

# ICES SYMPOSIA REPORT 2012

ICES CM 2012/GEN:01

REF. SCICOM

## Report on ICES Symposia

2012

Second ICES/PICES Conference for Early Career Scientists: Oceans of Change,  
23-27 April 2012, Mallorca, Spain

World Council of Fisheries Societies 6th World Fisheries Congress (WFC). 7th-  
11th May 2012, Edinburgh, UK

Symposium on "Research and ecosystem-based management strategies support-  
ing the implementation of the Marine Strategy Framework Directive" (Marine  
Strategy 2012), 14–16 May 2012, Copenhagen, Denmark

Second International Symposium on Effects of Climate Change on the World's  
Oceans, 15–20 May 2012, Yeosu, Korea

ICES-PICES Symposium on Forage Fish Interactions: Creating the Tools for Eco-  
system-based Management of Marine Resources., 12-14 November 2012,  
Nantes, France



**ICES**

International Council for  
the Exploration of the Sea

**CIEM**

Conseil International pour  
l'Exploration de la Mer

## **International Council for the Exploration of the Sea Conseil International pour l'Exploration de la Mer**

H. C. Andersens Boulevard 44–46  
DK-1553 Copenhagen V  
Denmark  
Telephone (+45) 33 38 67 00  
Telefax (+45) 33 93 42 15  
[www.ices.dk](http://www.ices.dk)  
[info@ices.dk](mailto:info@ices.dk)

Recommended format for purposes of citation:

ICES. 2012. Report on ICES Symposia, 2012, 18 pp.

For permission to reproduce material from this publication, please apply to the General Secretary.

The document is a report of an Expert Group under the auspices of the International Council for the Exploration of the Sea and does not necessarily represent the views of the Council.

© 2012 International Council for the Exploration of the Sea

## Contents

---

- 1 **Second ICES/PICES Conference for Early Career Scientists: Oceans of Change, 23-27 April 2012, Mallorca, Spain.....1**
- 2 **Report for the World Council of Fisheries Societies 6<sup>th</sup> World Fisheries Congress (WFC). 7th-11th May 2012, Edinburgh, UK (Felicity Huntingford) .....4**
- 3 **Report from the Symposium on "Research and ecosystem-based management strategies supporting the implementation of the Marine Strategy Framework Directive" (Marine Strategy 2012), 14–16 May 2012, Copenhagen, Denmark (Jesper Andersen) .....13**
- 4 **Report from the Second International Symposium on Effects of Climate Change on the World's Oceans, 15–20 May 2012, Yeosu, Korea (Adi Kellermann and Svein Sundby) .....14**
- 5 **Report on ICES-PICES Symposium on Forage Fish Interactions: Creating the Tools for Ecosystem-based Management of Marine Resources., 12-14 November 2012, Nantes, France (Myron Peck) .....16**



## 1 **Second ICES/PICES Conference for Early Career Scientists: Oceans of Change, 23-27 April 2012, Mallorca, Spain**

---

Generously supported by ICES, PICES, the US National Oceanic and Atmospheric Administration, and the North Pacific Research Board, the second ICES/PICES Conference for Early Career Scientists (CECS) provided an opportunity for 121 participants from 25 countries to explore emerging topics in marine science, develop international contacts, and build skills to effectively communicate science and secure external funding. Participants were less than 36 years in age or within 5 years of receiving a Ph.D., including graduate students, post-doctoral researchers, junior faculty, and research scientists; many noted the gender balance among participants and diversity of countries represented. The conference was the second of its kind and followed on the success of the first ICES/PICES CECS held five years earlier in Baltimore, USA. Indeed, more than 550 applications for the 2012 CECS were received, reflecting the positive reputation established by the 2007 Baltimore meeting as well as the high level of interest among young scientists to network with their peers at an international level.

CECS 2012 was organized under the theme “Oceans of change” and divided into three sessions: 1) Impact of Change of Marine Ecosystems, which addressed the responses of physical, biological, and geochemical responses to long-term change 2) Human Interactions with the Marine Environment, which addressed anthropogenic impacts on the marine environment, and 3) New Tools and Views in a Changing Ocean, which addressed state of the art techniques for ocean monitoring and exploration. Each session was opened by a senior keynote address: Joaquin Tintoré (Spain), Anne Hollowed (USA), and Jack Barth (USA); followed by two invited, highly accomplished early career speakers: Marta Coll (Spain), Akinori Takasuka (Japan), Monique Messié (USA), Eun Jung Choy (Korea), Abigail McQuatters-Gollop (United Kingdom), and Malin Pinsky (USA). These keynotes, 79 contributed talks, and XX posters covered a highly diverse range of topics, though some were visited multiple times and provided some indication of the future of marine science as well as the opportunities and challenges early career scientists will face in the coming years. Among these include the automation of ocean monitoring and associated emerging technologies, the ability to manage and analyze increasingly large and complex datasets, the increasing complexity and sophistication of computer modelling, managing natural resources under increased human impacts and global change, and the importance of working as interdisciplinary groups to address issues that span multiple spatial, temporal, and biological scales. After a very difficult selection process, Kristy Kroeker (Ocean acidification affects recruitment and competition in benthic communities surrounding natural CO<sub>2</sub> vents), Jameal Samhuri (Risky business: linking land- and sea-based activities to risk in coastal ecosystems), and Robin Kodner (Phytoplankton in a Changing World: What we can learn from Metanomics Technologies) were chosen for best oral presentations while David Nicholson (Dissolved gas tracers as new constraints for ecosystem-biogeochemistry models) was awarded best poster.

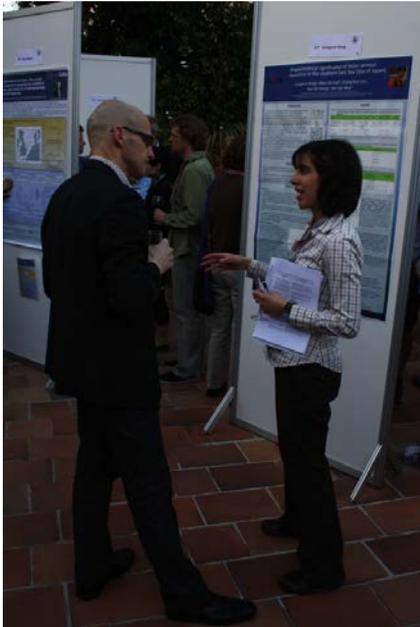
Two afternoon workshops were also held as part of the CECS 2012. The first of these was led by Martin Pastoors (Netherlands), who discussed a number of helpful techniques to improve science communication with the main points of focusing on mes-

sage, using the power of image, and thinking like a journalist. Next, Wojciech Wawrzynski (ICES) shared his experience at improving communication among marine researchers. The second afternoon workshop was co-led by Jack Barth (USA) and Joaquin Tintoré (Spain) and addressed techniques for pursuing funding and writing proposals, with particular emphasis on speaking to the criteria listed in the request for proposals, and before applying, knowing success rates and levels of funding available through the given funding agency. This was followed by an overview of life as a scientist in ICES and PICES as well as resources ICES and PICES have to offer young scientists with contributions from Skip McKinnell (PICES), Adi Kellermann (ICES), Poul Dengbol (ICES), Anne Hollowed (USA) and Søren Pedersen (ICES).

In addition to talks and workshops, CECS included a number of opportunities to socialize and interact with fellow participants. On the first night of the meeting, a welcoming reception was held at Bellver Castle, a 14th century fortress with spectacular views of the night time lights of Palma. Mid-week the conference explored the mountainous north coast of Mallorca Island with a stop in the village of Valldemossa, with its narrow cobblestone streets and monastery where Chopin composed his 24 preludes in the winter of 1838/39. In addition, there were numerous opportunities to explore Mediterranean beaches and the towns near the conference hotel. Almost certainly, the new friendships and collaborations initiated on outings, during breaks, and at shared meals will be the most valued and lasting outcomes of the conference.

There are many people to thank for making this conference a success. First, we are grateful to ICES, PICES, NOAA, and the North Pacific Research Board for their generous financial support. Many thanks to Adi Kellerman (ICES), Søren Pedersen (ICES), and Skip McKinnell (PICES), for their help with logistics and expert advice to the Steering Committee. I also thank local organizers Ignacio Catalan and the Mediterranean Institute for Advanced Studies for arranging so many of the conference details including the hotel (which was beautiful!), outings, banquets, and conference facilities. Thanks to the other members of the Scientific Steering Committee (Ignacio Catalan, Helen Findlay, Hanna Na, Nina Overgaard Therkildsen, Marta Varela, and Naokie Yoshie) for their extensive efforts in planning the scientific program.





## 2 Report for the World Council of Fisheries Societies 6<sup>th</sup> World Fisheries Congress (WFC). 7th-11th May 2012, Edinburgh, UK (Felicity Huntingford)

---

### The event

The 6th WFC was held in Edinburgh, UK from 7th-11th May 2012, hosted by the Fisheries Society of the British Isles on behalf of the World Council of Fisheries Societies

### The venue

The Congress was held at a single location, the Edinburgh International Conference Centre (EICC).

This proved to be an excellent venue, being extremely attractive and well appointed, large enough to hold all the delegates without its feeling cramped, but small enough to make movement between venues easy.

There was a good range of lecture halls and meeting rooms that were sufficiently flexible to accommodate the full and varied programme and with very good AV provision.

The EICC was extremely well staffed, with sufficient efficient, friendly staff on hand that it was easy to get help on any matter.

On the whole the catering was excellent, with good quality coffee, tea and lunch being served with very few queues, though some delegates felt more should have been provided at lunchtime.

#### Lessons:

- Flexibility is essential.
- We allocated sessions to rooms on the basis of expected number of attendees, but some sessions in the smaller rooms were very crowded; on the other hand sessions with rather few attendees did not feel too empty.
- A small selection of exhibitors complained about inadequate footfall, but this reflected the level of interest in the sessions. This was fixed later in the week by moving coffee down into the exhibition hall. Planning more catering in the exhibition space would be recommended in the future.

### Organisation

The LoC was composed of scientists representing the FSBI, wider academia, Marine Scotland Science, Marine Scotland (Government), Environment Agency, NGOs (i.e. Seaweb and Seaweb), and CEFAS. England, Wales and Scotland were all represented on the LoC.

We derived great benefits in terms of logistics and broader input from the involvement of Seafish and Seaweb.

**Lessons:**

- The inner circle (Felicity Huntingford, Michel Kaiser and Inigo Everson, with invaluable input from Ian Winfield) acted as an effective delegated authority to take decisions on behalf of the LoC in a timely manner and avoided over-burdensome delays when rapid decisions were required. This proved essential for the smooth running of the Congress.
- A conference organiser of the calibre of Congrex was critical to the success of a meeting. It was also essential that the LoC and Congrex had a close working relationship and this hinged on the personalities of the staff from Congrex that were very much tuned into the LoC.

**Plenary programme**

The Plenary programme was unanimously agreed to be of very high quality, in terms both of the excellence of the of individual talks and of covering an impressively broad range of topics/sectors. These presentations are now available of the Congress website.

The high quality of the Plenary sessions would not have been achieved without 4 years intensive work by Michel Kaiser as Chair of the International Programme Committee.

Participation in the Plenary session by HRH Prince Charles and by a Minister from the Scottish Government highlighted the importance of the Congress and added to the interest of the programme. It also helped to ensure a well attended opening session. HRH's attendance was particularly appropriate as he has a real interest in the topic of the Congress and had something of significance to say.

**Lessons:**

- There was a trade off between aiming for high profile speakers, thereby attracting delegates and media attention and (a) risk of their pulling out (b) security constraints and (c) focussing media attention on a few high profile people. Overall, we feel that the decision to include high profile speakers was correct..
- We tried extremely hard to attract female Plenary speakers and speakers from a wide range of countries, but were not 100% successful and this did prompt some comments.
- We saw the plenary talks as generic, in the sense of covering issues relevant to both freshwater and marine fisheries, but there was some feeling that freshwater fisheries were under-represented.

**Submitted programme**

1040 submitted presentations were received, 590 accepted as talks and 350 as E-posters.

To accommodate these, the Congress was extended by adding extra parallel sessions and continuing into the Friday afternoon, ending with the final plenary talk, which was well attended.

**Lessons:**

- Compiling the programme was difficult. For logistic reasons, we did not have a full meeting of theme leaders. This was probably the right thing to do, but did lead to some problems.
- There was some overlap in content between the different themes and some delegates felt that this exacerbated the difficulty of deciding between parallel sessions.
- Representatives of some Member Societies who had agreed to sit on the International Programme Committee did not contribute anything to its work.
- Sessions without a “champion” were particularly difficult and probably not as high calibre as those sessions that had a clear ‘thought leader’.
- Some of the sessions on Friday were a bit thin.
- In some cases, excellent speakers were invited to participate in this part of the programme, without it being made clear to them that their expenses would not necessarily be covered (in spite of clear instructions to session organisers from the LoC).
- One theme convenor insisted on non-standard timings, which created problems for organisers and delegates.
- Not all session Chairs attended the briefing session, and so did not chair their sessions as well as they might have.
- The programme used by Congrex to handle the programme abstract submissions seemed very unwieldy.

**E-posters**

A decision was made to use electronic rather than paper posters, with each e-poster presenter allowed up to 3 PowerPoint slides including video and animation; these were available for view throughout the meeting on touch screens. The challenge of organizing poster in this new format was handled excellently by David Bailly.

From observations and comments on site, this worked well in terms of generating some really interesting presentations and in terms of being an attractive and easily accessible format throughout the congress.

The e-poster receptions worked well, in that lots of people attended and e-posters were viewed and discussed

Arrangements for making sure that presenters were by their e-posters at given times did not work so well. This may have been because the instructions were not absolutely clear or because people paid no attention to them, or both.

**Lessons:**

- There are some specific lessons about preparing e-posters, for example, using the touch screen facility rather than timing to move about within the posters.
- Many authors had not used the full potential of an e-poster and/or put too much material in.
- It might have been advisable to have an e-poster template.

- Despite clear instructions, significant numbers of authors had not uploaded their e-posters by the given deadline. We were fortunate that the poster company could and would accommodate this.
- Having specialist providers of software etc was essential and the firm we used were excellent.
- There are differences of opinion as to which screen type was best.
- Some system for alerting presenters when someone was looking at their e-poster on a given screen (via a text message?) might be worth developing.
- It might have been better to give a specific time during the receptions for each e-poster, as opposed to cluster of posters, with a chair.

### **Questions and answer sessions**

These panel-based question and answer sessions (organised by Seaweb) on topics of current concern (reform of the common fisheries policy, illegal, unregulated and unreported fisheries and the role of accreditation and certification in sustainable fisheries) added a very interesting extra dimension to the Congress.

There were uniformly well attended, although the room (200 seater) was most occupied for the CFP reform and IUU panels.

They were very successful in terms of generating spontaneous and constructive discussion.

A live twitter feed was run in each of the sessions with tweets reported during the sessions. This added a very interesting component to the discussions.

The Prince's Charities International Sustainability Unit's discussion on the important and timely topic of transitions to sustainable fisheries also proved popular and effective.

#### **Lessons:**

- Good chairing is essential. Seaweb were able to get the BBC environment correspondent Richard Black to chair the CFP session and he was excellent.

### **Early career programme**

A special programme was put in place, excellently organised by Kath Sloman, to make the Congress attractive to students and early career scientists.

This was very successful in that 277 student delegates had abstracts accepted, 156 as talks and 121 as Eposters.

Informal feedback at the time was very positive.

23 students (out of 96 applicants) were given funding to support attendance. 10 of these are from developing countries, fully funded by FSBI, all with a talk or an e-poster.

A competition was held for the best oral and e-poster presentations from early career scientists, sponsored by Wiley-Blackwell.

There was an additional prize of donated tracking equipment, which happened to fit very well with research needs of the winner.

Arrangements were made for early career delegates to meet with established scientists during the Welcome Reception to help them with introductions etc. In the event, little use was made of this, but from comments made at the time, the offer was appreciated.

**Lessons:**

- FSBI support for early career delegate from developing countries, initiated by the FSBI Treasurer, was critical for the success of this part of the Congress.

**Supplementary programme**

A supplementary programme (excellently organised by Iam McCarthy) of 3 courses (Practical Conservation of Freshwater Fishes, Scientific Communication and the Welfare of Fish used in Experiments) was run from Friday to Monday before the main congress.

Attendances were 16, 18 and 24 respectively. Informal feedback was very good, especially for the first two.

UFAW, which sponsored the welfare session and have been in touch about material for their newsletter, was very pleased with how this went.

The Supplementary programme served as a good way of allowing students to find their feet and helped them in gaining funding.

**Lessons:**

- We started off with more courses proposed, and our decision to reduce the number for reasons of time was clearly correct.
- Congrex kindly helped us with the organisation of the supplementary programme, although this was not part of their contract. We should perhaps have included this explicitly as part of their remit from the start.
- On a related point, we also should have clarified whether the costs of running the supplementary programme were part of the main Congress budget (which it was not).

**Publications**

The congress proceedings will be published as a special edition of the Journal of Fish Biology in December 2012 comprising papers from selected plenary, keynote and submitted talks, edited by Paul Hart. Perhaps Paul or John Craig can report on progress.

There may be additional publications based on specific themes and sessions.

**Lessons**

- It is unreasonable to expect very busy high profile plenary speakers to prepare papers based on their talks. This is likely to be an increasing problem in the future.

## Social programme

11.1 The Welcome Reception, held in the Exhibition Hall, was well attended and from informal observation very successful.

11.2 As mentioned above, the poster receptions also worked well as social events.

The Gala Dinner, held Thursday in Murrayfield Stadium, was attended by 376 for dinner and an additional 47 for dancing only. The Scottish theme was much appreciated.

### Lessons:

- In the event, while the Gala dinner was a good venue for award of the International Medal, the fine details of the presentation did not work well. We should have been clearer sooner about whose responsibility this was.
- Given the eventual number of delegates, Murrayfield was not an ideal venue for the Gala dinner, though had the weather allowed us to have a reception pitch-side, this might have worked better. We should perhaps have taken stock of likely numbers earlier and found an alternative, more special venue, although we were also conscious of the need to control costs.
- It was great that so many people wanted to dance, but as a result the dance floor was too small. However, photographic evidence suggest that great fun was had by (almost) all.

## Exhibition

40 organisations took part in the Exhibition (listed in the Appendix), the format and presentation of which worked very well.

The attractive, flexible space (with fairy lights) was important.

Having a seating area and coffee/lunch facilities in the hall ensured that there was good attendance by delegates throughout the Congress.

The barcode scanner for exhibitors worked very well.

### Lessons:

- It is important to have the exhibition as near as possible to the talks and to have the area baited with coffee, etc. Our arrangements were just about right.
- The LoC should perhaps have identified unique selling points sooner for effective recruitment, although some of these only became apparent as the programme developed.
- We could also have let potential exhibitors know that we would maximise footfalls space by strategic location of catering outlets.

## Public engagement

Michel Kaiser and Seafood Scotland ran a competition for school children to design a logo for the Congress T shirt. Two excellent designs were selected from a short list of 10.

The winning entry was awarded science equipment for their school donated by Seafish and free access to the first day of the Congress for the class of the winning child.

Prizes were awarded by Richard Lochhead, MSP The Scottish Government Cabinet Secretary for Rural Affairs and the Environment, who was great, and the winners were also congratulated by HRH Prince Charles. The children, their parents and their teachers seemed really pleased with the event.

The winning designs were on display at the Congress.

### Lessons

- This exercise was one of the most successful features of the Congress.

## Registrations

The final number of registrations was 1151 paying delegates with an overall attendance of 1305. For 75% this was the first time they had attended a WFC. Some statistics are provided in Appendix 1.

This attendance, though less than originally anticipated, was the result of a huge amount of very effective publicity and active personal canvassing by Inner Circle and others.

Though less than originally anticipated, this represents a very good turn out, given the current economic climate. In terms of how the Congress felt, it was just the right number for the venue.

### Lessons:

- The LoC should perhaps have identified unique selling points sooner for effective recruitment, though see the point above.
- The Day delegate rate was a good addition.
- The Fishers rate was also a good idea, even though few fishers took advantage of it.
- An almost complete absence of delegates from Greece and Spain and very few from France was noted.
- Too many complementary registrations were handed out. We should have made it clear to invited speakers that they would be expected to cover their own registration and to session chairs that the complementary code should not be handed out to any speakers.

## Sponsorship

The final figures for sponsorship were £133,281 in Sponsorship and £64,430.00 in Exhibition (see Appendix 2 for full lists).

Again, this is less than originally envisaged, but very good given the current economic climate and was the result of a huge amount of hard work and flexibility (for example, sponsorship in kind).

**Lessons:**

- The LoC should perhaps have identified unique selling points sooner for effective recruitment, though point 12.3 applies here as well.

## **Publicity and PR**

Publicity during the planning phase was carried out very effectively by Congrex

Publicity and PR in the run up to and during the Congress was handled by Weber Shandwick, who generated over 119 pages of media stories.

Overall, media coverage of the Congress was impressive, focussed on HRH, but by no means restricted to him.

**Lessons:**

- Two levels of publicity were required: general advertising of the event (which Congrex did very effectively) and the generation of media stories. We made no special provision in the budget for the latter. Thanks to Seafish, we were able to use Weber Shandwick, but this was an oversight in our original planning/budget.
- Perhaps the other member societies could have done more, earlier.
- Weber Shandwick also helped us to develop a Crisis Plan for dealing with adverse media interest, which fortunately we did not need to use.

## **Professional Conference Organisers**

The Professional Conference Organisers (Congrex UK Ltd) were selected in 2009 from ca 10 applicants on the basis of a written bid and face-to-face presentations.

A conference organiser of the size, experience and calibre of Congrex was critical for success.

It was also essential that the LoC and Congrex had a close working relationship and this hinged on the personalities of the staff from Congrex that were very much tuned into the LoC.

**Lessons:**

- It is absolutely crucial to get this right.
- It was extremely helpful to have someone with experience of the tendering process (Bill Turrell from Marine Scotland) on the interview panel.
- The experience of Congrex staff in working with the EICC was extremely helpful.

## Budget

Because the FSBI is not allowed to be directly involved in potentially profitable trading and in order to give it some degree of financial protection, finances for the Congress were handled on behalf of the FSBI by a limited company, FSBI Conference Ltd, set up for the purpose. In addition to the Directors of the Company (MK, FH, IE), a treasurer was appointed to oversee Congress finances (IW).

Based on information about previous congresses, our original budget (put together with the help of the Edinburgh Congress Bureau prior to 2008) was based on £84,105.00 projections for exhibition, £ 124,456.00 sponsorship income and minimum delegate numbers of 1400

The Congress was supported very extensively by three successive loans (which can be converted into grants) from the FSBI of £50K, £50K and £25K, the last in May 2012.

The final budget has been provided by Congrex and sent to FSBI Office bearers. Including the cost of auditing FSBI Conference Ltd's accounts, this has a bottom line of £3,471.

Thus in spite of careful monitoring of the budget and considerable time and effort expended by the Inner Circle and Congrex to cut costs to the minimum compatible with delivering a successful conference and the late surge in registrations, the unremittingly grim economic situation means that there is still a shortfall of £3062 to get FSBI Conference Ltd to a final zero balance.

### Lessons:

- With hindsight, it would perhaps have been wiser to have planned more pessimistically, though higher registration fees would have meant fewer delegates (especially from the freshwater fisheries community, members of which commented that the registration fee was high).
- A quicker system for working out financial scenarios might have helped.
- Some identified "red flags dates" for when to consider cancellation might have been advisable, although even without such dates this drastic action was considered and rejected on financial grounds as events unfolded.
- The 4 year gap between successive WFCs makes accurate number predictions difficult.
- In our view, fees could not have gone much higher and so gaining major sponsorship (other than that generously provided by the FSBI) would have been the only way to balance the budget.
- Although FSBI Conference Ltd is a limited company, its Directors put themselves at personal risk unless they can prove that due diligence was shown. Support from the FSBI was critical in ensuring that this was the case.
- Without this support, we may well have had to cancel the Congress some time in 2010/11. This would have been a real pity, was clear during the meeting and from all the subsequent feedback that the Congress was very successful and reflects extremely well on the FSBI as host society.

### 3 Report from the Symposium on "Research and ecosystem-based management strategies supporting the implementation of the Marine Strategy Framework Directive" (Marine Strategy 2012), 14–16 May 2012, Copenhagen, Denmark (Jesper Andersen)

A three day conference, Marine Strategy 2012, or in full "Research and Ecosystem-Based Management Strategies in Support of the Marine Strategy Framework Directive" took place 14-16 May 2012 in Copenhagen, Denmark. The conference was organized by Aarhus University, DHI, International Council for the Exploration of the Seas (ICES), and University of Copenhagen in collaboration with the Danish Ministry of the Environment. The conference was supported by the Danish EU Presidency, DTU Aqua, HARMONY, Danish Meteorological Institute, and the Danish Nature Agency.

The overarching aims of Marine Strategy 2012 were to take stock of progress in regard to implementation of the EU Marine Strategy Framework Directive (MSFD) and to consider and discuss next steps in regard to the MSFD implementation process, especially to discuss how to achieve a good environmental status in all European seas. The conference included a total of 70 presentations (Opening, key notes, invited, contributed oral presentations, posters as well as a Conference Summary) as outlined in the table below.

	14 MAY	15 MAY	16 MAY
Opening	2	-	-
Key notes	2	2	1
Invited presentations	-	10	6
Contributed oral presentations	-	28	17
Posters	-	11	-
Conference Summary	-	-	1
Sum:	4	41	25

The conference was attended by more than 130 persons ranging from marine scientists over those persons and institutions implementing the MSFD in EU Member States to senior officials and decision makers. The following European countries were represented: Denmark (59), United Kingdom (9), The Netherlands (8), Italy (8), France (7), Germany (6), Sweden (5), Norway (5), Finland (4), and Belgium (4). Spain, Portugal, Greece, and Latvia were represented by 2 persons, whilst Estonia, Lithuania, Romania, Iceland and Faroe Islands were represented by one person. In addition 2 participants (8 key note speakers) from the US attended the conference.

Important conclusions and key messages from presentations were collated and presented as a Conference Summary focusing upon research needs, management needs, development of indicators for descriptors including definitions of GES, and monitoring needs. The following challenges were highlighted: (1) the combined effects human activities being the core of MSFD, (2) the definition of GES in a changing environment, (3) reversibility of marine ecosystem and likelihood of returning to GES, and (4) seeing humans as part of marine ecosystem (People comes first!).

More information about Marine Strategy 2012 can be found at: <http://marinestrategy2012.dmu.dk>.

#### **4 Report from the Second International Symposium on Effects of Climate Change on the World's Oceans, 15–20 May 2012, Yeosu, Korea (Adi Kellermann and Svein Sundby)**

---

After the First International Symposium on Effects of Climate Change on the World's Oceans, jointly organized by IOC, ICES and PICES, was held in Gijón, Spain, in 2008, the follow-up symposium was hosted by the Korean Ocean Research and Development Institute in Yeosu, South Korea, 15–19 May 2012. In addition, four adjoint workshops were held prior to the symposium on the 13 and 14 May, and two adjoint workshops were held on the 20 May. The venue of the symposium and the workshops was in a new conference centre located in the middle of this year's Ocean Expo site in Yeosu at the Korean south coast. The symposium was arranged at the start of the 3-months Expo event that has "The Living Ocean and Coast , - Diversity of Resources and Sustainable Activities" as its main theme.

At the issue of the Fourth Assessment Report (AR 4) of IPCC in 2007 the emphasis on impacts of climate change in marine ecosystems was limited, and none of the AR4 chapters were dedicated to impacts on the oceans ecosystems. With the First International Symposium on Effects of Climate Change on the World's Oceans the succeeding year, the international marine science community initiated a leap to the effort of revealing impacts of climate change to ocean ecosystems. Since then, the research has accelerated in the number of works published and in the diversity of themes addressed. The present symposium in Yeosu reflected this development. The symposium had ten thematic sessions with plenary presentations by invited key note speakers in the morning and followed by parallel sessions in the afternoons. The presentations in general held a high scientific standard and with a number of excellent presentations both on specific process studies, time series analyses and integrative model studies. It is not possible to mention in detail all the important results from the symposium. However, it is worth mentioning some cross-cutting issues:

##### **Diverse ecosystems and diverse responses on climate change**

The first message from many of the presentations is that regional ecosystem responses to global climate change are much more diverse than appearing from the first climate effects literature. This is because the critical factors and processes – or structure and function - varies among ecosystems. Moreover, the physical forcing varies among regional ecosystems. Marine ecosystems do not respond to global climate change, but to the regional climate change.

##### **Past ecosystem responses are a combination of natural climate variability and climate change**

The second message is that ecosystems have responded to various frequencies of natural climate variability from interannual to multidecadal, and that we should be careful not to interpret all kinds of past climate change as anthropogenic climate change. Moreover, not all observed changes are due to ocean climate change.

##### **Need more insight into local and regional processes**

The third message is that local process understanding is needed both in the construction of global models and in the interpretation of their results, and that many of the critical ecosystem processes only can be captured by sufficient downscaling.

**Impact studies should define what kind of physical processes to be studied**

The fourth message is that the physical sciences basis as appearing in the IPCC WG 1 AR 4 is not providing to a sufficient degree the required information on the ocean processes as input to impact studies on marine ecosystems. For example, natural climate variability which has clear and specific impacts on regional marine ecosystems is poorly captured by global climate models. It relates to the upwelling regions and to the inflow of warm Atlantic water to the Arctic.

**Model validation**

And finally - and this is far from a new message, but it becomes even more important as modeling takes up an increasing part of the science – we need continuously to validate the relevance of the processes in our models and to validate them against observations. And the very last comment: we still need faster computers.

ICES funds covered participation of nine early career scientists from Canada, France, Italy, Russia, Spain, the UK and the USA.

The proceedings of the symposium will be published in the ICES Journal of Marine Science in 2013

## 5 **Report on ICES-PICES Symposium on Forage Fish Interactions: Creating the Tools for Ecosystem-based Management of Marine Resources., 12-14 November 2012, Nantes, France (Myron Peck)**

---

Forage fish are small, often pelagic and schooling fishes that are a main pathway for energy to flow from plankton to higher predators in marine ecosystems. Because they maintain this trophodynamic role throughout their life, population fluctuations in forage fish may produce notable ecological effects and, therefore, the sustainable management of their fisheries is critical to maintaining ecosystem functioning. A group of 70 scientists from 16 nations (Figure 1) gathered near the banks of the Loire River in the city of Nantes, France for a joint *ICES-PICES Symposium on Forage Fish Interactions: Creating the Tools for Ecosystem-based Management of Marine Resources*. The 3-day symposium (12-14<sup>th</sup> November 2012) was organized around three overarching themes and questions:

- (Drivers of Change) - how do environmental factors and predator-prey interactions drive the productivity and distribution of forage fish stocks across ecosystems world-wide,
- (Management of Resources) - what are the economic and ecological costs and benefits of different forage fish management strategies, and
- (Common traits) - do commonalities exist across ecosystems in terms of the effective management of forage fish exploitation?

The symposium was kicked off with a keynote address by Jake Rice (Canada) who provided a retrospective of important achievements in both field and modelling research that have paved the way towards our current view of forage fish as central players in the trophodynamic structure and function of marine ecosystems. The talk also highlighted how historical achievements have led to the development of the different strategies employed today to manage the exploitation of forage fish stocks. That keynote address set the stage for a series of oral and electronic poster presentations that were given over the following three days within five theme sessions.

### **Session 1 (Climatic and Biotic Mechanisms and Forage Fish Recruitment).**

Within the first theme session, Akinori Takasuka (Japan) gave a keynote address that reviewed the various recruitment hypotheses that have been offered to explain world-wide, synchronous fluctuations in anchovy-sardine species pairs. Using different examples, he highlighted how subtle changes in mean growth rates and stage durations of early life stages may lead to dramatic consequences for survival and year class success. Following that presentation, a number of talks illustrated how changes in the distribution and productivity of key forage fishes were associated with climate-driven changes in bottom-up processes (changes in physical forcing, zooplankton community dynamics, etc.). An emerging theme was the role of intra-guild predation and competition in population dynamics, particularly how intra-guild dynamics can amplify impacts of external drivers (e.g. environment and fishing). Forage fish recruitment dynamics from a diverse array of habitats (from the Mediterranean and North Seas, to the Seto Inland Sea, of Japan) were discussed.

**Session 2 (Post Recruitment Predator-prey Dynamics in Ecosystems World-wide).**

In the second theme session, Geir Huse (Norway) provided a keynote presentation that reviewed how swimming behaviour, which modifies the spatial overlap of forage fishes and their predators, has been utilized within biophysical food web models developed for the Barents and Norwegian Seas. The important trophodynamic role of forage fish as prey was highlighted in presentations that spanned a wide range of ecosystems (from sub-tropical seas to sub-Arctic habitats). Several presentations emphasized the impacts that local changes in forage fish availability had to central-based predators such as marine mammals and seabirds. These presentations and discussions also highlighted our lack of knowledge on the diet requirements of predators including “charismatic megafauna”, particularly those inhabiting complex food webs such as shelf sea ecosystems.

**Session 3 (Linking biology and Economics)**

An important element of the symposium was to bring together (and bridge any potential gaps between) biologists and economists. This represents a critical step towards advancing knowledge and tools useful in the management of forage (and other) fishes. The state of the art in coupling biology and economics was provided in a keynote address by Rognvaldur Hanesson (Norway). Beyond their direct value in capture fisheries (and as products such as fish meal), forage fish provide several ecosystem service (e.g. supporting ecosystem structure and maintaining food web structure and function) which are difficult to value but, nonetheless, need to be considered and compared to the direct value of forage fish landings.

**Session 4 (Ecosystem-based management)**

This theme session offered presentations that highlighted the role of forage fish within current, ecosystem-based approaches to managing marine systems and included a keynote presentation from Jason Link (USA). It included presentations stemming from the recent Lenfest Forage Fish Task Force report, the most comprehensive global analysis of forage fish and their management. A reoccurring theme in many talks was that managing forage fish fisheries broadly hinges on striking a balance between utilizing different parts of the system and balancing biological and economic tradeoffs. These various management options must also be considered within the context of the large fluctuations in biomass that exemplify many forage fish stocks. Examples of management tradeoffs were provided for both data rich and data poor situations. A number of talks examined size-based indicators of forage fish status (e.g., the mean ratio between “small” and “large species (e.g., pelagic versus demersal fishes) to examine changes in the fish community assemblage and discussed whether, in some cases, forage fish could be managed as one portfolio (as a single component). How much forage fish should be left in the water for predators was a hotly contested question although it was clear from many talks that mortality due to predators is often (much) higher than the removal of forage fish due to fisheries.

*Session 5 (Direct Comparisons between Ecosystems and Generic Properties)* This session explored whether commonalities existed among ecosystems and the role of forage fish in ecosystem structure and function. Jeremy Collie (USA) provided a keynote that explored forage fish dynamics among various shelf sea ecosystems across the

northern hemisphere highlighting the role of forage fishes as key planktivores and common (and sometimes striking) shifts observed from benthic to pelagic fishes in these and other marine systems. Other presentations highlighted the utility of generic, size-based approaches to model the impacts of different harvest strategies of forage fish to other components of the food web, contrasting the different population response of relatively “small” and “large” fish species to different level of fishing mortality. Another presentation critically examined 18 existing ecosystem-based models and their suitability (in terms of design) to project the potential consequences the impacts of forage fish removals on marine food webs.

The final event of the symposium was a Panel discussion on “What exactly is a healthy ecosystem? Managing Forage Fish: What do we want and why?”(Figure 2). The six keynote speakers took questions from the audience and offered their own opinions about remaining questions, hot topics and future research needs concerning the effective management of forage fish within an ecosystem context. Authors of oral and poster presentations have submitted manuscripts to a special volume of the ICES Journal of Marine Science which is planned to be published in 2013.

The ICES-PICES Symposium on Forage Fish Interactions was convened by Stefan Neuenfeldt (Denmark), Myron A. Peck (Germany), Tim Essington (USA), Niels Vestergaard (DK) and Vladimir Radchenko (RU). The conveners owe a debt of gratitude to a long list of people that made the event run smoothly including Olivier Berthéle, Mareike Volkenandt and Sophie Pilven. Special thanks are given to Verena Trenkel and Helle Sørensen who formed the essential “wasp-waist”, channelling substantial amounts of local energy to the symposium’s participants. Additional funding for the symposium was obtained from the EU FP7 project “FACTS”.