

Report of the Fishery Science Committee

The Fishery Science Committee met on Sunday, November 6, 18:00-20:00 and Wednesday, November 9, 14:00-19:00 in San Diego, USA. Chair, Elizabeth (Libby) Logerwell (USA) led the meetings. Vice-Chair, Dr. Xianshi Jin (China) was also present. Introductions were made and Dr. Gordon Kruse was nominated to serve as rapporteur, to which he agreed. Members represented all PICES member countries (*FIS Endnote 1*). The agenda was adopted with no modifications (*FIS Endnote 2*).



FIS members and guest at PICES-2016. Back row, from left: Kazushi Miyashita, Libby Logerwell, Mikhail Stepanenko, Xianshi Jin, Anya Dunham, Jacquelynne King, Sukgeun Jung, John Field; front row, from left: Naoki Tojo, Masahito Hirota, Gordon Kruse, Sukyung Kang (missing from photo: Tetsuichiro Funamoto).

AGENDA ITEM 3

Volunteers for Award Committees for 2016

Volunteers were sought to serve on subcommittees to select the FIS awards for Best Oral Presentation and for Best Poster Presentation by an early career scientist during PICES-2016. Drs. John Field (USA) and Jacquelynne King (Canada) agreed to judge oral presentations. Drs. Anya Dunham (Canada), Xianshi Jin (China) and Mikhail Stepanenko (Russia) agreed to judge posters. This year's selections were made from FIS-sponsored topic sessions S4 (*Climate variability, climate change and the reproductive ecology of marine populations*) and S9 (*Resilience, transitions and adaptation in marine ecosystems under a changing climate*). The FIS Committee appreciates the work of these subcommittee members. The Best Oral Presentation was given to Caren Barcelo, “*Identifying climatically resilient or sensitive locations in the Northern California Current using partitioned beta-diversity*” (S9). The Best Poster Presentation was given to Michael Malick, “*Effects of the North Pacific Current on productivity of 163 Pacific salmon stocks*” (S4).

AGENDA ITEM 4

FIS Chair's report

Dr. Logerwell, combined her report of FIS activities in 2016 with Agenda Item 6.

AGENDA ITEM 5

Update on FUTURE activities

Dr. Logerwell provided a briefing to the FIS members on the FUTURE mini-symposium held on Sunday, November 6. The agenda for the mini-symposium included reports from expert groups reporting to the FUTURE SSC (S-CC, SG-CEP, WG 30, WG 31, S-CCME, AP-NPCOOS, SG-CERP, WG 31, S-MBM, S-HAB, S-HD, AP-CREAMS, WG 34, and SG-NPESR3), followed by general discussion. This year's mini-symposium was particularly effective, in part because each expert group gave their presentation in a similar format: they presented completed and anticipated activities and products. Discussion topics included but were not limited to a suggestion for a workshop on outreach activities; natural and social science intercommunication challenges; how to aggregate and synthesize FUTURE products; and the need for more activities related to mariculture.

A report on FUTURE was presented by Dr. Sukyung Kang (Korea), member of the FUTURE SSC and FIS liaison. She provided an overview of FUTURE and upcoming activities. FIS Committee members pointed out that the FUTURE Science Program conceptual diagram does not include mariculture. This might be included in the Human System and the Marine Ecosystem.

AGENDA ITEM 6

Review of Standing Committees

Dr. Logerwell gave an overview of FIS activities from 2012 to 2016 as part of the review of Standing Committees; 2016 activities include:

- S-CCME held several workshops in 2016, one on “*Economic modelling of the effects of climate change on fish and fisheries*” (WKSICCME_Econ), May 30–June 3, 2016, Brest, France; two on SICCME modeling updates (for ICES and PICES scientists separately); W5 on “*Modeling effects of climate change on fish and fisheries*” at PICES-2016.
- Joint PICES/ISC Working Group on *Ocean Conditions and the Distribution and Productivity of Highly Migratory Fish* (WG 34) held a Workshop (W4) on “Methods relating oceanographic conditions to the distribution of highly migratory species” (Nov. 3) at PICES-2016
- Dr. King represented FIS at the SG-NPESR3 workshop on “*Evaluation and synthesis North Pacific Time Series Observations*”, June 28–30, 2016, in Sidney, BC, Canada. FIS Committee members nominated Ecosystem Time Series Observations for consideration during the workshop.

Science Board has requested that the Standing Committees evaluate the following questions: What are three or four highest priority scientific activities that FIS is undertaking? What are FIS's current or planned collaborations? What are some ideas for new expert groups? What are some gaps, challenges in terms of products and deliverables? Committee members reviewed a draft summary of “FIS achievements and challenges” prepared by Dr. Logerwell. The Committee then discussed the highest priority scientific activities that FIS is undertaking. S-CCME activities were cited as high priority. In addition, members discussed whether the International Year of the Salmon could result in a plan for international cooperative work, and whether it would provide further opportunity for FIS to be involved with NPAFC, perhaps by forming an expert group. One challenge that was discussed was the need for more activities relating to coastal ecosystems. It was suggested that FIS members consider developing an expert group having to do with this topic. Another issue raised was that FIS has not been involved in topic sessions on stock assessment. Subjects such as ecosystem approaches to stock assessment or ecosystem considerations in stock assessment would be of interest to FIS and PICES as a whole. It was also suggested that FIS pursue activities related to fish early life history and reproductive ecology, such as in a new expert group. Finally, it was noted that more work needs to be done on climate indicators.

AGENDA ITEM 7

Status Reports of FIS-sponsored expert groups

Anne Hollowed (USA) gave the committee an update on the activities of: Joint PICES/ICES Section on *Climate Change Effects of Marine Ecosystems* (S-CCME). The full report can be found at <http://meetings.pices.int/members/sections/S-CCME>.

Gerard DiNardo (USA) gave a presentation on: the joint PICES/ICS Working Group on *Ocean Conditions and the Distribution and Productivity of Highly Migratory Fish* (WG 34). Dr. DiNardo noted that the WG has two needs: (1) further assistance with highly migratory species; and (2) a U.S. representative from PICES. (These needs were brought to the attention of Science Board by Dr. Logerwell.) In addition, the WG needs to explore specific science collaborations between PICES and ICS. One area of potential collaboration is on oceanographic conditions and the distribution and productivity of pelagic fish in the North Pacific Ocean. This could involve POC, FIS, BIO, TCODE, S-CCME, and CLIOTOP. Specific topics could be species' distribution, population productivity, and inclusion of oceanographic conditions into assessments to determine stock status. Another area of collaboration could be environmental interactions with fishers and fisheries (involving S-HD and S-CCME). Topics in this field could be fleet dynamics in response to oceanographic conditions and socio-economic impacts of changing ocean conditions. Finally, PICES and ISC could collaborate on the effects of climate change on ecosystems and pelagic fish dynamics (involving POC, FIS, S-CCME, NPESR, BIO, and CLIOTOP).

AGENDA ITEM 8

Relations with other programs and organizations

FIS members discussed the ICES ASC 2017 list of theme sessions for potential PICES co-sponsorship. The consensus was that the following were highest-ranked by FIS: #07, *Projected impacts of climate change on marine ecosystems, wild captured and cultured fisheries, and fishery dependent communities*; #08, *The practical use of ecosystem indicators for decision making*; combined #05, 12, 25 on stock assessment methods and uncertainties; and combined #17 and 13 on aquaculture. It was noted that the aquaculture topics are of particular interest to Asian member countries.

Dr. Vladimir Radchenko (NPAFC) gave an update on the North Pacific Anadromous Fish Commission and the International Year of the Salmon (IYS). The proposal and reports of the two scoping meetings are available at the NPAFC IYS webpage, http://www.npafc.org/new/science_IYS.html. FIS discussed nominations for: the North Pacific Scientific Steering Committee and the IYS Symposium Steering Committee. FIS recommends a salmon expert from Hokkaido University (Japan) – Dr. Kudoh or Dr. Shimizu – for membership on the North Pacific Scientific Steering Committee. FIS recommends Nathan Mantua (USA) or Brian Wells (USA) for the IYS Symposium Scientific Steering Committee. FIS also recommends Dr. Hal Batchelder to represent the PICES Secretariat on the IYS Symposium Steering Committee.

Dr. Laura Richards (PICES Chair) gave a presentation about the Fourth Meeting of Scientific Experts on Fish Stocks in the Central Arctic, held in Tromsø, Norway, in September 2016. She reported that PICES may receive a request to participate in an ICES/PAME Working Group on Integrated Ecosystem Assessment (IEA) for the central Arctic Ocean. The Working Group will meet in Seattle in spring 2017. If PICES considers participation, FIS is the logical committee to house this representation. FIS nominated Dr. Logerwell to serve this function.

Dr. Masahito Hirota (Japan) gave a presentation on a new MAFF project on building capacity for Ecosystem Based Fishery Management in coastal communities. The project will begin in April 2017 and extend for three years. Candidate countries include Vietnam and Indonesia. The approach will be to encourage capacity building with social assessments, value chain and ecological approaches and development of technology for local communities which can be managed by members of the community themselves. A database and manual on EBFM will be developed.

FIS – 2016

Dr. Gordon Kruse (USA) gave a presentation on the North Pacific Fishery Management Council (NPFMC). Some NPFMC current issues of PICES interest include: habitat protections, gear modifications, bycatch controls, protected species, electronic monitoring and the Bering Sea Fishery Ecosystem Plan.

Dr. Dan Margulies (IATTC) gave a presentation on the Inter-American Tropical Tuna Commission (IATTC) pre-recruit research on tunas in the eastern Pacific, with an emphasis on hatchery-based research with yellowfin tuna in Panama.

Franz Mueter (USA) represented Ecosystem Studies of Sub-Arctic Seas (ESSAS). ESSAS requested PICES support for a Russian or Japanese colleague working on early life history/growth/energetics in the Arctic to serve as an invited speaker for workshop 2 (*Climate change impacts on nearshore fish habitats in the Arctic*).

AGENDA ITEM 9

PICES-2017

PICES-2017 will be held in Vladivostok, Russia, September 20–October 1. The theme is “*Environmental changes in the North Pacific and impacts on biological resources and ecosystem services*”. FIS ranked the following Topic Session proposals as high priority, and FIS would co-sponsor them:

7 “*Can short-term forecasts inform long-term climate projections and vice-versa*”. FIS recommends that this proposal be combined with 6 “*Interannual variability in marine ecosystems*” (1 day);

9 “*Marine ecosystem health and human well-being: a social-ecological systems approach*” (1 day);

5 “*Coastal ecosystem conservation and challenge*” (½-day);

12 “*Environmental variability in Arctic and Subarctic and evaluating fishery management strategy*” (1 day).

FIS suggested that the topic session proposal be revised to clarify the MSE approach. Dr. Andrew Edwards (Canada) and Dr. Curry Cunningham are suggested as potential conveners.

FIS also felt that, although FIS would not co-sponsor, 3 “*Below and beyond maximum sustainable yield: ecosystem reference points*” (1 day) was high priority for PICES.

FIS ranked the following Workshops as high priority, and FIS would co-sponsor:

3 “*Linking oceanographic conditions to the distribution and productivity of highly migratory species and incorporation into fishery stock assessment models*” (1-day);

1 “*The role of the northern Bering Sea in modulating the Arctic II: international interdisciplinary collaboration*” (1 day).

FIS ranked the inter-session Workshop on “*Regional climate change vulnerability assessment for the large marine ecosystems of the northern hemisphere*” (3 days) and S-CCME Phase 3 planning workshop (1 day) as high priority.

AGENDA ITEM 10

Proposal for new Working Group

Dr. Hiromichi Ueno (Japan) gave an overview of the proposed Working Group on *Mesoscale and Submesoscale Processes*. This would be a POC-sponsored proposal. FIS will not be a parent committee, but will nominate a FIS member after the proposal is further developed.

AGENDA ITEM 11

Proposals for new meetings/workshops/conferences with PICES as co-sponsor

Dr. Logerwell presented a summary of a proposal for a PICES International Summer School on “*Advanced survey approaches for broad-scale fishery independent surveys of fish and their habitats*”. Science Board gave a provisional approval to this proposal at ISB-2016. The proponents of the proposal are Drs. Elizabeth Clark and Libby Logerwell (USA). The summer school would accommodate 20 students and would be convened in Washington or California. The FIS committee supported this summer school which would be of interest to students from Canada and Asia. FIS recommends using Dr. Anya Dunham as a contact, as Canada has a lot of expertise in such surveys (*e.g.*, ROVs on seamounts).

Dr. Keith Criddle (USA) gave a brief overview of MSEAS I (May 30–June 3, 2016, Brest, France) as well as a proposal for a PICES/ICES-sponsored MSEAS II (2019 or 2020 in Yokohama, Japan). MSEAS II is the inter-sessional meeting for the Section on *Human Dimensions of Marine Systems* (S-HD). The Section also proposes a website as a clearing house for information of mutual interest from PICES, ICES, *etc.* There may also be some Japanese funding. PICES is being asked to provide some in-kind support, as well as some financial support. FIS supports the proposal for MSEAS II.

AGENDA ITEM 12

High priority projects and activities with financial/policy implications

PICES has been invited to send a representative to the North Pacific Fishery Commission (NPFC) Pacific saury stock assessment workshop to be held December 13–15, 2016, in Busan, Korea. FIS nominates Dr. Sukgeun Jung (Korea) to be the PICES representative.

Dr. Phillip Mundy (USA) gave a presentation on the North Pacific Ecosystem Status Report (NPESR). A total of 435 nominations for Ecosystem Time Series Observations (ETSOs) have been submitted by the Committees. However, there are some gaps for fish, birds, and mammals, and for the Yellow Sea, East China Sea, and Kuroshio current region. In addition, contact information for nominations provided by FIS is needed. The Chair asked Dr. Mundy to send a list of nominations that need contact information as well the list of missing regions.

Dr. King represented FIS at the NPESR workshop, held in Sidney, BC, in June 2016. Workshop participants decided against the Longhurst provinces and instead adopted Large Marine Ecosystems (LMEs) to define regions. They proposed a numbering system for the LMEs. FIS needs to nominate members who will become chapter authors. Gaps will be addressed by the NPESR Editorial Board (Committee Chairs). Gaps include: no ETSOs for fish or fisheries from China; fish catch ETSOs are nominated for the Human Dimensions discipline, not the Fish and Invertebrate discipline; Japan nominated 84 fish stock indicators, however, a subset of these with linkages to climate/ocean processes or that indicate ecosystem status would be preferred.

AGENDA ITEM 13

Proposed publications

It costs about \$5,000 to publish each report in the PICES Scientific Report series and takes a fair amount of the Secretariat’s time. The demand for hard copies is decreasing and storage at the Secretariat is limited. It was suggested that PICES could direct the money for Open Access or other items instead and that PICES could publish reports electronically only. FIS supports this approach.

AGENDA ITEM 14

Inter-sessional activities and meetings, travel support requests

See Agenda Item 13.

FIS Endnote 1

FIS participation list

Members

Anya Dunham (Canada)
John C. Field (USA)
Tetsuichiro Funamoto (Japan)
Masahito Hirota (Japan)
Xianshi Jin (China, Vice-Chair)
Sukgeun Jung (Korea)
Jacquelynne R. King (Canada)
Gordon H. Kruse (USA)
Elizabeth (Libby) A. Logerwell (USA, Chair)
Kazushi Miyashita (Japan)
Mikhail Stepanenko (Russia)

Members unable to attend

China: Jiahua Cheng, Jie Kong
Korea: Jaebong Lee, Chang-Ik Zhang
Russia: Elena P. Dulepova, Alexander I. Glubokov

PICES

Laura Richards (Chair)

Observers

Keith Criddle (USA, Co-Chair S-HD)
Gerard DiNardo (ISC; Co-Chair WG 34)
Robert Foy (USA)
Anne Hollowed (USA, Co-Chair S-CCME)
Sukyung Kang (Korea)
Dan Margulies (IATTC)
Richard McBride (USA)
Franz Mueter (ESSAS)
Phillip Mundy (USA, SG-NPESR Chair)
Vladimir Radchenko (NPAFC)
Kenneth Rose (USA)
Xiujuan Shan (China)
Paul Spencer (USA)
Chi-Lu Sun (ISC)
Yongjun Tian (China)
Naoki Tojo (Japan)
Hiromichi Ueno (Japan)

FIS Endnote 2

FIS meeting agenda

Sunday, November 6, 2016

1. Introductions, and nomination of a rapporteur
2. Adoption of agenda
3. Volunteers for Award Committees for 2016
 - a) FIS Best Presentation Award
 - b) FIS Best Poster
4. FIS Chair's report
5. Update on FUTURE activities
 - a) FIS Chair report on FUTURE mini-symposium
 - b) FUTURE SSC liaison update on FUTURE. Sukyung Kang
6. Review of Standing Committees
 - a) What are three or four highest priority scientific activities that FIS is undertaking?
 - b) What are FIS's current or planned collaborations?
 - c) What are some ideas for new Expert Groups?
 - d) What are some gaps, challenges in terms of products and deliverables?

Wednesday November 9 14:00 – 18:00

7. Status Reports of FIS-sponsored Expert Groups
 - a) S-CCME: Joint PICES/ICES Section on *Climate Change Effects of Marine Ecosystems*. Anne Hollowed. Excerpts from Dr. Hollowed's report include:
 - i) "SICCOME co-chairs discussed the need for another side workshop to be held in conjunction with the ICES meeting in 2017. By 2017, modeling teams from Japan, CERES, COCA and ACLIM will

- have outputs available as will several other teams. With this in mind, we request a workshop that would focus on techniques for comparing results, within region structural uncertainty (multi-model inter-comparison), between region responses of marine species, and across region assessment of community impacts. SICCME co-chairs felt that this workshop will be critical since SICCME projections are expected to be delivered in time for the 4th Effects of Climate on the Worlds Ocean symposium in 2018.”
- ii) S-CCME also requests PICES support of ICES ASC Theme Session
 - b) WG 34: Joint PICES/ICS Working Group on *Ocean Conditions and the Distribution and Productivity of Highly Migratory Fish*. Siqing Chen
8. Relations with other programs and organizations
 - a) ICES ASC 2017 list of theme sessions for PICES co-sponsoring (TBD)
 - b) SCOR Working Group Proposals (TBD).
 - c) North Pacific Anadromous Fish Commission, International Year of the Salmon (IYS) update. Vladimir Radchenko
 - d) Observers
 - i) International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC). Chi-lu Sun and Gerard DiNardo. Oral presentation.
 - ii) North Pacific Anadromous Fish Commission (NPAFC). Vladimir Radchenko
 - iii) North Pacific Fishery Management Council (NPFMC). Gordon Kruse. Oral presentation
 - iv) Inter-American Tropical Tuna Commission (IATTC). Dan Margulies. Oral presentation on “IATTC’s pre-recruit research on tunas in the eastern Pacific, with an emphasis on hatchery-based research with yellowfin tuna in Panama”
 - v) Ecosystem Studies of Sub-Arctic Seas (ESSAS). Franz Mueter. Oral presentation.
 9. PICES-2017
 - a) Vladivostok, Russia, dates TBD.
 - b) FIS committee rankings of Topic Sessions and Workshops.
 - i) Please review proposals online before our meeting. The online system no longer allows us to rank proposals, so please email me your ranking and I will compile the results. This will not be our final ranking, but will serve as a starting point for our discussion of which proposals FIS will support.
 - <http://www.pices.int/meetings/annual/PICES-2017/2017-theme.aspx>
 - Click “Submit topic session/workshop proposal here”
 - Login, Update, then scroll to bottom of page and click on “View Session submissions” and “View Workshop submissions”
 - Proposers are encouraged to submit proposals online before October 1. The online system closes at midnight November 9. We will review any later submissions during the FIS meeting.
 - c) FUTURE at Annual Meetings
 10. Proposals for new FIS Working Groups, Study Groups and Special Projects
 11. Proposals for new meetings/workshops/conferences with PICES as co-sponsor (with funding implications)
 - a) PICES International Summer School on Advanced Survey Approaches for Broad-Scale Fishery Independent Surveys of Fish and their Habitats. Libby Logerwell
 - b) This is a placeholder for proposals received after publication of the Agenda.
 12. High priority projects and activities with financial/policy implications
 - a) North Pacific Fishery Commission (NPFC) Pacific Saury Stock Assessment Workshop, Busan, 13–15 December 2016.
 - b) North Pacific Ecosystem Status Report (NPESR)
 - i) Report on NPESR3-SG workshop, Institute of Ocean Sciences, Sydney BC, June 2016. Jacquelynne King
 - ii) Report on NPESR next steps. Phil Mundy
 13. Proposed publications (PICES Scientific Report series and primary journals)
 14. Intersessional activities and meetings, travel support requests
 15. Other business