total of 6263 person days. The increasing number of participants, often attending simultaneous working groups, and the increased demand for break-out workspace for subgroups stretched ICES meeting-room capacity to the limit.

As a consequence of the large number of meetings in the building, the meeting facilities at ICES headquarters were further improved, and repairs were organized during quieter times of the year.

ICES Bureau met in February, June, September, and October. The 99th Statutory Meeting of ICES Council was held in Copenhagen, 26–27 October. The Finance Committee met in June.

Based on a Council decision, an external review group was established to evaluate the success of the new Advisory structure and processes. The group met at ICES headquarters in November in parallel with the annual Advisory Committee (ACOM) meeting.

The annual work programme 2011 had three meetings of the Science Committee in January, May, and September. ACOM met in September and November, and held WebEx conferences throughout the year.

As a major initiative anchored in the Science Programme, ICES involvement in the European marine science coordination structures was further developed in 2011. The Head of Science and the Professional Science Secretary continued to coordinate the pan-European project for scientific cooperation and coordination (MARCOM+). With this initiative, ICES is in the driver's seat for the development of new structures for overarching European marine and maritime science cooperation.

A letter of agreement between ICES and NAMMCO was signed, and a letter specifying cooperative activities with FAO was exchanged.

Memoranda of understanding (MoU) with the partner organizations continued in 2011, and collaboration with these partners was actively developed, e.g. through the MICC (Meeting with ICES and Client Commissions) meeting, ICES participation in RAC (Regional Advisory Councils) and EFARO (European Fisheries and Aquaculture Research Organization) meetings, and bilateral contacts through the Science Programme and Advisory Programme. Scientific cooperation was active *inter alia* through participation in the PICES annual conference, strengthening of links with the EurOceans network, meetings of ERANETS (European Research Area Networks), 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 met at ICES Annual Science Conference in Gdańsk with representatives from EC–DG Research to discuss closer cooperation in science planning and to develop future services for DG Research in the renewed

ICES/EC MoU for 2012. In July, ICES General Secretary and ICES Head of Science participated in the annual meeting of the LME programme, and links were established for future scientific cooperation in ecosystem research, monitoring, and management advice in advanced training and in logistic support. This activity resulted in an invitation to ICES General Secretary to make a presentation about ICES to the annual science meeting of the Benguela Current Commission in Swakopmund, Namibia, in October.

In October, Director General of DG Mare Lowri Evans and staff visited ICES to discuss a future review of the European advisory structures and the role of ICES for the Commission's scientific advice, including training activities, and new tasks were included in the MoU for 2012.

Work is progressing on the redesign of ICES website. The project continues under the shared leadership of ICES IT (technical set-up and technical management) and ICES Communications (content and style), with input from the Internet Redesign Group, which was formed to act as the accepting partner on behalf of ACOM and SCICOM.

Gerd Hubold completed his six-year term as ICES General Secretary on 31 January 2012. Anne Christine Brusendorff was selected as ICES next General Secretary. She is the first woman in ICES 109-year history to be elected to the position of General Secretary.

On the ICES Annual Report 2011 Supplementary DVD

The following document can be found under the heading Secretariat.

- *ICES Progress Report 2011*
 - *Secretariat Programme Review 2011*
-

ADVISORY PROGRAMME

The Advisory Programme provides secretarial support for the Advisory Committee (ACOM), and the more than fifty expert groups that are managed under ACOM, to produce research-based advice to public authorities with a marine management mandate. The 2011 advice included monitoring of marine pollutants, cold-water corals, and vulnerable marine habitats, monitoring of sea pens and buried fauna, management advice for 140 fish stocks in the Northeast Atlantic, and advice regarding rebuilding and management plans for several fish stocks. Advice was delivered throughout the year in accordance with the needs of the clients and the practicalities of data and expertise being available. Planning and development of the advice take place throughout the year, with most of the advice released between late May and early October.

Benchmarks, which are thorough reviews of the data and methodologies that form the basis for advice, were conducted in two workshops reviewing a number of roundfish and flatfish stocks, and a herring stock. In addition, two between-benchmark workshops were set up to deal with issues in the stock assessments of North Sea cod and North Atlantic spurdog. Benchmark workshops draw on expertise not affiliated with the institutes directly involved in the stock assessments, engaging scientists from Canada, USA, New Zealand, and Australia, as well as stakeholders.

In 2011, the transition to providing fishery advice that would achieve maximum sustainable yield (MSY) continued. Initiated in 2009, ICES interpretation and framework have since been refined in consultation with clients and stakeholders at specific workshops and with the Regional Advisory Councils and advice recipients at

annual meetings. The 2010 advice was provided with multiple options, including advice following the ICES MSY framework (as limited by the precautionary approach), management plans, and the precautionary approach alone. Advice recipients agreed to a single form of advice, to be based on existing management plans whenever they were considered precautionary. In 2011, changes were introduced to the format of the advisory report that mainly affected the fishery advice. These changes include the use of pictograms to communicate various aspects of stock status, as well as the return to a single item of advice, in response to the critique from users of the system of multiple advice lines introduced in 2010. Therefore, a single item of advice was provided for each stock, based either on a management plan as agreed with the competent authorities, the ICES MSY framework, or the precautionary approach.

Jean-Jacques Maguire (Canada) began his three-year term as ACOM chair in January 2011. Han Lindeboom (the Netherlands) began his term as a new Vice-Chair, ecosystem portfolio, and three Vice-Chairs (Manuela Azevedo, Carl O'Brien, and Eugene Nixon) continued their terms.

The earlier (2008) reforms to the advisory process have led to a more responsive advisory system, with a credible and transparent process of peer review and advice drafting. Peer review is now a well established part of ICES advice, creating a high demand for experts as well as logistical and organizational support to the process. All expert group reports, which form the basis of ICES advice, are processed in review groups by experts who, by virtue of originating in another region within the ICES area or from a non-member country of ICES, can be considered objective with respect to the issues concerned. The review groups are open to stakeholder

and client observers. The outcome is transparent; the review reports are freely available in the published version of the expert group reports on ICES website.

With the increasing demand and limited supply of expertise in the advisory process, ICES aims to foster a scientific community with an enhanced capability to contribute advice. The Advisory Programme, in cooperation with the Science Programme, continues to promote the development of the science basis for future advice through the strategic initiatives on biodiversity (SIBAS), area-based management (SIASM), and stock assessment models (SISAM).

In 2010, ACOM and SCICOM established the joint SCICOM/ACOM Steering Group on the Marine Strategy Framework Directive (STGMSFD). ACOM continued its support of this process in 2011. It became apparent early in the year that ICES was expected to provide support for the development of the “good environmental status” descriptor for commercially important fish stocks (D3). ICES Bureau took the initiative to produce a report on the development of Descriptor 3, based on best available science, as a resource for the parties responsible for implementing the MSFD. A core team of experts was established, and two workshops were held in 2011, with the report expected to be finalized early in 2012. (See page 16.)

Interactions with stakeholders – through the Regional Advisory (RACs) or otherwise – continued in 2011. These interactions have included a strong element of mutual education helping ICES scientists understand the issues important to stakeholders, explaining to stakeholders the basis for the advice, and clarifying the technical concepts used in advice reports. A specific issue in 2011 was cooperation to improve data quality, and processes

were set up with the North Sea and the North Western RACs to move on this.

In 2011, ICES Advisory Programme was partner in two projects:

The **FIMPAS** (Fisheries Measures in Protected AreaS) project was initiated to develop a proposal for fishery measures in three designated areas in the Dutch EEZ in the North Sea. In 2011, the project was extended to include German- and UK-designated areas, evaluating these in a joint Netherlands–UK–Germany process and with specific emphasis on Dogger Bank. ICES is asked to consider the two Dutch Natura 2000 sites (Frisian Front and Cleaver Bank) together with the Dogger Bank Natura 2000 sites for the UK, Germany, and the Netherlands, and to evaluate whether the proposals for fishery measures are likely to deliver on the conservation objectives. An answer to this request is required in May 2012.

The **Fish Behind the Net** project (FBtN) is a cooperative effort with the University of Copenhagen (Institute for Agricultural and Fisheries Economics) and the European Environment Agency (EEA). The study provides input to EEA's 2012 European Ecosystem Assessment (EURECA), which aims to assess the state of ecosystems in Europe in 2010 and their future development. The study assesses the impacts of commercial fishing on selected ecosystem goods and services, aims to quantify and value the observed trends and changes of the relevant goods and services, explores resilience and sustainability issues, and finally examines management measures to address the observed and future trends and changes in the goods and services. A final report was submitted in July 2011.

A constant demand made on the advisory process is for more and better data. To this end, ICES continues to support, coordinate, and quality-assure data collection through the Planning Group on Commercial Catch, Discards, and Biological Sampling (PGCCDBS). In 2011, this group arranged a number of workshops, including workshops on methods and analysis (fleet data, discards), on age reading and maturity staging.

ICES has coordinated a number of research vessel surveys through its various planning groups for surveys.

The Secretariat provides an annual overview of the data received in the fish stock assessment process and the data that have been included in the assessments that form the basis for the advice. This includes an overview of the Research Vessels (RV) survey data used in the assessments.

ICES Training Programme (reported under the Science Programme) has provided training opportunities for researchers involved in advice-related expert groups. In 2011, the Training Programme conducted two training courses for staff at DG MARE under the EC MoU to develop capacity to utilize the advice.

On the ICES Annual Report 2011 Supplementary DVD

The following document can be found under the heading Advisory Committee.

- *ACOM November Report 2011 will be made available on the ICES website*
-



**RV ARNI
FRIDRIKSSON**



COUNTRY	ICELAND
BUILT	2000
LENGTH	69.9 METRES
GROSS TONNAGE	2233
CRUISING SPEED	16 KNOTS
ACCOMODATION	15 CREW & 17 SCIENTISTS
PHOTO	EINAR ASGEIRSSON



RV G.O. SARS



COUNTRY	NORWAY
BUILT	2003
LENGTH	77.5 METRES
GROSS TONNAGE	3800
CRUISING SPEED	17 KNOTS
ACCOMMODATION	15 CREW & 30 SCIENTISTS
PHOTO	N/A

SCIENCE PROGRAMME

The past year saw the consolidation of the structures that SCICOM created to deliver *ICES Science Plan* (2009–2013), including steering groups, strategic initiatives, and operational groups.

SCICOM steering groups and strategic initiatives

SCICOM Steering Group on Ecosystem Functions (SSGEF) oversees the activities of a suite of expert groups related to the first thematic area of *ICES Science Plan*, Understanding Ecosystem Functioning. At the end of 2011, SSGEF consisted of thirteen working groups and six study groups; two study groups were dissolved. Three workshops were also hosted, with a total of twenty-four expert-group meetings in 2011.

During the past two years, SSGEF has assessed its strengths and weaknesses, as well as the integration of the science results of expert groups, by mapping the terms of reference (ToRs) for individual expert groups against *ICES Science Plan* challenges, and by reporting SSGEF science highlights at ICES Annual Science Conference (ASC).

One of the group's highlights was the broadening of the expert group on modelling physical–biological interactions to incorporate end-to-end ecosystem modelling.

Pierre Petitgas finished his term as Chair of the Steering Group and was replaced by Graham Pierce, who will serve until 2014.

SCICOM Steering Group on Sustainable Use of Ecosystems (SSGSUE) often straddles the boundary between SCICOM and ACOM activities. In 2011, many SSGSUE expert groups dealt with issues relating to the development of single-species stock assessment products, multispecies, operationalizing the ecosystem approach, and examining the implications for advice of some basic assumptions on stock structure. Other groups dealt with issues such as the efficacy of marine protected areas and the impacts of fishing on the genetics of stocks.

SSGSUE is currently composed of eight working groups and three study groups; one working group was dissolved this year. Nine of these groups met in 2011, and four workshops were hosted. SSGSUE groups tend to produce science with short-term applications, often with strong management implications and addressing cross-cutting issues.

SCICOM Steering Group on Human Interactions on Ecosystems (SSGHIE) covers a wide array of specialized expert groups ranging from the environmental effects of aquaculture through marine chemistry and marine spatial planning (MSP). This makes the steering group extremely diverse.

SSGHIE currently consists of nine working groups, one joint working group with PICES, and one with the IOC, plus two study groups and one strategic initiative. In addition, two workshops were hosted in 2011, for a total of sixteen group meetings.

In 2011, SSGHIE emphasized the development of the scientific basis for coastal and MSP by providing support and advice to the ACOM/SCICOM Strategic Initiative on Area-based Science and Management (SIASM). Expert

groups collaborated enthusiastically with SISAM, responding to requests and tackling relevant scientific issues.

SCICOM has identified the sustainability of aquaculture as an emerging issue, and therefore the work of the Study Group on Socio-economic Dimensions of Aquaculture was extended until 2012.

Following the example of SSGEF, the SSGHIE coded the expert groups' ToRs against *ICES Science Plan* priorities. This pointed up SSGHIE's large footprint on the issues of contaminants, eutrophication, and habitat change, and its small footprint on issues such as renewable energy and coastal-zone management. A strategic plan for SSGHIE is currently under development.

SCICOM Steering Group on Regional Sea Programmes (SSGRSP) identifies real-world applications of science with an interest at the regional-sea level. It has five working groups, two study groups, and hosted six meetings and one workshop during 2011.

Four of the working groups provide the means to perform integrated ecosystem assessment of regional seas, and some are close to implementing this vision. SSGRSP now includes four regional groups (Baltic Sea, Northwest Atlantic, North Sea, and western European shelf seas). In 2011, the SSGRSP Chair Yvonne Walther attended several HELCOM meetings and hopes to present the group's work to other interested parties, such as the EU's Scientific, Technical, and Economic Committee for Fisheries (STECF) in 2012.

In cooperation with the Working Group on Integrated Assessments of the Baltic Sea (WGIAB), a workshop was established to study ecosystem health issues related

to the biological effect of contaminants, continuing the work of the Study Group for the Development of Integrated Monitoring and Assessment of Ecosystem Health in the Baltic Sea (SGEH).

SCICOM Steering Group on Ecosystem Surveys Science and Technology (SSGESST) coordinates expert groups responsible for developing, maintaining, and advancing assessment surveys; evaluating and mitigating the impacts of fishing on marine ecosystems; and improving and developing new advanced technology tools for ecosystem monitoring. The group aims to improve and advance existing survey capabilities, leading to the development and implementation of integrated surveys and monitoring systems in support of the ecosystem approach to management. It also encourages cooperation and collaboration with the fishing industry and other stakeholders.

With the creation of the new expert group on Improving the Use of Survey Data for Assessment and Advice (WGISDAA), the membership of the Steering Group on Ecosystem Survey Science and Technology (SSGESST) increased to twenty-six: fourteen working groups, five study groups, and seven workshops. Twenty-two of the groups met during 2011.

SSGESST's expert groups supported many activities of other steering groups and strategic initiatives. Because many SSGESST expert groups contribute directly to assessments or to the improved understanding of fishing dynamics and the impacts of fishing on marine ecosystems, ongoing coordination with ACOM is especially important.

In 2011, ICES and FAO reviewed the status of the joint ICES/FAO Working Group on Fishing Technology and

Fish Behaviour (WGFTFB), and agreed to maintain it as a joint working group, with co-chairs from both parent organizations.

ACOM/SCICOM Strategic Initiative on Area-based Science and Management (SIASM) responds to ICES needs in the area of marine spatial management. The initiative has cemented strong relations with relevant players, such as the European Commission, OSPAR (the Oslo and Paris Commissions), HELCOM/VASAB (Helsinki Commission/Vision and Strategies for the Baltic Sea Region), the EEA (European Environment Agency), and national ministries. SIASM is also well connected to relevant European projects, such as the EU HARMONY, MESMA, and MASONOOS.

Expert group feedback demonstrated ICES enormous potential to provide data and advice on MSP, particularly through the use of the ICES Spatial Facility.

A joint workshop in collaboration with HELCOM/VASAB and OSPAR demonstrated how ICES and the regional conventions can cooperate and contribute to MSP. The meeting strengthened and expanded the ICES MSP network, informed a wide range of MSP practitioners about the ICES Spatial Facility, and shared knowledge and developed networks between scientists and practitioners. A simulation game, “Sea of Colours”, gave participants the opportunity to develop actual MSP plans for four fictitious countries.

ACOM/SCICOM Strategic Initiative on Biodiversity Science and Advice (SIBAS). All science and advisory activity within ICES relates to biodiversity issues. Biodiversity can be defined as the variety, quantity, and distribution of life, and it is fundamental to the function and resilience of ecosystems and the goods and services they provide. The Strategic Initiative on Biodiversity Science and Advice (SIBAS) seeks to build on ICES existing capacity and to further develop the profile, relevance, influence, and use of biodiversity science and advice.

In 2011, SIBAS main activity was hosting the Workshop on Marine Biodiversity (WKMARBIO), furthering ICES engagement in biodiversity issues, held in Copenhagen between 9 and 11 February. The workshop included speakers representing a broad range of policy and science interests, discussing data, assessment indicators and reference points, and science priorities. Participation included global, regional, and national organizations with responsibility for the development and implementation of biodiversity policy to ICES (CBD, FAO, EU, OSPAR, HELCOM), as well as biodiversity scientists and scientific advisors.

SIBAS members successfully outlined a rationale for initiating discussions with the Convention on Biological Diversity (CBD), which led to ICES Secretariat developing a Letter of Agreement with CBD.

SIBAS was led by Simon Jennings and Mark Tasker (as SCICOM and ACOM representatives). Following the ASC, Henn Ojaveer, Estonia (representing SCICOM), and Han Lindeboom, the Netherlands (representing ACOM), became co-chairs.

SCICOM Strategic Initiative on Climate Change (SICC)

entered its final stage in 2010 with the *ICES Cooperative Research Report “ICES Status Report on Climate Change in the North Atlantic”*, launched at the ASC in September. The joint ICES/PICES Strategic Initiative on Climate Change Effects on Marine Ecosystems (SICCME) was formed to benefit from ICES and PICES complementary expertise in climate change and ecosystem studies. The new **SCICOM Strategic Initiative on Climate Change Impacts on Marine Ecosystems (SICCME)** supports ICES and PICES in becoming the leading international organizations providing science and advice related to the effects of climate change and variability on marine resources and ecosystems.

Most of 2011 was dedicated to the preparation of SICCME's science and implementation plans. SICCME's work will be coordinated by a core group of scientists from ICES and PICES, co-chaired by Brian Mackenzie (ICES) and Anne Hollowed (PICES).

ACOM/SCICOM Strategic Initiative on Stock Assessment Methods (SISAM) will ensure that ICES scientists can apply the best methods when developing management advice and will help chart the future course of this scientific enterprise. SCICOM and ACOM have stated that this initiative is central to ICES business.

The core group refined the objectives of the strategic initiative, discussed membership, liaised with the Working Group on Methods of Fish Stock Assessment (WGMG), developed a timeline for planned deliverables, and began the preparation for the World Symposium on Stock Assessment Methods, scheduled for 2013. The core group has members from five continents.



A categorization scheme for stock assessment methods was developed and delivered, and will be the basis for the World Symposium on Stock Assessment Methods. In preparation for the symposium, WGMG will provide key datasets to use as case studies in 2012.

The joint SCICOM/ACOM Steering Group on the Marine Strategy Framework Directive (STGMSFD)

was established in 2011 to support Member Countries and the regional conventions' implementation of MSFD. ICES agreed, in particular, to assist Member Countries by taking the lead in developing methodologies for Descriptor 3 on Commercial Fisheries and Shellfish. This work will supplement the ongoing work of ICES on Descriptor 1 (biodiversity), undertaken by SIBAS and Working Group on Ecosystem Effects of Fishing Activities (WGECO), and the work of Marine Chemistry Working Group (MCWG), Working Group on Marine Sediments in Relation to Pollution (WGMS), and Study Group on Integrated Monitoring of Contaminants and Biological Effects (SGIMC) on Descriptor 8 (contaminants), in partnership with OSPAR.

The steering group developed a number of ToRs for all expert groups, to identify elements of their work that will help determine the status of the eleven descriptors set out in the Commission Decision and provide views on what good environmental status (GES) might be for those descriptors. Responses were compiled in a draft overview. During its Statutory Meeting, ICES Council also discussed what ICES could do in the longer term to contribute to the implementation of the MSFD.



RV ENDEAVOUR	 
COUNTRY	UNITED KINGDOM
BUILT	2003
LENGTH	73 METRES
GROSS TONNAGE	2983
CRUISING SPEED	14.4 KNOTS
ACCOMMODATION	16 CREW & 19 SCIENTISTS
PHOTO	UK CROWN COPYRIGHT, 2012

International cooperation

ICES President and the Chair of SCICOM visited FAO during 2011 and negotiated an expansion of the current cooperation. An addendum to the current MoU was agreed, which provides guidance for future activities, with a number of priority areas specifically agreed.

For the past two years, ICES has participated in meetings of the UN *Ad Hoc* Working Group of the Whole (AHWGW) on the regular process for global reporting and assessment of the state of the marine environment, including socio-economic aspects. At the ASC, ICES hosted a meeting of the AHWGW to facilitate the preparation of the report about the North Atlantic. The meeting was attended by the regional conventions and the UN's Secretary of Division for Ocean Affairs and the Law of the Sea (DOALOS).

ICES and PICES continued to develop their international cooperation. The P/ICES Study Group on Strategic Cooperation met during the intercessional PICES Science Board meeting in Honolulu, Hawaii, USA, where a report and roadmap on cooperation (Report of the P/ICES Study Group on Developing a Framework for Scientific Cooperation in Northern Hemisphere Marine Science) were finalized. Both organizations worked together on co-convening the 5th International Zooplankton Production Symposium in Pucón, Chile, and the Symposium on Comparative Studies of Climate Effects on Polar and Sub-polar Ecosystems: Progress in Observation and Prediction, in Seattle, Washington, USA.

The North Atlantic Marine Mammal Commission (NAMMCO) initiated a procedure to formalize the ongoing scientific cooperation between the two organizations, and a Letter of Agreement was signed. Cooperation between ICES and NAMMCO concentrates

on the top predators in the ecosystem, a research area that is outlined in *ICES Science Plan* as requiring enhanced focus.

Cooperation with the Mediterranean Science Commission (CIESM) continued within the MARCOM+ project, where both organizations have common interests, defined *inter alia* by their common Member Countries and by the members' interest in cooperation beyond the lifetime of the MARCOM+ project.

The Head of ICES Science Programme was invited to attend the Advisory Board at the EuroMarine kick-off meeting in Gothenburg, Sweden. The purpose of EuroMarine is to establish an integrated platform of European marine research networks of excellence (NoEs) in order to develop an integrated and multidisciplinary approach to research questions and problems.

EuroMarine will connect existing marine biological research institutes, which were members of the former European Commission marine NoEs (Marine Biodiversity and Ecosystem Functioning, (MARBEF), Marine Genomics Europe (MGE), and EUROCEANS) into a united organization with common visions and strategies.

The historical ICES plankton survey data digitization project, carried out in association with the Sir Alister Hardy Foundation for Ocean Science (SAHFOS), was successfully concluded in late 2011.

ICES Annual Science Conference

ICES Annual Science Conference 2011 was held in Gdańsk, Poland, with 661 registered participants from thirty-eight countries.

Attending the General Assembly were Kazimierz Plocke, Secretary of State from the Ministry of Agriculture and Rural Development; Maciej Lisicki, Vice-Mayor of the City of Gdańsk; and Wiesław Byczkowski, Deputy Marshal of the Pomeranian Voivodeship (region). The 2011 Prix d'Excellence was presented to Carlos Duarte of Spain, and Mike Sissenwine received the 2011 Outstanding Achievement Award. Jan Marcin Węśławski, University of Sopot, gave the Open Lecture on "Practitioners Faster than Scientists – Marine Nature Conservation". James E. Cloern, US Geological Survey, gave the first plenary lecture on "Phytoplankton as Indicators of Ecosystem Response to Global Change at the Land–Sea Interface". The second plenary lecture on "Ecosystem-based Management for the Baltic Sea – Historical Development and Future Challenges" was given by Ragnar Elmgren, recently retired from the Department of Systems Ecology at Stockholm University.

There were 287 presentations over the course of the week. In addition, 106 posters were on display. ICES Merit Awards for the Best Presentation (Bryan A. Black, USA) and Best Poster (Tina K. Kerby, UK) were presented at the Closing Session.

Twenty-three early-career scientists received travel support this year. For the first time, three Early Career Scientist Awards were conferred, recognizing two Oral Presentations and one Poster Presentation by young scientists attending the ASC (Holly J. Rolls, USA; Núria Calduch-Verdiell, Germany; and Antje Gimpel, Germany).

The awards are meant to encourage the involvement of early career scientist in the ICES network by subsidizing participation costs in an ICES-sponsored activity, such as ICES training courses, expert group meetings, symposia, or workshops.

On the ICES Annual Report 2011 Supplementary DVD

The following documents can be found under the heading ICES Annual Science Conference 2011.

- *Conference Handbook*
 - *ASC programme*
 - *Opening Session addresses*
 - *Ed Houde, Outstanding Achievement Award to Mike Sissenwine*
 - *Ed Houde, Prix d'Excellence to Carlos Duarte*
 - *Plenary lectures*
 - *Jan Marcin Węśławski, University of Sopot*
 - *James E. Cloern, the US Geological Survey*
 - *Ragnar Elmgren, recently retired from Stockholm University*
 - *Closing Session awards*
 - *Index of papers and posters presented at the ASC*
 - *Index of theme session reports*
 - *List of participants*
-

RV WALTHER HERWIG III



COUNTRY	GERMANY
BUILT	1993
LENGTH	64.5 METRES
GROSS TONNAGE	2131
CRUISING SPEED	13.6 KNOTS
ACCOMODATION	21 CREW & 12 SCIENTISTS
PHOTO	KIRK WILLIAMS





MARCOM+ and EMAR²RES

MARCOM+, which develops interaction between partners in the marine and maritime science communities, concluded the series of pilot cooperation models and conducted the final eight panel meetings and three workshops. Involvement of the maritime industry grew as the project progressed, and connections with major maritime research networks were established and formalized, with, for example, the European Ocean Energy Association. Future models of cooperation for the Marine and Maritime Forum were developed. They will emphasize areas of common interest between marine science communities and the maritime world, such as seafood (catch to markets, ocean energy), environmental challenges and resources, blue biotechnology and living resources, shipping and transport technology (environmental impacts, for example, in the Arctic), and biotech.

The Marine and Maritime Forum created a steering group based on current membership, which will become the governing body and operate under a rotating presidency, assisted by a coordination facility. Under the Forum's leadership or at the request of the European Commission, conferences, workshops, and expert groups will consider areas of common interest for the purpose of bringing marine and maritime researchers together. A vision for future work and a roadmap for 2012 were agreed at the final consortium meeting. Based on available residual funds, the project was extended into 2012, but ICES will continue to coordinate the project over the next two years.

A sister FP7-funded project is the European MARine and MARitime REsearch and Science (EMAR²RES), running from 2010 to 2012. Similar to MARCOM+, EMAR²RES centres on cooperation and exchange, but

with a concentration on the maritime transport sector. Both projects are in close contact and coordinate their activities. EMAR²RES convened workshops to identify topics of common interest. The last workshops were held in April, and themes relevant to ICES were identified and elaborated: "Polar Sea Route and Alien Species" and oil spills in the Arctic.

ICES Training Programme

ICES Training Programme was initiated in August 2009 to ensure that scientists and participants in expert groups and other parts of the scientific and advisory process have the skills needed to deliver high-quality advice. Courses provide a common understanding of ICES advisory practice, and cooperation with other organizations is intensified, bringing new disciplines and perspectives to ICES science and advice.

In the first three years of its existence, ICES Training Programme has offered fourteen courses on a wide range of skills, including stock assessment (introductory and advanced), ecosystem modelling, model building, management strategy evaluation, Bayesian inference, fishery advice, trawl survey design and evaluation, and integrated ecosystem assessment. Each course is taught within the context of the ICES science and advisory system to demonstrate best practices as well as state-of-the-art technical skills. Almost 400 students from more than thirty countries attended courses: AD Model Builder and Stock Assessment; Ecosystem Modelling for Fishery Management; Fishery Management to Meet Biodiversity Conservation Needs; Stock Assessment (introduction); Trawl Survey Design and Evaluation; and Approaches to the Integrated Assessment of Status and Trends in Marine Ecosystems.

ICES symposia

Five symposia, sponsored or co-sponsored by ICES, took place in 2011.

5th International Zooplankton Production Symposium, Pucón, Chile, 14–18 March. Selected papers will be included in a special issue of *ICES Journal of Marine Science*.

ICES/NAFO Symposium on the Variability of the North Atlantic and its Marine Ecosystems during 2000–2009, Santander, Spain, 10–12 May. Selected papers will be included in a special issue of *ICES Journal of Marine Science*.

Comparative Studies of Climate Effects on Polar and Sub-polar Ocean Ecosystems: Progress in Observation and Prediction, Seattle, Washington, USA, 22–26 May. At least three special volumes are anticipated from the symposium. A special volume of *ICES Journal of Marine Science* will publish up to thirty refereed papers. In addition, Session 8, “Interactions between Gadoids and Crustaceans: The Roles of Climate, Predation, and Fishing”, is planning a special volume, as is Session 3 on “Modelling Marine Ecosystem Dynamics in High Latitude Regions”, and possibly Session 2, “New Observations and Understanding of the Eastern and Western Bering Sea”.

2nd International Symposium on Integrated Coastal Zone Management, Arendal, Norway, 3–7 July. The symposium proceedings will be published by Wiley–Blackwell Publishing.

ICES/NASCO Symposium on Salmon at Sea: Scientific Advances and their Implications for Management, La Rochelle, France, 11–13 October. A special symposium issue of *ICES Journal of Marine Science* will follow in 2012, along with a second report by the conveners, highlighting the management implications and applications of the research presented in La Rochelle.

On the ICES Annual Report 2011 Supplementary DVD

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

- *September Report 2011*
 - *SCICOM Progress Report 2011*
 - *Symposia reports 2011*
 - *ICES Training Group reports 2011 are available on the ICES website.*
-

DATA CENTRE

ICES Data Centre launched ICES Spatial Facility (GIS application suite), with the support of working groups, SCICOM, and ACOM. Originally conceived as a tool to organize ICES own map references, it allows working groups to describe their own map layers and products in the online catalogue. The facility can be found at <http://geo.ices.dk/index.php>.

The main online data portal <http://ecosystemdata.ices.dk> continued to improve its functionality, and also added the ICES Historical Plankton dataset (a joint project of ICES, SAHFOS, and Plymouth University) to its inventory of searchable data <http://ecosystemdata.ices.dk/HistoricalPlankton/>.

The oceanographic section of the ICES online data services, <http://ocean.ices.dk/>, received an overhaul; many of its services were updated and linked to a new database.

DATRAS, the online database of trawl surveys, was busy adding new surveys to the application and improving the DATRAS outputs and indices. There are now eleven surveys available. The World Register of Marine Species (WoRMS) was adopted as the primary species reference. This ensures that DATRAS can easily share data with ICES data systems and other data nodes, including the Ocean Biogeographic Information System (OBIS).

Some of the Data Centre's most diverse activity comes from its work on external projects and partnerships.

Both the Baltic region through HELCOM and the regions within the Northeast Atlantic through OSPAR had very active assessment work programmes in

2011, resulting in a great deal of activity in receiving, processing, and preparing datasets for input to the OSPAR contaminants assessments, as well as the HELCOM CORESET preparations for the EU Marine Strategy Framework Directive (MSFD). The MSFD was a recurring theme throughout the ICES Data Centre work in 2011; for example, the Data Centre contributed to the technical work on marine litter in relation to MSFD requirements.

At a workshop hosted by ICES for HELCOM and attended by OSPAR representatives, progress was made on understanding how to adapt reporting standards to cope with the range of methods in which scientists sample macrophytobenthos.

HELCOM and ICES merged information to create a single Station Dictionary, a means of tracking monitoring stations over time.

Working closely with the OSPAR contaminants assessment group, ICES Data Centre combined data and expert assessment knowledge in an interactive tool. Originally developed in the UK for their 2011 national assessment, the regional assessment was made using the OSPAR version of this same tool that is hosted by ICES.

The Data Centre continued its technical support of the EEA (European Environment Agency) through its involvement in the European Topic Centre on Inland, Coastal, and Marine Waters (ETC-ICM). The MSFD featured heavily in this area, and ICES contributed knowledge about existing data and information issues, as well as upcoming challenges such as the INSPIRE directive and the European Marine Observation and Data Network (EMODNET) alignment. Participation

in the EMODNET pilots continued in 2011; both the biological and chemical portals have now reached a level where data and map products can be viewed.

InterCatch, the information facility that documents commercial fish catch data, introduced a discard functionality in 2011. In all, researchers for thirty-one stocks have used, tested, or considered the use of InterCatch and concluded that it can be used as the tool for importing national data, allocation of unsampled catches, and aggregation to stock level for the assessment groups.

ICES Data Centre maintained international interaction at various data-standards fora through the IODE programme, SeaDataNet, INSPIRE thematic drafting groups, and EMODNET, as well as continued cooperation on fishery-related statistical data (SDMX-ML) through FAO and EUROSTAT.



ICES Data Centre has also been an active player in the suite of ICES strategic initiatives, participating in the Biodiversity workshop, MSFD activities, and contributing to the Marine Spatial Planning initiative with ICES Spatial Facility.

ICES Data Centre hosted visiting staff from the Norwegian Institute of Marine Research who came to Copenhagen for a knowledge exchange workshop.

On the ICES Annual Report 2011 Supplementary DVD

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

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

RV RAMON MARGALEF  	
COUNTRY	SPAIN
BUILT	2011
LENGTH	46.5 METRES
GROSS TONNAGE	988
CRUISING SPEED	12 KNOTS
ACCOMODATION	14 CREW & 9 SCIENTISTS
PHOTO	ASTILLEROS ADMÓN



COMMUNICATIONS AND PUBLICATIONS

Communications

With Council's approval of *ICES Communications Strategy*, 2011 was the first year of a two-year trial period agreed upon to implement the strategy, which calls for the creation of a communications department that will raise public awareness of ICES scientific and advisory activities.

As a structure for the new department was being put in place, a very visible sign of progress appeared in November in the form of *ICES News* website. *ICES News* offers a mixture of news stories, feature articles, and links to ICES-related institutes and external stories about ICES. Visit *ICES News* at <http://news.ices.dk/>.

ICES established its presence in the world of social media with the creation of a Facebook page and a LinkedIn group. The LinkedIn initiative has been particularly successful, so far attracting a membership of more than 1100.

As the new department was taking shape, work continued on existing communication media.

The bimonthly online newsletter *ICES Inside Out* has established itself and is very positively received by more than 650 subscribers.

Issue 48 of *ICES Insight* appeared in August, with ten articles spread over sixty-four pages.

Press material for ICES ASC was developed in cooperation with the Polish National Marine Fisheries Research Institute. A press event was held on the first day of the ASC and was well-attended by reporters from Polish media. Coverage of the ASC on the ICES website received exceptionally positive feedback.

Monitoring of ICES presence in the print media revealed that 199 articles mentioning ICES appeared in European and international publications, representing twelve countries, including ten ICES Member Countries.

Publications

Among ICES in-house publications, *ICES Cooperative Research Reports* (CRRs) were an important part of ICES outreach material, presenting high-level science from the ICES network in an attractive layout with high editorial standards. Four CRRs were published in 2011.

Of special note is "ICES Report on Climate Change in the North Atlantic," which was published in September. These CRRs are freely available on ICES website, as are all of ICES in-house publications.

- **No. 307.** ICES Zooplankton Status Report 2008/2009. May 2011.
- **No. 308.** Sediment dynamics in relation to sediment trend monitoring. May 2011.
- **No. 309.** ICES Report on Ocean Climate 2010. August 2011.
- **No. 310.** ICES Report on Climate Change in the North Atlantic. September 2011.

It was a productive year for *ICES Journal of Marine Science* (IJMS), based on the quality and number of submissions (317 regular-issue manuscripts and 79 symposium-issue manuscripts). In addition, the IJMS science citation index continued its upward trajectory.

Ten issues of IJMS were published in Volume 68. Six issues contained articles on mixed topics. Four contained the proceedings of ICES-sponsored symposia, one of which was a supplementary issue, i.e. paid for in full by the conveners. Titles of symposium issues included “Issues Confronting the Deep Oceans: the Economic, Scientific, and Governance Challenges and Opportunities of Working in the Deep Sea”, “International Symposium on Remote Sensing and Fisheries”, “Climate Change Effects on Fish and Fisheries: Forecasting Impacts, Assessing Ecosystem Responses, and Evaluating Management Strategies”, and “Making the Most of Fisheries Information – Underpinning Policy, Management, and Science”.

Andrew (Andy) I. L. Payne completed his term as editor-in-chief, and Howard Browman was named new editor-in-chief.

On the ICES Annual Report 2011 Supplementary DVD

The following documents can be found under the heading Communications and Publications.

- *ICES Insight 2011*
- *ICES Inside Out 2011, Nos. 1–6*

*Coverage of ICES ASC can be found online,
<http://www.ices.dk/iceswork/asc/2011/index.asp>*

*Subscribe to ICES Inside Out,
<http://www.ices.dk/products/icesinsideout.asp>*

*Previous ICES Annual Reports can be found online,
<http://www.ices.dk/products/annualreports.asp>*

Visit ICES News, <http://news.ices.dk/>.

ICES COUNCIL

ICES Council held its 99th Statutory Meeting at ICES Secretariat in Copenhagen 26–27 October. ICES President Michael Sinclair led discussions on the scientific, advisory, strategic, operational, and financial issues affecting ICES. Delegates from all twenty Member Countries attended, along with representatives from ACOM, SCICOM, and the Secretariat.

The amended 2012 budget and the 2013 alternative forecast budget, which included a 0% increase in national contributions, were adopted.

Council accepted a proposal to extend the term of ACOM Vice-Chair Carl O'Brien for an additional year and to appoint Carmen Fernandez as Vice-Chair for 2012–2014.

A new policy relating to affiliate institutes instead of countries was adopted. The affiliate status allows participation in ICES Training Programme under the same conditions as Member Countries. The institutes will submit relevant information on their national activities annually. All applications for affiliate status will be decided by Council.

Council welcomed new national delegates: David Gillis (Canada), Kai Myrberg (Finland), Pierre Petitgas (France), Fredric M. Serchuk (USA), and William Turrell (UK).

Four new Vice-Presidents were elected to serve as members of ICES Bureau: Fritz W. Köster (Denmark), Tore Nepstad (Norway), Carmela Porteiro (Spain), and Fredric M. Serchuk (USA). Cornelius Hammer (Germany) was named Chair of the Finance Committee.

An observers policy was adopted that opens all groups to observers, except for expert groups in the advisory process. It was further clarified that observers are granted access to Council Statutory Meetings, but not to Special Council meetings dealing with internal staff matters.

The FAO Memorandum of Understanding was updated, highlighting collaborative work on emerging priorities. A draft Letter of Agreement was approved between ICES and the North Atlantic Marine Mammal Commission (NAMMCO) to formalize ongoing scientific cooperation between the two organizations, which concentrates on top predators in the ecosystem.

At the conclusion of the first day's meeting, Council members were invited by Ambassador Jørg Willy Bronebakk to a reception at the official residence of the Norwegian Ambassador to Denmark.

A special open strategic discussion session was held to consider ICES role in the Marine Strategy Framework Directive (MSFD). During the half-day session, chaired by ICES First Vice-President Paul Connolly, key collaborators, in this case representatives from HELCOM and the European Commission, were invited to contribute to the discussion. The session focused on the challenges faced by ICES European Member Countries in addressing and implementing the Directive, and how ICES can help.

On the ICES Annual Report 2011 Supplementary DVD

The following documents can be found under the heading Council.

- *Council Meeting 26–27 October*
- *Index of Resolutions*

The following documents can be found under the heading Finance Committee.

- *May Report*
 - *Final Accounts*
-

ICES BUDGETS 2011–2012



(All amounts in Danish Kroner)

	Budget 2011	Budget 2012
INCOME		
Price for one share	410,000	410,000
1. National Contributions		
Belgium	820,000	820,000
Canada	1,230,000	1,230,000
Denmark	1,230,000	1,230,000
Estonia	410,000	410,000
Finland	615,000	615,000
France	1,640,000	1,640,000
Germany	1,640,000	1,640,000
Iceland	1,230,000	1,230,000
Ireland	820,000	820,000
Latvia	410,000	410,000
Lithuania	410,000	410,000
The Netherlands	1,230,000	1,230,000
Norway	1,640,000	1,640,000
Poland	1,230,000	1,230,000
Portugal	820,000	820,000
Russia	1,230,000	1,230,000
Spain	1,230,000	1,230,000
Sweden	1,230,000	1,230,000
United Kingdom	1,640,000	1,640,000
USA	1,230,000	1,230,000
Total National Contributions	21,935,000	21,935,000
Contributions from Faroe Islands and Greenland	410,000	410,000
Total Contributions	22,345,000	22,345,000
2. Income from Commissions		
Contribution from NEAFC	2,177,492	2,234,000
Contribution from Russia for Baltic Sea Advice	0	0
Contribution from OSPAR (Advice)	323,594	410,000
Contribution from OSPAR (Datahandling)	529,225	540,000
Contribution from HELCOM (Advice)	0	0
Contribution from HELCOM (Data handling)	489,705	469,000
Contribution from NASCO	498,458	511,000
Contribution from EC	6,091,314	10,255,000
Total Income from Commissions	10,109,788	14,419,000

	Budget 2011	Budget 2012
3. Other Income		
Once off advice	1,000,000	100,000
Income from <i>ICES Journal of Marine Science</i>	590,000	600,000
Sale of Publications	25,000	15,000
ASC Income (Fees)	408,000	420,000
Miscellaneous income	27,000	27,000
Total Other Income	2,050,000	1,162,000
Total Income	34,504,788	37,926,000

EXPENDITURES		
Secretariat Salaries	27,380,223	28,563,000
Office Expenses	2,405,000	2,387,000
IT Expenses	2,665,000	2,885,000
Expenses for ASC	1,208,000	1,305,000
Travel and meetings expenses	4,770,000	5,590,000
Publications and Communications	1,030,000	995,000
Total Expenditures	39,458,223	41,725,000
Transfer from SIF	736,078	2,839,000
Transfer from former years	3,283,879	430,000
Transfer from Projects	500,000	80,000
Interests	433,478	450,000
Balance for the year	0	0



RV TRIDENS		 
COUNTRY	THE NETHERLANDS	
BUILT	1990	
LENGTH	73.5 METRES	
GROSS TONNAGE	2199	
CRUISING SPEED	13 KNOTS	
ACCOMODATION	19 CREW & 14 SCIENTISTS	
PHOTO	RIJKSREDERIJ	

ICES INTERVIEWS

Interviews with the invited plenary lecturers at ICES Annual Science Conference 2011 in Gdańsk, Poland.

James Cloern



James Cloern is a senior research scientist at the US Geological Survey, where he has worked since 1976. He leads a team investigation of San Francisco Bay that has included study of primary production, nutrient cycling, algal and zooplankton community dynamics, ecosystem metabolism and foodweb dynamics, disturbance by introduced species, bay-ocean connectivity, ecosystem restoration, and projected responses to climate change.

In his lecture “Phytoplankton as Indicators of Ecosystem Response to Global Change at the Land–Sea Interface”, he discussed examples and proposed a conceptual model for understanding the dynamics of estuarine–coastal ecosystems where perturbations from terrestrial, atmospheric, oceanic sources, and human activities converge to cause changes that cascade across local to global scales.

What area are you and your team dealing with?

One focus of our research is the Sacramento–San Joaquin River Delta, about 100 km east of San Francisco, where California’s two largest rivers converge. About 150 years ago, the Delta was a massive tidal freshwater wetland system, almost all of which was subsequently diked and converted into farmland. Tracts are now becoming available for conversion back to wetland habit. The question is which ones to buy, and how do we shape them to sustain native species? Saltmarshes around San Francisco Bay were also transformed a century ago when they were diked and converted into evaporation ponds for producing salt from seawater. Now, 16 000 acres have been purchased with a combination of state, federal, and private funds, and a plan has begun to convert them back into saltmarshes. It’s the largest programme of tidal wetland restoration in the western US. This began about ten years ago, and there are already signs that the ponds are being colonized relatively quickly with saltmarsh plants after their reconnection to San Francisco Bay.

What are the dangers involved in breaching levies and exchanging water from two types of ecosystems?

This was a pet project of one of the US senators from California, and the people running the programme wanted action. They thought magic was going to happen. Before the levies were breached, I expressed concern about the water’s effect on the Bay. They hadn’t thought about that, and the first thing that happened was a pond, filled with large amounts of organic matter, discharged it into the Bay. It was a brine solution, and it sank to the bottom. Organic matter was metabolized, and oxygen was depleted from the bottom layers. At that point, programme managers started becoming interested in the connectivity between the Bay and the salt ponds.

The other problem is that these ponds can be habitats for harmful, toxin-producing species of phytoplankton. The ponds can function as incubators for harmful algal blooms.

Is this an example of scientific work affecting policy?

For the first three decades that I worked in San Francisco Bay, phytoplankton abundance was low. We knew that it had high nutrient concentrations and loadings like the Baltic does, but that it doesn't have harmful algal blooms, it doesn't have hypoxia or anoxia, and it doesn't even have very high primary productivity. One of the reasons was that phytoplankton biomass accumulation was controlled by clams.

Now, the clams have disappeared, and people are becoming very interested in nutrients, wondering if we will have to take steps to reduce nutrient input to the Bay. So for most of my career, in part because of our science, there wasn't any policy interest in nutrients, and now the agencies that issue the permits for discharging sewage into the Bay are very interested in the work that we are doing because most of the nutrients in San Francisco Bay come from treated sewage; six and a half million toilets are connected to San Francisco Bay. The dischargers want to know if this is going to increase for another decade, because if it does, they will be required to make big investments in sewage treatment to remove nutrients actively, possibly between \$10 and \$100 billion. So, they want to know if the Bay is impaired and at what point are we going to have to make these investments? They want to know if they should reduce nitrogen inputs, phosphorous inputs, or both. So, that's an example of how the work we've done will influence policy.

Can San Francisco Bay be compared with the Baltic? Can the lessons we have learned be shared?

They're very different systems, but there are some things we can learn through comparison. One of the big differences is the presence of strong tides in San Francisco Bay, the lack of which in the Baltic leads to stratification and anoxia in the bottom waters; there isn't a source of mixing energy large enough to break down that stratification. Places with weak tides, such as Chesapeake Bay, the Neuse-Pamlico system in North Carolina, and the Baltic, are particularly susceptible to the problems of nutrient enrichment, whereas San Francisco Bay is more resilient to this problem because strong tides prevent persistent stratification.

Strong tidal energy feeds into the role that clams play in removing phytoplankton because, if there are strong tides, oxygen is continually mixed down to the bottom, and the clams can be sustained. However, in the Baltic where it's stratified, the bottom waters go anoxic, and the clams die, so it's like a double whammy.

Do we know why the clams are disappearing from San Francisco Bay?

They're apparently being eaten by juvenile stages of marine crabs, shrimp, and fish that migrate into the Bay. And that's another example of how we can learn by comparing systems. As a biologist, I didn't realize that shrimp can feed on clams. I found a study of the Dutch Waddenzee that demonstrated that years with very strong recruitment of shrimp are years of poor recruitment of clams because shrimp can feed on the newly settled clams. That's how you lose a cohort of clams. So, I learned it from this study in the Waddenzee.

Why worry about phytoplankton?

First, they play an important ecological role at the base of the foodweb. If you took them away, everything else would disappear, although that's not necessarily true in estuaries because they receive other sources of food for consumers.

Second, if we produce too much phytoplankton, we have major water quality problems, as occurs on the Baltic coast. What's the right amount? It's like red wine: a glass a day is good for your health but a bottle a day isn't.

Which is analogous to a bloom?

Scientists haven't provided a very precise definition of what a bloom is, but the sense is that you've reached a substantial abundance of phytoplankton that's well above the baseline or the average. Usually, we think of these as things that happen episodically or seasonally, but sometimes they persist for years. There was a brown tide that developed in a Texas bay that persisted for eight years.

Are blooms absolutely localized, or can they help or hurt another area? What is the approximate reach?

It's a relevant question for San Francisco Bay because we have taken all of the fringing marshes and basically filled or diked them. The marshes had small, shallow ponds, so there was a mixture of marsh plain habitat and pond habitat. Because so many native species of fish are experiencing severe population declines, we should ask if it is possible to reclaim the areas and convert them back into something like the habitat that existed before we destroyed them. What's the right mix between shallow, open-water habitat and marsh habitat?

I did a little modelling experiment with a deep system and a shallow system, the latter being the producer system; it was the net producer of phytoplankton biomass that could then be exported to the deep system and support its zooplankton. The deep system was a regenerating system, and it regenerated nutrients that then fed back into the shallow system. The shallow system would use all the nutrients converted into phytoplankton biomass, export it to the deep system where it was feeding zooplankton. Then, the regeneration in the deep system would regenerate nutrients that were mixed back to the shallow system.

So, I wondered, if we looked at a coupled system and found a mosaic of habitats that can be connected by water exchange, tidal mixing for example, so the shallow system is functioning one way and the deep system is functioning another way, and we allow them to exchange water, what happens to the total production of the system? If you have zero exchange between them and create two isolated systems, the total system is a low productivity system because one runs out of nutrients and the other runs out of phytoplankton as a food resource for consumers. But if you allow them to exchange nutrients and phytoplankton, the total system production increases in proportion to the rate of the water exchange.

So, the answer is yes, phytoplankton production in one place can feed consumers in another place. And the reason is that, for consumers like copepods, when the phytoplankton reach a certain level, their efficiency at capturing food has been saturated and they can't eat any more. If that excess amount is exported to a place where there's less than optimal phytoplankton biomass for the consumers, then you are getting more consumer production as a result.



Production in one place can feed consumers in another place, and that's why the notion of connectivity is so important: if we have habitats that provide different ecological functions, the way the whole ecosystem functions is going to be determined by the connectivity between these different habitats. One of the ways we have damaged landscapes is by fragmenting habitats. We've disconnected them, and now we are trying to learn how to reconnect habitats that provide different functions, to meet the goals of these restoration problems.

How would we know what the baseline is? How do we know what it was really like fifty or a hundred years ago?

We don't know what it was really like, but we can take measurements in different habitat types that were part of the natural landscape and try to determine what the different habitats provide. It turns out that this is going to be determined in part by how well connected they are to other habitat types. So, not only is it important for us to think about what kinds of habitats we should add back to the system, but also how they're connected. Both are important in determining the outcomes of these habitat restoration programmes. In this case, the place that I'm discussing, most of that wetland habitat was converted to farmland or salt ponds. So, how do we reshape the transformed landscape, how do we connect the different habitats if we want to sustain endemic species of fish and birds that are at risk of extinction now?





RV ARGOS			
COUNTRY	SWEDEN		
BUILT	1974		
LENGTH	61.2 METRES		
GROSS TONNAGE	1264		
CRUISING SPEED	11 KNOTS		
ACCOMODATION	18 CREW & 13 SCIENTISTS		
PHOTO	MATS BÖRJE		

Ragnar Elmgren



Ragnar Elmgren retired recently as professor of Brackish Water Ecology at the Department of Systems Ecology at Stockholm University, a post he held since 1990. His current research projects deal with adaptive management of nutrient discharges to the coastal zone, ecosystem effects of Baltic cyanobacterial blooms, and ecosystem-based management of the Baltic Sea.

In his plenary lecture “Ecosystem-based Management for the Baltic Sea – Historical Development and Future Challenges”, he traced the history of Baltic environmental problems, which, for a long time, were tackled as isolated from each other, and differently in each country. A 1970 ICES report on the Baltic environmental syndrome helped initiate ecosystem research in the Baltic and led to the creation of the Helsinki Convention for the Protection of the Marine Environment of the Baltic Sea Area. Problems caused by political division, scientific uncertainty, and weak governance structures have continued to plague the region. Though we now realize how closely intertwined the various environmental problems of the Baltic Sea are, we still lack the basic ecological knowledge to

manage them together in a true ecosystem approach. Different economic and democratic conditions in an area of fifteen independent countries, where people have widely diverging attitudes and aspirations, make it difficult to make management democratic and equitable.

Is it possible to identify the “biggest” problem facing the Baltic?

Climate change apart, which is a global problem, I think that the biggest problem in terms of size and complexity is eutrophication, with fisheries a close second. Most fishery problems are manageable if there is political will, whereas with eutrophication, even if you have the political will, we don't know exactly how to solve it. Farming is a major activity in the area, and identifying the best techniques to minimize nutrient leakage and getting farmers to use them is difficult. Also, there are long time-lags on the farm, on the way from the farm to the sea, and in the sea. We have so much phosphorus turning over every year in the Baltic that, even if we cut input back drastically, it's likely to take several decades before you see the full effect; it's really a long-term problem. You're working for your children and grandchildren, and of course that is a harder political sell. Still, in coastal areas with limited water exchange, you can have much faster improvement, as has been shown in the Stockholm archipelago.

Everything takes longer in the Baltic?

Yes, in two ways. First, water exchange is very slow. In the UK, if you go to a coastal inlet, the water is exchanged every few days, simply because you have effective tides. The Baltic is almost totally enclosed, so turnover time for the water is on the order of twenty to twenty-five years. Flushing of coastal areas takes longer because

there are virtually no tides, and the upper mixed layer that develops in the summer when the water warms up is much thinner and therefore can reach much higher temperatures in the Baltic. On the west coast of Scotland, winter water temperatures may be 7°C; in summer, they may be about 11°C. Around Stockholm, we are about as far north as Scotland, yet we have winter temperatures that cause the sea to freeze over in coastal regions almost every year, and occasionally the Baltic freezes over totally. In summer, we can reach 23 or 24°C, so it's an entirely different situation.

What about overfishing?

Previously there was a tendency for the politicians to compromise based on the interest of the fishermen, and the result was that, year after year with few exceptions, they would set total allowable catches (TACs) higher than the scientific advice, and as a result, you had a twenty-year decline in the cod stock. Now, they have finally decided to listen to the scientists, and the result is extremely positive, although one has to beware that this wasn't only the result of good management. There was also an element of pure luck (good recruitment). And, of course, you have the problem of unreported catch. For example, if you have a mixed catch and have TACs that allow more catches for sprat and less for herring, you'll report the catch as sprat. Fishermen will report catches so they fit with their allocated TACs. Also, there is the possibility that you deliver your catch without registering it, and I think one of the reasons for the improvement is that it is now more difficult to do that. I think the most significant regime shift for the Baltic cod was in Poland in 2007. The previous Polish government emphasized the very short-term interests of their fishermen, and didn't appear interested in the longer term.

It now appears that recreational fishing is gaining in importance, whereas commercial fishing is becoming less important in terms of national economies, because the amount of fish available isn't increasing relative to industrial production. This means that new interests, wanting more and bigger fish, must be considered. And I think that eventually we will realize that we should keep a lot of fish in the sea and that we haven't wasted anything by leaving them there.

A recent European poll found that the average person was only moderately interested in the sea and that their perception of the problems of the sea was focused on things like oil spills, litter, and industrial pollution, which is how science saw it thirty years ago. Now, things like overfishing and eutrophication are much higher on the agenda, as are climate change and ocean acidification, but those issues haven't yet become part of the popular perception.

These issues are less of a story because it is much harder to view the individual farmer or fisherman as the bad guy, because they aren't. They're just trying to make a living. But if you have a big factory that is knowingly polluting the sea with toxic stuff, then you have a clear bad guy, which makes a better story. We'll just have to continue to provide information about these things, and eventually a more complete picture will emerge.

Is it possible to propose a time-frame when the Baltic will have recovered to a good level?

If it weren't for climate change, I would have said that there was a chance that by 2020 we would be able to predict that, in twenty or thirty years, it would be okay. I'm talking mainly about eutrophication, but also about some of the classic polluting substances like PCBs and

dioxins that currently cause some Baltic fish to be banned for sale in most of the EU. Certainly, most fish stocks could be fixed in a shorter time-frame. But there is the long-term problem of ocean acidification, the implications of which we are just beginning to understand. A lot more work is needed before we can say what will happen in fifty or a hundred years.

Climate warming will probably bring some southern brackish-water species into the Baltic, which wouldn't have been here otherwise, for example, mullet. Regional climate models indicate that it's going to rain more over the Baltic. The Baltic is a brackish sea, and salinity may well decline, which might mean that, in thirty or forty years, we will see more problems with cod reproduction. In a hundred years' time, we might lose Baltic cod altogether, if some of the worst projections of decreased salinity come true. If it rains more, there could be more run-off of nutrients, increasing eutrophication. On the other hand, most of the projections say that it will rain more in the north, but less in Poland, where much of the nutrients come from.

I can foresee that, in twenty or thirty years, we may want to increase the salinity of the Baltic. But this would require major engineering of nature of a type that is not popular with the public, for good reasons. Still, similar things have been attempted on a smaller scale. For example, the Peel-Harvey inlet in Australia was plagued by huge blooms of a toxic cyanobacterium, *Nodularia*. They constructed a channel that allowed saline seawater to regularly flush the estuary using tidal flows, reducing the blooms. Doing something similar in the Baltic would be a gigantic engineering project. Getting nine countries to agree on something of this order would be difficult.

I think there has been more fish production in the Baltic in the past thirty or forty years than ever before, simply because of eutrophication; more nutrients, more fish. The question is, are we getting the fish we want? Because if the main harvest is dioxin-contaminated sprat and herring, that's not a very attractive proposal. If you lower the nutrient levels, there will be less fish, but if we can get the fish stocks right, there could be more of the valuable fish like cod and less of low value fish like sprat. And if we can also get the toxins down, we'll still have a more valuable harvest.

We will have to adapt to climate change, and one of the things I can foresee is that the Baltic is going to be more of a tourist destination in summer. Because it has wonderful archipelagos and huge sandy beaches, it is going to be a few degrees warmer than it has been, and there are no longer any political barriers. The Mediterranean, on the other hand, is going to become too hot for many in summer. If we can achieve reasonable water quality, I think that the tourist industry in the Baltic could increase greatly in value already in the next few decades.

How will phytoplankton levels influence this?



Nutrients leak mostly from the land; some nitrogen comes by way of the atmosphere and part of that is from shipping. The nutrients are used by the phytoplankton, and blooms occur. In the Baltic, you have two major blooms annually, in spring and summer. The spring bloom is bigger, but it doesn't float to the surface and there are no tourists then, so no one notices it. Increased nitrogen loads on the Baltic have made the spring blooms even bigger, and after sinking, they add to the oxygen deficiency in the deep waters of the Baltic. Later, in summer, when the archipelago and the beaches are filled with tourists, and a cyanobacterial bloom floats to the surface, and in

an unhappy year, is blown ashore, it will be noticed. And these blooms are not only ugly and smelly, but also toxic. No human has ever been killed by them, but dogs, cattle, and birds have been. This situation is very undesirable for the tourist industry.

Removing phosphorus in sewage treatment plants will, over time, gradually decrease the blooms of cyanobacteria. But cyanobacteria blooms are not only unpleasant, but also have a positive effect because they are the only type of phytoplankton that can fix nitrogen, which is available as gas, and turn it into easily available nitrogen compounds. This nitrogen leaks from the cyanobacteria and is used by other phytoplankton, which are eaten by zooplankton which are eaten by fish larvae. Furthermore, the cyanobacteria blooms take place in summer, when most of the zooplankton and fish larvae are produced, so these blooms are not only a nuisance,

they also foster fish production in the Baltic. They have a positive as well as a negative effect, and I think the aim should not be to get rid of them altogether, because we have been able to show by studying sediments that they are a natural feature of the Baltic that has occurred ever since the Baltic became a brackish sea. Therefore, I am convinced that we have to reduce the inputs of both nitrogen and phosphorus to the Baltic, as is the current plan.



RV BALTICA	 
COUNTRY	POLAND
BUILT	1993
LENGTH	41.8 METRES
GROSS TONNAGE	614
CRUISING SPEED	11.5 KNOTS
ACCOMODATION	11 CREW & 11 SCIENTISTS
PHOTO	B. SZPIGANOWICZ

Jan Marcin Węśławski



Jan Marcin Węśławski is currently Full Research Professor at the Laboratory of Marine Ecosystems, Institute of Oceanology (Head of the Marine Ecology Department), Polish Academy of Sciences. He is also member of the Committee for Polar Research, Polish Academy of Sciences (member of governing body), and member of the Committee for Marine Research, Polish Academy of Sciences (member of governing body). He has spent more than forty-five months in international polar and marine expeditions to Canada, Svalbard, Greenland, and Russia.

In his lecture “Practitioners Faster than Scientists – Marine Nature Conservation”, he makes the case that, when biodiversity assessment is limited to counting objects (be it genomes, populations, species, habitats, etc.), its interpretation is difficult and often misleading. The objects’ functions are more important than the number of items. Practitioners tend to focus on the numbers, which are far easier to assess, not on the functions, which are difficult to monitor.

What is the danger of mistaking science for technology?

There is a tendency in some European research institutes to present themselves as problem solvers instead of researchers. Science should not be mistaken for technology. Scientists, for example environmental scientists, study the environment, ecosystems, and very complex issues, and try to understand and describe how those systems work. Technology produces practical solutions to problems. I believe that it's a mistake to ask for practical technical answers from scientists, especially if they are paid for it.

A good example is the inclination to treat the Baltic as a model aquarium. There is an idea that, by protecting all of the carnivores and limiting the nutrients, we will have a blue sea and large fish. The idea is that the carnivores will consume the zooplankton-feeding fish, such as sprat and herring, and then the zooplankton, which is feeding on algae, will bloom and all of the small crustaceans in the zooplankton will graze all of the algae. The Baltic is so complex that it can go in unexpected directions, and I believe it is the scientist's role to provide scenarios and probabilities but not play the role of an engineer, who is expected to produce predefined results.

You seem to feel that science is being dragged into public debates and that is causing problems.

In modern society, we discuss almost every sector of life. People can speak freely about politics, the arts, medicine, about what's beautiful and what's ugly, and so on. The problem is that the debate on scientific issues requires a lot of information and a specific vocabulary, so it's quite a closed system. When confronted with two opposing views, the public may be confused because they receive information from people with academic titles, and they don't know who to listen to.

This brings up the issue of public trust in science, which is different from place to place. In Poland, for example, for people who were raised during the Communist time, my generation, mistrust remains. People knew that the authorities were lying; that was a rule of thumb. For example, fishermen were sceptical about the limitations imposed by fishery scientists. The immediate reaction was, "somebody paid them to say that". That type of reaction is still common in the post-Communist countries. As a result of this scepticism, my colleagues and I spend quite some time showing people how the science is made, that the work of modern science is the result of networking, that my findings are cross-checked many times.

You believe that science must remain value-free?

Ideally, science should be value-free, and an example of the conflict between value-free science and value-laden science is the dispute over sea mammal protection, in particular, the minke whale. From a scientific or management point of view, it's a huge population, and the amount taken by the Norwegians certainly doesn't harm the population, so they are not threatening the species' existence. But from a moral point of view, I don't like whaling. As a scientist, I am value free, and I say you can hunt whales as long as it is not threatening the species. But although I have feelings for the environment, I should not use my scientific authority to fight whaling. I can use my moral authority as a person but I shall not sign a letter as a professor or some specialist in some field. Of course, in the Baltic, you have a similar issue with grey seal protection. Activists are promoting the active management of species, especially grey seals, to return them to their original number, and again, it's far from a scientific debate; it's very value laden and emotional. I would like to warn my colleagues that they should

be conscious of where their capability or authority as scientists ends. We should not enter into the field of moral issues.

Can you explain the title of your lecture, "Practitioners Faster than Scientists"?

There are many examples in the fishing industry of new fish stocks being reported, even in the remotest places, such as underwater mountains or shelf ridges, and immediately the fishermen, the exploiters, were there exploiting the resource before scientists could even organize a proper expedition. I remember a case in the late 1980s. There was a recovering population of walrus on the edge of northwest Spitsbergen. Norwegian scientists found the feeding grounds, and in summer, they published a small note about it. The following winter, trawlers from Norway demolished the place in a single season. They figured out that if walrus were feeding there, there must be plenty of clams and shrimp. It was only the next year that scientists realized what had happened and another year until the fishery authorities introduced a law against fishing those slow-growing clams from northern-most populations.

Do you believe that counting species will not help biodiversity, that it actually undermines trust in science?

The term biodiversity was coined at the beginning of the 1990s by people who were working in isolated places such as islands and mountains and were really concerned at seeing species of frogs, butterflies, birds, and even trees vanishing from those areas. But in the last thousand years, the number of extinct marine species is less than twenty, including birds and large sea mammals. In the Baltic, we lost one fish species, a sturgeon which, according to the genetic data, was an alien, probably introduced

from America by the Vikings. In the sea, we haven't been faced with real extermination of species as we have seen elsewhere. Furthermore, we know so little about the sea that the number of new species discovered nowadays is greater than at any time in history. In the past ten years in my lab alone, we have discovered more than fifteen new species, and we are just one small group.

A lot of confusion has been caused by influential papers by Boris Worm of Canada's Dalhousie University and his co-authors. He has declared that the sea has lost 70% or 80% of its large fish. Last year, I was at a conference in London where one of Boris's teammates announced that, on the shelf, we have lost probably 7% of the shelf species. Knowing the number of species that are living on the shelf, my colleagues from the Biodiversity Group and I calculated that would mean that we have lost 20 000 species of sea animals, and that's simply not true.

When we questioned them, they admitted that the species aren't lost. So, they coined a new term: it's not extinction, it's "economic extinction". Of course, overfishing is a huge problem, but we must not confuse it with extinction. An extinct species is gone forever; a product of evolution is lost, and it will never reappear. These exaggerations are causing us to lose credibility.

Often at public debates, I'm asked if the Baltic is already completely dead. The public is led to believe that we are living in a cemetery, where species are dying by the dozens every day. The public is being misled by these exaggerations. We are mistreating the environment, but we should use the proper words to describe what's happening.

For example, I really care about habitat protection. Many people consider it a key to the modern management of nature. We should protect the habitats, and we should

convince people that protecting the habitat, which is a complex of elements, is important. We should focus on that, not just on counting species.

Another example of the misuse of counting species is the Arctic ecosystem. I often work in the European Arctic on Svalbard. The Arctic is generally species poor, and there we observe a very efficient system, which is supplied by very few species. We have large zooplankton, which feeds on phytoplankton, and that large zooplankton is consumed directly by the top predators, seals, seabirds, whales, and so on. There are not many species, but it's a healthy, fast moving, strong, and productive system.

Now, with the warming climate, we are observing a great influx of Atlantic water, with more and more warm pulses of Atlantic water loaded with very diverse plankton, which is very small and poor in calories. There is a clear frontline border between cold and warm water, and in the cold water, there are approximately fifteen species of zooplankton, all big and fat and good food for the large animals. A kilometre away in the warm water, there are more than a hundred species of zooplankton, but they are so small that animals cannot feed on them directly. They need small fish and then the larger fish and then the animals can take the larger fish.

Arctic biodiversity is increasing rapidly because we are getting more species from the south. We are increasing the biodiversity, but we are changing the system. It's not a catastrophe; it's a regime shift. Instead of a simple, efficient system, which feeds whales and huge colonies of seabirds, the system is apparently going to feed mainly small fish. It's good for fishermen, of course. They will have plenty of herring, sprat, and mackerel, but those huge bird colonies are likely to disappear, although the species won't go extinct. The system is changing. Biodiversity in the Arctic is increasing, but I cannot say it is good.

CONTENTS OF ICES ANNUAL REPORT 2011 SUPPLEMENTARY DVD

Documents relating to ICES work are collected on ICES Annual Report 2011 Supplementary DVD, found on the inside back cover. The Index has two sections, ICES Statutory Meeting and Annual Science Conference 2011. 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 "Index2011.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 99th Statutory Meeting

Secretariat – ICES Progress Report 2011; Secretariat Programme Review 2011.

Advisory Committee – ACOM November Report 2011.

Science Committee – September Report 2011; SCICOM Progress Report 2011; Symposia reports 2011; ICES Training Group reports 2011 are available on the ICES website.

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

Communications and Publications – *ICES Insight 2011*; *ICES Inside Out 2011*, Nos. 1–6.

Council – Meeting 26–27 October; Index of Resolutions.

Finance Committee – May Report; Final Accounts.

Annual Science Conference 2011

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 2011, agendas and orders of the day, and a list of exhibitors and sponsors.

ASC programme – Complete programme of theme sessions and social events.

Opening Session – Ed Houde, presenting the Outstanding Achievement Award to Michael Sissenwine and the Prix d'Excellence to Carlos Duarte.

Plenary lectures – Addresses by Jan Marcin Węśławski; James E. Cloern; Ragnar Elmgren.



Closing Session – Merit award recipients.

Index of papers and posters presented at the ASC – An index of papers presented at the Annual Science Conference 2011, 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.

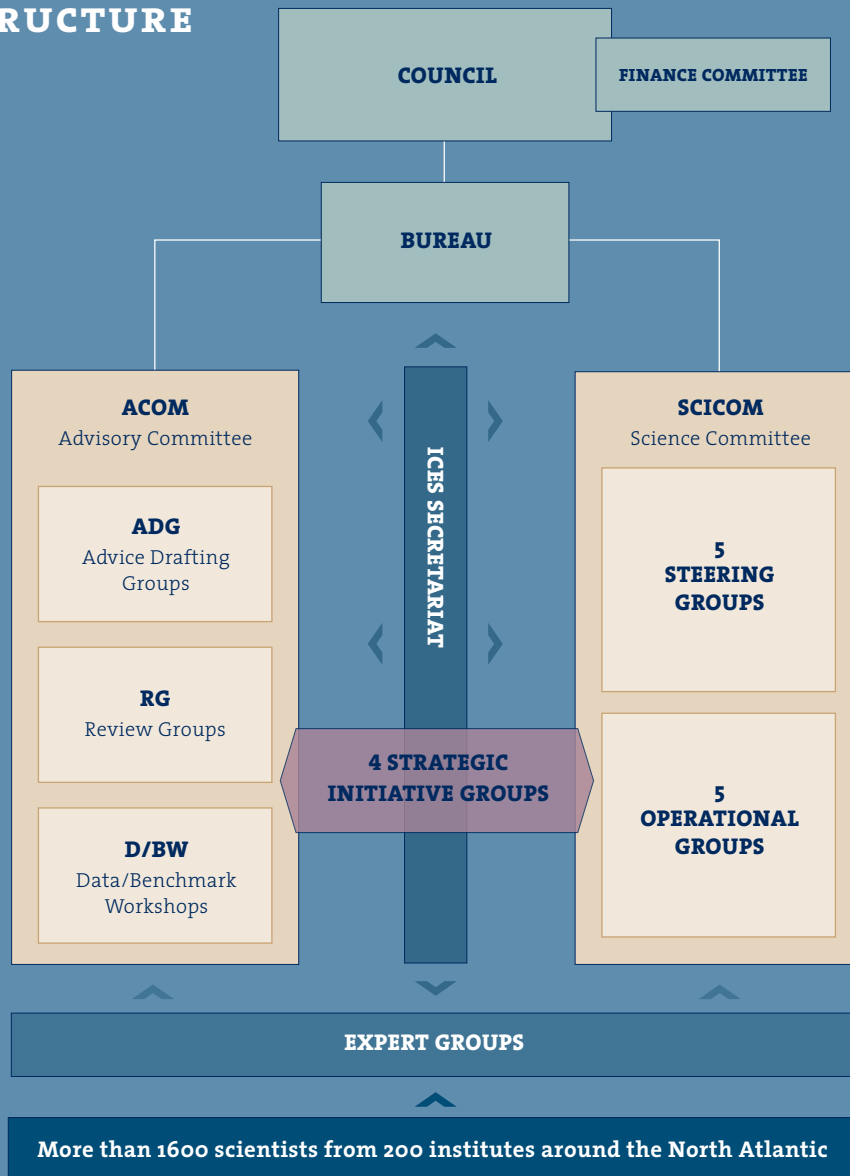
Index of theme session reports – An index of theme session final reports.

List of participants – A list of all ASC participants.



RV SALME		 
COUNTRY	ESTONIA	
BUILT	1974	
LENGTH	31.3 METRES	
GROSS TONNAGE	223	
CRUISING SPEED	9 KNOTS	
ACCOMODATION	6 CREW & 12 SCIENTISTS	
PHOTO	KAIMO VAHTER	

ICES STRUCTURE



ICES NETWORK 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, the Advisory Committee (ACOM) provides advice to clients on fisheries and marine ecosystem issues and the Science Committee (SCICOM; formerly the Consultative Committee as established in the ICES Convention) 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 their subordinate expert groups. Five operational groups, the Working Group on Data and Information Management (WGDIM), ICES Publications and Communications Group (PUBCOM), ICES Training Group, the Annual Science Conference Group, and the Awards Committee, all report directly to SCICOM, but also work closely with the Advisory Programme.

Joint activities for ACOM and SCICOM include three strategic initiatives and one steering group, established in 2010.

ACOM/SCICOM Strategic Initiative on Stock Assessment Methods (SISAM)

ACOM/SCICOM Strategic Initiative on Biodiversity Science and Advice (SIBAS)

ACOM/SCICOM Strategic Initiative on Area-based Science and Management (SIASM)

ACOM/SCICOM Marine Strategy Framework Directive Steering Group (STGMSFD)

In 2011, SCICOM established the ICES–PICES Strategic Initiative on Climate Change Impacts on Marine Ecosystems (SICCME).

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RV THALASSA



COUNTRY	FRANCE
BUILT	1996
LENGTH	73.6 METRES
GROSS TONNAGE	2803
CRUISING SPEED	11 KNOTS
ACCOMODATION	26 CREW & 24 SCIENTISTS
PHOTO	IFREMER / MICHEL GOUILLOU

Bureau of the Council (Contact details in Delegates listing on preceeding pages)

President/ <i>Président</i>	Michael M. Sinclair, Canada
First Vice-President/ <i>Premier Vice-Président</i>	Paul Connolly, Ireland
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Chair/ <i>Président</i>	Tore Nepstad, Norway (until October) Cornelius Hammer, Germany (from 1 November)
	Fritz Köster, Denmark Carmela Porteiro, Spain Joost Backx, the Netherlands (from 1 November) Kai Myrberg, Finland (from 1 November) The First Vice-President is an <i>ex-officio</i> member

Editors of Council Publications in 2011

ICES Cooperative Research Report	Emory D. Anderson <i>emoryanderson@comcast.net</i>
ICES Techniques in Marine Environmental Sciences	Paul D. Keizer <i>keizerp@mar.dfo-mpo.gc.ca</i>
ICES Identification Leaflets for Diseases and Parasites of Fish and Shellfish	Stephen Feist <i>s.w.feist@cefas.co.uk</i>
ICES Journal of Marine Science	Andrew I. L. Payne, Editor-in-Chief <i>andy.payne@cefas.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 (until 30 September) <i>pepin@dfo-mpo.gc.ca</i> John W. Ramster (deceased) <i>jramster@lineone.net</i> Rochelle Seitz <i>seitz@vims.edu</i> Verena M. Trenkel <i>verena.trenkel@ifremer.fr</i> William Turrell <i>b.turrell@marlab.ac.uk</i>
ICES Marine Science Symposia	Editor specially appointed for each volume

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RV BELGICA



COUNTRY	BELGIUM
BUILT	1984
LENGTH	50.9 METRES
GROSS TONNAGE	765
CRUISING SPEED	12 KNOTS
ACCOMODATION	15 CREW & 16 SCIENTISTS
PHOTO	G. OZER MUMM



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<p>Baltic Fisheries Assessment Working Group (WGBFAS)</p>	<p>82 Michele Casini (Sweden) Institute of Marine Research, Lysekil <i>michele.casini@slu.se</i></p>
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Benchmark Workshop on Roundfish and Pelagic Stocks 2011 (WKBENCH 2011)	<p>102 Jim Berkson (United States) NMFS RTR Unit at University of Florida <i>jim.berkson@noaa.gov</i></p> <p>ICES Coordinator: 63 Bjarte Bogstad (Norway) Institute of Marine Research, Bergen <i>bjarte.bogstad@imr.no</i></p>
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RV FRIDTJOF NANSEN



COUNTRY	RUSSIAN FEDERATION
BUILT	1987
LENGTH	62.2 METRES
GROSS TONNAGE	2508
CRUISING SPEED	13 KNOTS
ACCOMODATION	30 CREW & 19 SCIENTISTS
PHOTO	PINRO

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Workshop on the Evaluation of the Long-term Management Plan for North Sea Herring (WKHERMP)	<p>58 Mark Dickey-Collas (the Netherlands) Wageningen IMARES, IJmuiden <i>mark.dickeycollas@wur.nl</i></p>
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Workshop on Herring Interim Advice on the Management Plan (WKHIAMP)	<p>14 Lotte Worsøe Clausen (Denmark) DTU Aqua, Section for Fisheries Advice, Charlottenlund <i>law@aqua.dtu.dk</i></p>
Workshop on Implementing the ICES FMSY Framework 2 (WKFRAME2)	<p>45 Ciaran Kelly (Ireland) Marine Institute, Oranmore <i>ciaran.kelly@marine.ie</i></p>
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RV ARANDA			
COUNTRY	FINLAND		
BUILT	1989		
LENGTH	59.2 METRES		
GROSS TONNAGE	1734		
CRUISING SPEED	10.5 KNOTS		
ACCOMODATION	13 CREW & 25 SCIENTISTS		
PHOTO	PATRICK ERIKSSON		

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SCICOM members:

Mårten Åström, Sweden
Olafur S. Astthorsson, Iceland
Pierre Pepin, Canada

ASC Group

Composed of the local host
and SCICOM Delegate (Einar
Svendsen, Norway) and six
SCICOM members tasked
to review and recommend
to SCICOM the ASC theme
sessions for 2012.

**Einar Svendsen, Norway
(Chair)**

Manuel Barange,
United Kingdom
Mark Dickey-Collas,
the Netherlands
Dariusz Fey, Poland
William Karp, United States
Christian Möllmann, Germany
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CGSC HUDSON



COUNTRY	CANADA
BUILT	1963
LENGTH	90.4 METRES
GROSS TONNAGE	3444
CRUISING SPEED	12 KNOTS
ACCOMODATION	31 CREW & 24 SCIENTISTS
PHOTO	KELLY BENTHAM

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BUILT	1978
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GROSS TONNAGE	495
CRUISING SPEED	11 KNOTS
ACCOMODATION	22 CREW & 12 SCIENTISTS
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Working Group on North Sea Cod and Plaice Egg Surveys in the North Sea (WGEGBS)	<p>58 Cindy van Damme (the Netherlands) Wageningen IMARES, IJmuiden <i>cindy.vandamme@wur.nl</i></p>



RV DANA		 
COUNTRY	DENMARK	
BUILT	1980-81	
LENGTH	78.4 METRES	
GROSS TONNAGE	2545	
CRUISING SPEED	12.5 KNOTS	
ACCOMODATION	17 CREW & 21 SCIENTISTS	
PHOTO	SØREN RYSGAARD	

Working Group for Northeast Atlantic Continental Slope Survey (WGNEACS)	64 Elvar Halldor Hallfredsson (Norway) Institute of Marine Research, Tromsø <i>elvarh@imr.no</i>
Working Group on Northeast Atlantic Pelagic Ecosystem Surveys (WGNAPES)	45 Ciaran O'Donnell (Ireland) Marine Institute, Oranmore <i>ciaran.odonnell@marine.ie</i>
Working Group on the Northwest Atlantic Regional Sea (WGNARS)	111 Steven Cadrin (United States) University of Massachusetts Dartmouth, Department of Fisheries Oceanography, Fairhaven <i>scadrin@umassd.edu</i> 12 Catherine Johnson (Canada) Bedford Institute of Oceanography, Dartmouth <i>Catherine.Johnson@dfo-mpo.gc.ca</i>
Working Group on Oceanic Hydrography (WGOH)	45 Glenn D. Nolan (Ireland) Marine Institute, Oranmore <i>glenn.nolan@marine.ie</i> 44 Hedinn Valdimarsson (Iceland) Marine Research Institute, Reykjavik <i>hv@hafro.is</i>
Working Group on Operational Oceanographic Products for Fisheries and Environment (WGOOFE)	58 Mark Dickey-Collas (the Netherlands) Wageningen IMARES, IJmuiden <i>mark.dickeycollas@wur.nl</i> 63 Morten D. Skogen (Norway) Institute of Marine Research, Bergen <i>morten.skogen@imr.no</i>
Working Group on Pathology and Diseases of Marine Organisms (WGPDMO)	7 Simon Jones (Canada) Pacific Biological Station, Nanaimo <i>simon.jones@dfo-mpo.gc.ca</i>
Working Group on Phytoplankton and Microbial Ecology (WGPME)	12 William Li (Canada) Bedford Institute of Oceanography, Dartmouth <i>Bill.Li@dfo-mpo.gc.ca</i> 76 Xose Anxelu G. Moran (Spain) IEO, Centro Oceanográfico de Gijón <i>xelu.moran@gi.ieo.es</i>

Working Group on Redfish Surveys (WGRS)	44 Kristjan Kristinsson (Iceland) Marine Research Institute, Reykjavik <i>krik@hafro.is</i>
Working Group on the Science Requirements to Support Conservation, Restoration, and Management of Diadromous Species (WGRECORDS)	64 Benjamin Planque (Norway) Institute of Marine Research, Tromsø <i>benjamin.planque@imr.no</i>
Working Group on Seabird Ecology (WGSE)	88 Ted Potter (United Kingdom) Cefas, Lowestoft Laboratory <i>ted.potter@cefas.co.uk</i>
Working Group on Small Pelagic Fishes, their Ecosystems and Climate Impact (WGSPEC)	108 Richard Veit (United States) The College of Staten Island, Biology Department <i>veitrr2003@yahoo.com</i>
Working Group on Zooplankton Ecology (WGZE)	41 Jürgen Alheit (Germany) Leibniz Institute for Baltic Sea Research Warnemünde, Rostock <i>juergen.alheit@io-warnemuende.de</i>
Workshop on Basin-wide Impact of Atlantic Multidecadal Oscillation (WKAMO)	99 Mark Benfield (United States) Louisiana State University, Department of Oceanography and Coastal Sciences, Baton Rouge <i>mbeinfie@lsu.edu</i>
	41 Jürgen Alheit (Germany) Leibniz Institute for Baltic Sea Research Warnemünde, Rostock <i>juergen.alheit@io-warnemuende.de</i>
	63 Ken F. Drinkwater (Norway) Institute of Marine Research, Bergen <i>ken.drinkwater@imr.no</i>
	98 Janet Nye (United States) Environmental Protection Agency, Atlantic Ecology Division, Narragansett <i>nye.janet@epamail.epa.gov</i>




**FSV HENRY
B. BIGELOW**



COUNTRY	UNITED STATES OF AMERICA
BUILT	2005
LENGTH	63.8 METRES
GROSS TONNAGE	2479
CRUISING SPEED	12 KNOTS
ACCOMODATION	23 CREW & 15 SCIENTISTS
PHOTO	NOAA

Workshop on Biological Consequences of a Decrease in Sea Ice in Arctic and Subarctic Seas (WKBCASAS)	<p>106 Anne B. Hollowed (United States) NMFS, Alaska Fisheries Science Center, Seattle <i>Anne.Hollowed@noaa.gov</i></p> <p>63 Harald Loeng (Norway) Institute of Marine Research, Bergen <i>harald.loeng@imr.no</i></p>
Workshop on Cataloguing Data Requirements from Surveys for the Ecosystems Approach to Fisheries Management (WKCATDAT)	<p>45 David Reid (Ireland) Marine Institute, Oranmore <i>david.reid@marine.ie</i></p>
Workshop on Egg Staging, Fecundity, and Atresia in Horse Mackerel and Mackerel (WKFATHOM)	<p>58 Cindy van Damme (the Netherlands) Wageningen IMARES, IJmuiden <i>cindyvandamme@wur.nl</i></p>
Workshop on the Identification of Clupeoid, Flatfish, Gadoids, and Other Fish Larvae (WKIDFL)	<p>58 Cindy van Damme (the Netherlands) Wageningen IMARES, IJmuiden <i>cindyvandamme@wur.nl</i></p> <p>38 Matthias Kloppmann (Germany) Johann Heinrich von Thünen-Institute, Institute for Sea Fisheries, Hamburg <i>matthias.kloppmann@vti.bund.de</i></p>
Workshop on the Implications of Stock Structure (WKISS)	<p>58 Niels Hintzen (the Netherlands) Wageningen IMARES, IJmuiden <i>niels.hintzen@wur.nl</i></p> <p>110 Lisa Kerr (United States) University of Massachusetts, Dartmouth <i>lkerr@umassd.edu</i></p>
Workshop on Marine Biodiversity (WKMARBIO)	<p>88 Simon Jennings (United Kingdom) Cefas, Lowestoft Laboratory <i>simon.jennings@cefas.co.uk</i></p> <p>90 Mark Tasker (United Kingdom) Joint Nature Conservation Committee, Aberdeen <i>Mark.Tasker@jncc.gov.uk</i></p>

Workshop on Salmon Tagging Archive (WKSTAR)	<p>66 Lars Petter Hansen (Norway) Norwegian Institute for Nature Research (NINA), Oslo <i>l.p.hansen@nina.no</i></p>
Workshop on the Science for Area-based Management: Coastal and Marine Spatial Planning in Practice (WKC MSP)	<p>46 Eugene Nixon (Ireland) Marine Institute, Marine Spatial Planning, Dublin <i>eugene.nixon@ices.dk</i></p> <p>63 Erik Olsen (Norway) Institute of Marine Research, Bergen <i>erik.olsen@imr.no</i></p>
Workshop on Seine and Net Selectivity (WKSEINE)	<p>92 Barry O'Neill (United Kingdom) Marine Scotland Science, Marine Laboratory, Aberdeen <i>oneillb@marlab.ac.uk</i></p> <p>2 Dominic Rihan European Commission Directorate for Maritime Affairs and Fisheries, Brussels <i>Dominic.RIHAN@ec.europa.eu</i></p>

RV CELTIC VOYAGER	
COUNTRY	IRELAND
BUILT	1985
LENGTH	31.4 METRES
GROSS TONNAGE	340
CRUISING SPEED	10 KNOTS
ACCOMODATION	8 CREW & 7 SCIENTISTS
PHOTO	DAVID BRANIGAN



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.

Austria

1
International Institute for
Applied Systems Analysis
(IIASA)
Schlossplatz 1
2361 Laxenburg
www.iasa.ac.at

Belgium

2
European Commission
Directorate for Maritime
Affairs and Fisheries
200 rue de la Loi
1049 Brussels
[ec.europa.eu/dgs/
maritimeaffairs_fisheries/
index_en.htm](http://ec.europa.eu/dgs/maritimeaffairs_fisheries/index_en.htm)

3
Institute for Agricultural and
Fisheries Research (ILVO)
Ankerstraat 1
8400 Oostende
www.ilvo.vlaanderen.be/

4
Royal Belgian Institute
of Natural Sciences
Management Unit of the
North Sea Mathematical
Models (MUMM)
Gulledelle 100
1200 Brussels
www.mumm.ac.be

5
Royal Belgian Institute
of Natural Sciences
Management Unit of the
North Sea Mathematical
Models (MUMM), Oostende
Department
3de en 23ste
Linierregimentsplein
8400 Oostende
www.mumm.ac.be

Canada

6
Home address:
50 Fernlilly Place
Waverley, NS B2R 1X2
Institute affiliation:
Fisheries and Oceans Canada,
Newfoundland
and Labrador Region
(see address 8)

7
Fisheries and Oceans Canada
Pacific Biological Station
3190 Hammond Bay Road
Nanaimo, BC V9T 6N7
www.pac.dfo-mpo.gc.ca

8
Fisheries and Oceans Canada
Northwest Atlantic Fisheries
Center
80 East White Hills Road
PO Box 5667
St John's, NF A1C 5X1
www.nfl.dfo-mpo.gc.ca

9
Fisheries and Oceans Canada
Freshwater Institute
501 University Crescent
Winnipeg, MB R3T 2N6
[www.dfo-mpo.gc.ca/regions/
central/facilities-installations-
eng.htm#Freshwater_Institute](http://www.dfo-mpo.gc.ca/regions/central/facilities-installations-eng.htm#Freshwater_Institute)

10
Fisheries and Oceans Canada
Institut Maurice-Lamontagne
850, route de la Mer
PO Box 1000
Mont-Joli, QC G5H 3Z4
[www.qc.dfo-mpo.gc.ca/iml-mli/
institut-institute/index-eng.
asp](http://www.qc.dfo-mpo.gc.ca/iml-mli/institut-institute/index-eng.asp)

11
Fisheries and Oceans Canada
DFO Moncton
343 University Avenue
PO Box 5030
Moncton, MB E1C 9B6
www.glf.dfo-mpo.gc.ca

12
Fisheries and Oceans Canada
Bedford Institute of
Oceanography
1 Challenger Drive
PO Box 1006
Dartmouth, NS B2Y 4A2
www.bio.gc.ca

13
Home address:
1450 Godefroy
Sillery, QC G1T 2E4

Denmark

14
DTU Aqua – National Institute
of Aquatic Resources
Charlottenlund Slot
Jægersborg Allé 1
2920 Charlottenlund
www.aqua.dtu.dk

15
DTU Aqua – National Institute
of Aquatic Resources
North Sea Science Park
PO Box 101
9850 Hirtshals
[www.nordsoenforskerpark.dk/
Home-806.aspx](http://www.nordsoenforskerpark.dk/Home-806.aspx)

16
DTU Aqua – National Institute
of Aquatic Resources
Department of Marine
Ecology and Aquaculture
Kavalergaarden 6
2920 Charlottenlund
www.aqua.dtu.dk

17
International Council for
the Exploration of the Sea
(ICES)
H. C. Andersens Boulevard
44–46
1553 Copenhagen V
www.ices.dk

18
Aarhus University
National Environmental
Research Institute
Frederiksborgvej 399
PO Box 358
4000 Roskilde
www.dmu.dk/en/aboutneri/

19
Roskilde University
Department of Environmental,
Social and Spatial Change
Building 3.2.1
Universitetsvej 1
PO Box 260
4000 Roskilde
[www.ruc.dk/en/departments/
department-of-environmental-
social-and-spatial-change/](http://www.ruc.dk/en/departments/departments-of-environmental-social-and-spatial-change/)

Estonia

20
Estonian Marine Institute
University of Tartu
14 Mäealuse Street
12618 Tallinn
www.sea.ee

21
Estonian Marine Institute
University of Tartu
2a Lootsi
80012 Pärnu
<http://hmapcoml.org/about/>

Faroe Islands

22
Faroe Marine Research
Institute
Nóatún
PO Box 3051
110 Tórshavn
www.hav.fo

Finland

23
Finnish Environment
Institute (SYKE)
Mechelininkatu 34a
PO Box 140
00251 Helsinki
www.ymparisto.fi

24
Finnish Environment
Institute (SYKE)
Marine Research Centre
Erik Palménin aukio 1
PO Box 140
00251 Helsinki
www.ymparisto.fi

25
Finnish Game and Fisheries
Research Institute
Viikinkaari 4
PO Box 2
00791 Helsinki
www.rktl.fi

26
Finnish Game and Fisheries
Research Institute
Oulu Game and Fisheries
Research
Tutkijantie 2 E
90570 Oulu
www.rktl.fi/english/aquaculture/aquaculture_stations/

France

27
CEMAGREF
Unité ECOSEMA, Cemagref
de Bordeaux
50 avenue de Verdun – Gazinet
33612 Cestas Cédex
www.irstea.fr/linstitut/nos-centres/bordeaux

28
Ifremer
Head Office
155, rue Jean-Jacques Rousseau,
Technopolis 40
92138 Issy-les-Moulineaux
www.ifremer.fr/institut/

29
Ifremer
Port-en-Bessin Station
Avenue du Général De Gaulle
PO Box 32
14520 Port-en-Bessin
www.ifremer.fr/boulogne

30
Ifremer
Nantes Centre
Rue de l'île d'Yeu
PO Box 21105
44311 Nantes Cédex 03
www.ifremer.fr/nantes

31
Ifremer
Lorient Station
8, rue François Toullec
56100 Lorient
www.ifremer.fr/lorient

32
Ifremer
Centre de Brest
Technopole de Brest-Iroise
PO Box 70
29280 Plouzané
www.ifremer.fr/brest

33
Ifremer
Boulogne-sur-Mer Centre
150, Quai Gambetta
PO Box 699
62200 Boulogne Cédex
www.ifremer.fr/manchemerdunord

34
Institution d'Amenagement
de la Vilaine
Boulevard de Bretagne
PO Box 11
56130 La Roche-Bernard
www.eptb-vilaine.fr/site/

35
ONEMA
"Le Nadar" Hall C
5, square Félix Nadar
94300 Vincennes
www.onema.fr

Germany

36
Christian-Albrechts-University
of Kiel
Department of Economics
Wilhelm-Seelig-Platz 1
24118 Kiel
www.stat-econ.uni-kiel.de/

37
GKSS Institute for Coastal
Research
Max-Planck-Straße 1
21502 Geesthacht
www.hzg.de/institute/coastal_research/index.html

38
Johann Heinrich von Thünen-
Institute, Federal Research
Institute for Rural Areas,
Forestry and Fisheries
Institute for Sea Fisheries
Palmaille 9
22767 Hamburg
www.vti.bund.de/en/startseite/institutes/sea-fisheries.html

39
Johann Heinrich von Thünen-
Institute, Federal Research
Institute for Rural Areas,
Forestry and Fisheries
Institute for Baltic Sea
Fisheries
Alter Hafen Süd 2
18069 Rostock
www.vti.bund.de/en/startseite/institutes/baltic-sea-fisheries.html

40
Leibniz Center for Tropical
Marine Ecology
ZMT Bremen
Fahrenheitstraße 6
28359 Bremen
www.zmt-bremen.de

41
Leibniz Institute for Baltic
Sea Research Warnemünde
Seestraße 15
18119 Rostock
www.io-warnemuende.de

42
University of Hamburg
Institute of Hydrobiology
and Fishery Science
Olbersweg 24
22767 Hamburg
www.uni-hamburg.de/ihf/index_e.html

Greece

43
Hellenic Centre for
Marine Research (HCMR)
Institute of Marine
Biological Resources
PO Box 2214
71003 Heraklion
<http://innovator.ath.hcmr.gr/newhcmr1/secondpage.php?id=38>

Iceland

44

Marine Research Institute
Skúlagata 4
PO Box 1390
121 Reykjavík
www.hafro.is

Ireland

45

Marine Institute
Rinville
Oranmore
www.marine.ie

46

Marine Institute
Marine Spatial Planning
80 Harcourt Street
Dublin 2
www.marine.ie

47

Marine Institute
Aquaculture & Catchment
Research Management Facility
Furnace
Newport
[www.marine.ie/home/aboutus/
organisationstaff/serviceareas/
ACMS.htm](http://www.marine.ie/home/aboutus/organisationstaff/serviceareas/ACMS.htm)

Italy

48

Centro Interuniversitario di
Biologia Marina (CIBM)
Viale Nazario Sauro 4
57128 Livorno
www.cibm.it

49

European Commission
Joint Research Centre
Institute for Protection
and Security of the Citizen
Via E. Fermi 2749
21027 Ispra (VA)
<http://ipsc.jrc.ec.europa.eu/>

Japan

50

University of Tokyo
Atmosphere and Ocean
Research Institute (AORI)
5-1-5 Kashiwanoha,
Kashiwa-shi
277-8564 Chiba
[www.aori.u-tokyo.ac.jp/
english/](http://www.aori.u-tokyo.ac.jp/english/)

Republic of Korea

51

Jeju National University
School of Marine
Biomedical Sciences
1, Ara 1-dong,
102 Jejudaehakno
690-756 Jeju-si
[www.jejunu.ac.kr/_html/eng/
main.jsp](http://www.jejunu.ac.kr/_html/eng/main.jsp)

52

Pukyong National University
599-1, Daeyeon 3-Dong
608-737 Nam-gu
[www.pknu.ac.kr/
usrEngIndex.do](http://www.pknu.ac.kr/usrEngIndex.do)

Latvia

53

Institute for Food Safety,
Animal Health and
Environment (BIOR)
Fish Resources Research
Department
8 Daugavgrivas Str.
1048 Riga
[www.bior.gov.lv/en/left-menu/
research-on-fish-resources](http://www.bior.gov.lv/en/left-menu/research-on-fish-resources)

Lithuania

54

Lithuanian State Pisciculture
and Fisheries Research Centre
Fisheries Research Laboratory
Smiltynes pl. 1
PO Box 108
91001 Klaipėda
<http://zuv.lt/>

Luxembourg

55

EUROSTAT
Joseph Bech Building
5, rue Alphonse Weicker
2721 Luxembourg-Kirchberg
[http://epp.eurostat.ec.europa.
eu/](http://epp.eurostat.ec.europa.eu/)

Mexico

56

Universidad Nacional
Autónoma de México
Departamento Ciencias
Ambientales
Centro de Ciencias de la
Atmósfera
Ciudad Universitaria
04510 Coyoacán
www.atmosfera.unam.mx/

The Netherlands

57

DELTA RES
Rotterdamsweg 185
PO Box 177
2600 MH Delft
www.deltares.nl/en

58

Wageningen IMARES
Haringkade 1
PO Box 68
1970 AB IJmuiden
www.imares.wur.nl/NL/

59

Wageningen IMARES
Vestiging Yerseke
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PO Box 77
4400 AB Yerseke
www.imares.wur.nl/NL/

60

Wageningen IMARES
Postbus 167
1790 AD Den Burg
www.imares.wur.nl/NL/

New Zealand

61

National Institute of Water
and Atmospheric Research
(NIWA)
41 Market Place, Viaduct
Harbour
Auckland Central 1010
Private Bag 99940
1149 Newmarket, Auckland
www.niwa.co.nz/

Norway

62

University of Nordland
Faculty of Biosciences and
Aquaculture
Høgskolen i Bodø
8049 Bodø
www.hibo.no

63

Institute of Marine Research
Nordnes
PO Box 1870
5817 Bergen
www.imr.no/en

64

Institute of Marine Research
Tromsø
PO Box 6404
9294 Tromsø
www.imr.no/en

65

Møreforskning AS
Møreforskning Marin
PO Box 5075
6021 Aalesund
www.moreforsk.no

66

Norwegian Institute for
Nature Research
NINA Oslo
Gaustadalléen 21
0349 Oslo
www.nina.no/

67

University of Bergen
EvoFish, Biology Department
PO Box 7803
5020 Bergen
www.uib.no/rg/evofish

Poland

68

National Marine Fisheries
Research Institute (MIR)
ul. Kollątaja 1
81-332 Gdynia
www.sfi.gdynia.pl/

Portugal

69

INRB-IPIMAR
Avenida de Brasília
1449-006 Lisbon
www.inrb.pt/ipimar

Russian Federation

70

Russian Federal Research
Institute of Fisheries and
Oceanography (VNIRO)
17 Verkhne Krasnoselskaya
107140 Moscow
www.vniro.ru/en/

Spain

71

AZTI-Tecnalia
Herrera Kaia
Portualdea z/g
20110 Pasaia (Gipuzkoa)
www.azti.es/

72

AZTI-Tecnalia
Txatxarramendi ugartea z/g
48395 Sukarrieta (Bizkaia)
www.azti.es/

73

Institut de Ciències
del Mar – CSIC
Instituto de Investigaciones
Marinas de Vigo
Eduardo Cabello 6
36208 Vigo (Pontevedra)
www.iim.csic.es/

74

Instituto Español de
Oceanografía
Centro Oceanográfico de Vigo
Cabo Estai – Canido
PO Box 1552
36200 Vigo (Pontevedra)
www.vi.ieo.es/

75

Instituto Español de
Oceanografía
Centro Oceanográfico
de Santander
Promontorio San Martín s/n
PO Box 240
39004 Santander
www.ieo-santander.net/

76

Instituto Español de
Oceanografía
Centro Oceanográfico de Gijón
Avenida Príncipe de Asturias,
70 bis
33212 Gijón, Asturias
www.ieo.es/gijon.html

77

Instituto Español de
Oceanografía
Centro Oceanográfico de
A Coruña
Muelle de las Ánimas, s/n
PO Box 130
15001 A Coruña
www.ieo.es/acoruna.html

Sweden

78

Baltic Nest Institute Sweden
Stockholm Resilience Centre
Stockholm University
106 91 Stockholm
www.balticnest.org/

79

Ministry for Rural Affairs
Fredsgatan 8
103 33 Stockholm
www.sweden.gov.se/sb/d/2064

80

Swedish Agency for Marine
and Water Management
(SwAM)
Ekelundsgatan 1
PO Box 11930
404 39 Göteborg
www.havochvatten.se

81

Swedish University of
Agricultural Sciences
Department of Aquatic
Resources, Institute of
Freshwater Research
Pappersbruksallén 22
702 15 Örebro
[www.slu.se/en/faculties/
department-of-aquatic-
resources/organisation/ifr/](http://www.slu.se/en/faculties/department-of-aquatic-resources/organisation/ifr/)

82

Swedish University of
Agricultural Sciences
Institute of Marine Research
Turistgatan 5
PO Box 4
453 21 Lysekil
[www.slu.se/en/faculties/
department-of-aquatic-
resources/organisation/
institute-of-marine-research/](http://www.slu.se/en/faculties/department-of-aquatic-resources/organisation/institute-of-marine-research/)

83

Swedish University of
Agricultural Sciences
Institute of Marine Research
Utövågen 5
371 37 Karlskrona
[www.slu.se/en/faculties/
department-of-aquatic-
resources/organisation/
institute-of-marine-research/](http://www.slu.se/en/faculties/department-of-aquatic-resources/organisation/institute-of-marine-research/)

84

Swedish University of
Agricultural Sciences
Department of Aquatic
Resources, Institute of
Freshwater Research
Stångholmsvägen 2
178 93 Drottningholm
[www.slu.se/en/faculties/
department-of-aquatic-
resources/organisation/ifr/](http://www.slu.se/en/faculties/department-of-aquatic-resources/organisation/ifr/)

85

Swedish University of
Agricultural Sciences
Institute of Coastal Research
Skolgatan 6
PO Box 109
742 42 Öregrund
[www.slu.se/en/faculties/
department-of-aquatic-
resources/organisation/
institute-of-coastal-research/](http://www.slu.se/en/faculties/department-of-aquatic-resources/organisation/institute-of-coastal-research/)

United Kingdom

86

Agri-food and Biosciences
Institute (AFBI)
Fisheries and Aquatic
Ecosystems Branch
AFBI Headquarters
18a Newforge Lane
Belfast,
Northern Ireland BT9 5PX
www.afbini.gov.uk/index.htm

87

Centre for Environment,
Fisheries and Aquaculture
Science (Cefas)
Weymouth Laboratory
The Nothe, Barrack Road
Weymouth DT4 8UB
www.cefas.defra.gov.uk/

88

Centre for Environment,
Fisheries and Aquaculture
Science (Cefas)
Lowestoft Laboratory
Pakefield Road
Lowestoft NR33 0HT
www.cefas.defra.gov.uk/

89

International Centre for Island
Technology (ICIT)
Institute of Petroleum
Engineering, Heriot-Watt
University (Orkney Campus)
Old Academy, Back Road
Stromness KW16 3AW
www.icit.hw.ac.uk/

90

Joint Nature Conservation
Committee (JNCC)
Inverdee House
Baxter Street
Aberdeen AB11 9QA
<http://jncc.defra.gov.uk/>

91

Marine Scotland Science
Victoria Quay
1st floor
Edinburgh EH6 6QQ
www.scotland.gov.uk/Topics/

92

Marine Scotland Science
Marine Laboratory
375 Victoria Road
PO Box 101
Aberdeen AB11 9DB
[www.scotland.gov.uk/Topics/
marine](http://www.scotland.gov.uk/Topics/marine)

93

National Federation of
Fishermen's Organisations
(NFFO)
30 Monkgate
York YO31 7PF
www.nffo.org.uk/

94

Plymouth Marine Laboratory
Prospect Place, The Hoe
Plymouth PL1 3DH
www.pml.ac.uk/

95

University of St Andrews
Scottish Oceans Institute
East Sands
St Andrews KY16 8LB
<http://soi.st-and.ac.uk>

96

University of St Andrews
Sea Mammal Research Unit,
Gatty Marine Laboratory
St Andrews KY16 8LB
www.smru.st-and.ac.uk/

97

University of Salford
School of Environment & Life
Sciences
Salford Crescent
Manchester M5 4WT
www.els.salford.ac.uk/

United States

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Environmental Protection
Agency
Atlantic Ecology Division
27 Tarzwell Drive
Narragansett, RI 02882
www.epa.gov/aed/

99

Louisiana State University
Department of Oceanography
and Coastal Sciences
1002-Y Energy, Coast &
Environment Building
Baton Rouge, LA 70803
www.ocean.lsu.edu/

100

Mass. Division of
Marine Fisheries
Conservation Engineering
& Fisheries Dependent
Investigations
1213 Purchase Street
New Bedford, MA 02740
[www.mass.gov/dfwele/dmf/
index.html](http://www.mass.gov/dfwele/dmf/index.html)

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National Marine
Fisheries Services
Office of Science & Technology
Fisheries Statistics
Division (ST1)
1315 East West Highway
Silver Spring, MD 20910-6233
[www.st.nmfs.noaa.gov/st1/
index.html](http://www.st.nmfs.noaa.gov/st1/index.html)

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National Marine
Fisheries Services
NMFS RTR Unit at
University of Florida
PO Box 110240
Gainesville, FL 32611
[http://fishweb.ifas.ufl.edu/rtr/
index.shtml](http://fishweb.ifas.ufl.edu/rtr/index.shtml)

103

National Marine
Fisheries Services
Southwest Fisheries
Science Center
La Jolla Shores
Drive Laboratory
8604 La Jolla Shores Drive
La Jolla, CA 92037-1508
<http://swfsc.noaa.gov/>

104

National Marine
Fisheries Services
Sandy Hook Laboratory
74 Magruder Road
Sandy Hook Highlands,
NJ 07732
<http://sh.nefsc.noaa.gov/>

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

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National Marine Fisheries
Services, NOAA
Alaska Fisheries
Science Center
7600 Sand Point Way N.E.
Seattle, WA 98115
www.afsc.noaa.gov/

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National Oceanic and
Atmospheric
Administration (NOAA)
National Marine
Protected Areas Center
1305 East West Highway
Silver Spring, MD 20910-3281
www.mpa.gov/

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The College of Staten Island
Biology Department
2800 Victory Boulevard
Staten Island, NY 10314
[www.csi.cuny.edu/
departments/biology/](http://www.csi.cuny.edu/departments/biology/)

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University of Maryland
Horn Point Laboratory
2020 Horns Point Rd
PO Box 775
Cambridge, MD 21613
www.umces.edu/hpl

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University of Massachusetts
Dartmouth
285 Old Westport Road
North Dartmouth,
MA 02747-2300
www.umassd.edu/

111

University of Massachusetts
Dartmouth
Department of Fisheries
Oceanography
200 Mill Road, Suite 325
Fairhaven, MA 02719
[www.smast.umassd.edu/CMER/
index.php](http://www.smast.umassd.edu/CMER/index.php)

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University of New Hampshire
105 Main Street
Durham, NH 03824
www.unh.edu/

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University of Washington
School of Aquatic & Fisheries
Sciences (SAFS), Biology Dept.
PO Box 355020
Seattle, WA 98195-5020
www.fish.washington.edu/





RV BALTICA FOR LATVIA



COUNTRY	POLAND
BUILT	1993
LENGTH	41 METRES
GROSS TONNAGE	614
CRUISING SPEED	11.5 KNOTS
ACCOMODATION	11 CREW & 11 SCIENTISTS
PHOTO	VADIMS CERVONCEVS



ICES

International Council for
the Exploration of the Sea

CIEM

Conseil International pour
l'Exploration de la Mer

