

Report of the Fishery Science Committee

The meetings of the Fishery Science Committee (FIS) were held on Sunday, September 24 (18:00–20:00) and Wednesday, September 27, (14:00–18:00), 2017 in Vladivostok. Dr. Elizabeth A. Logerwell completed two full terms (2011–2017) as the Chair of FIS, and Dr. Xianshi Jin and Dr. Jacquelynne King were elected as the Chair and Vice-Chair, respectively, of FIS at PICES-2017. Dr. Jin called the meeting to order and welcomed members and observers (*FIS Endnote 1*). All members in attendance introduced themselves and absent members were noted. Members from the USA were not able to attend this year's meeting. The draft agenda was reviewed by the participants. After the addition of a WG 35 item and PICES-MAFF project introduction by Dr. Mitsutaku Makino to agenda, and rearrangement of agenda items, it was adopted (*FIS Endnote 2*). Dr. King agreed to act as rapporteur.

AGENDA ITEM 3

Changes to FIS membership

- Dr. Jie Kong, representing China, has replaced Dr. Qingyin Wang;
- Dr. Naoki Tojo, representing Japan, has replaced Dr. Kazushi Miyashita;
- Dr. Laura Brown (Canada) has stepped down as a Committee member.

AGENDA ITEM 4

Election of Chair and Vice-Chair of FIS

Deputy Executive Secretary, Dr. Harold (Hal) Batchelder, conducted the election for Chair and Vice-Chair of FIS. Dr. Xianshi Jin (China) was elected as Chair of FIS, replacing Dr. Elizabeth A. Logerwell (USA), and Dr. Jacquelynne King (Canada) was elected as Vice-Chair of FIS, replacing Dr. Xianshi Jin (China).

AGENDA ITEM 5

Volunteers for Award Committees for PICES-2017

- FIS Best Presentation Award
Judges: Dr. Jin (China) and Dr. Tetsuichiro Funamoto (Japan)
- FIS Best Poster Award
Dr. King (Canada) and Dr. Xiujuan Shan (China)

AGENDA ITEM 6

Annual review of FIS activities

1. PICES-2017 FIS Paper/Topic Sessions and Workshop

At PICES-2017, FIS sponsored:

- A ½-day FIS contributed Paper Session;
- A ½-day Topic Session (S5): *Coastal ecosystem conservation and challenge*;
- A 1-day Topic Session (S6): *Interannual variability in marine ecosystems and its coupling with climate projections*;
- A 1-day Workshop (W3): *Linking oceanographic conditions to the distribution and productivity of highly migratory species and incorporation into fishery stock assessment models*.

2. 2017 Inter-sessional symposia/sessions/workshops/meetings

- a) S-CCME: Joint PICES/ICES Section on *Climate Change Effects of Marine Ecosystems*, presented by Dr. King (elected as PICES Co-Chair of S-CCME).
- March 2017: In the **International Symposium on “Drivers of Dynamics of Small Pelagic Fish Resources”** – S-CCME convened **two workshops**: Workshop 4 “*Modeling migratory fish behavior and distribution*” and Workshop 5 “*Recent advances in the life stage ecophysiology of small pelagic fish: Linking laboratory, field and modeling studies*”;
 - March 2017: Galway, Ireland – S-CCME members coordinated and met at the **CERES Annual Meeting** to review progress on future scenarios for EU fisheries as well as vulnerability assessments;
 - March 2017: **Phase 3 planning workshop** in Victoria, British Columbia - S-CCME members met in conjunction with the small pelagics symposium to develop an Implementation Plan for Phase III. The next phase will add training, considerations of data storage and data exchange, emphasis on comparative analysis and synthesis and a greater emphasis on communication and outreach
 - May 2017: **Wakefield Symposium on “Impacts of a Changing Environment on the Dynamics of High-latitude Fish and Fisheries”** – S-CCME members served on the Scientific Steering Committee;
 - May 2017: **Scoping meeting for IPCC AR6 WGII report** was held in Addis Ababa, Ethiopia. Anne Hollowed gave a “setting the stage” presentation titled “*A summary of our current understanding of the implications of climate change and ocean acidification on marine ecosystems, their goods and services, and anticipated advancements for AR6*”. She also co-chaired the WGII breakout session on “*Natural and managed ecosystems: values and benefits*” which addressed two chapters: “Terrestrial and freshwater ecosystems including biodiversity” and “Marine ecosystems including biodiversity”;
 - June 2017: **ESSAS Open Science Meeting on Subarctic and Arctic Science “Moving in, out and across the Subarctic and Arctic marine ecosystems: shifting boundaries of water, ice, flora, fauna, people and institutions”** – S-CCME members served on the Scientific Steering Committee;
 - June 2017: S-CCME Co-Chairs were invited to participate in a Planning Meeting to prepare an **FAO Fisheries and Aquaculture Technical Paper** on “*Climate change implications for fisheries and aquaculture. Overview of current knowledge and responses*”, and were also requested to Lead the sections on North Atlantic and Atlantic-Arctic Fisheries, and on North Pacific and Pacific-Arctic Fisheries;
 - July 2017: S-CCME held a 3-day **Workshop on “Regional climate change vulnerability assessment for the large marine ecosystems of the northern hemisphere”** chaired by Myron Peck (Germany); Kathy Mills (USA); Elliott Hazen (USA) at ICES HQ, Copenhagen. The main goals were to: (1) Compare and contrast various **vulnerability assessment approaches** used for fisheries and aquaculture; (2) Discuss opportunities for **comparative studies** in different Large Marine Ecosystems (LMEs); (3) **Discuss best practices** for extending vulnerability assessments; (4) Draft short **statements on climate change impacts for regional ecosystem overviews**.
 - August 2017: S-CCME co-chairs were invited by the **European Defense Fund (EDF)** to participate in a **Workshop on “Climate-related impacts on fisheries governance”**;
 - September 2017: S-CCME convened **Theme Session A on “Projected impacts of climate change on marine ecosystems, wild captured and cultured fisheries, and fishery dependent communities”** at ICES ASC 2017 in Fort Lauderdale, USA. Convenors: Jon Hare (USA); John Pinnegar (UK); Myron Peck (Germany); 33 oral presentations were selected (out of a total of 40 submissions), along the broad sub-themes of distribution shifts (past and future), growth and metabolism, threats to fisheries and aquaculture, social and economic consequences;
 - September 2017: S-CCME convened a **POC/FIS Topic session (S6:) on “Interannual variability in marine ecosystems and its coupling with climate projections”** at PICES-2017. Convenors: Jackie King (Canada) and Yury Zenko (Russia). This session explored two aspects of inter-annual scale variability: First, the mechanisms responsible for year-to-year variability in

marine ecosystems including fisheries and second, to engage the climate, ocean and ecosystem modeling communities that are working on inter-annual to decadal-scales.

- For PICES-2018, S-CCME proposes a 1-day Workshop on “*Synthesizing projected climate change impacts in the north Pacific*”;
 - For PICES-2018, S-CCME requests a 1 day meeting.
- b) WG 34: Joint PICES/ICS Working Group on *Ocean Conditions and the Distribution and Productivity of Highly Migratory Fish*, presented by Dr. Gerard DiNardo, WG 34 PICES Co-Chair.
- WG 34 composition has been limited in highly migratory species representation from PICES. So far, there has been limited exchange of fisheries data, but sharing opportunities do exist; communication and exchange of information has been difficult. While the WG has made some progress as a result of two workshops, little progress has been made on product delivery items identified in the TORs. As such, the WG requests an extension of 1 year with an end date of fall 2019.

AGENDA ITEM 7

Relations with other organizations, programs and project

1. A PICES-MAFF Project on “Building capacity for the coastal monitoring by local small-scale fisheries” (2017–2020), presented by Dr. Mitsutaku Makino.
 - MAFF of the Fisheries Agency of Japan has provided a budget to support the project;
 - Dr. Makino requested a FIS Committee member to join the project, and if any member was interested, they could contact him.
2. ICES (International Council for the Exploration of the Sea)
 - A ICES/PICES S-CCME Strategic Planning workshop was held March 5, 2017 in Victoria, Canada;
 - ICES co-sponsored with PICES an Early Career Scientist (ECS) Conference, May 29–June 2, 2017, in Busan, Korea;
 - Aquaculture Steering Group: one of five currently sitting within SCICOM and overseeing the work of expert groups. Mike Rust is Chair. Expert groups in the Aquaculture Steering Group, cover:
 - i) Environmental interactions of aquaculture,
 - ii) Scenario planning for aquaculture,
 - iii) Ecological carrying capacity in aquaculture.
3. NPFC (North Pacific Fisheries Commission)
 - NPFC proposal for a joint Study Group to establish a framework for collaboration between PICES and NPFC; membership from FIS, BIO, POC is requested.
4. ICES/PICES/PAME Working Group on *Integrated Ecosystem Assessment for the Central Arctic Ocean* (WG 39)
 - PICES was asked to join at PICES-2016;
 - Aim is to improve the understanding of climate and ecosystem variability of the North Atlantic as well as in the Bering Sea and Gulf of Alaska in the North Pacific in order to provide scientific advice on issues such as the prospect for future fisheries in the Arctic Ocean and sensitivity and vulnerability in relation to shipping activities.
5. International Symposium on “Understanding changes in transitional areas of the Pacific”, April 24–26, 2018, La Paz, Mexico
 - Organized and led by PICES, CIBNOR (Centro de Investigaciones Biológicas del Noroeste, S.C.), Mexico; and CICIMAR (Centro Interdisciplinario de Ciencias Marinas), Mexico.

6. 4th International Symposium on “The effects of climate change on the world’s oceans”, sponsored by PICES, ICES, IOC and FAO, June 4-8, 2018, Washington, DC, USA.

AGENDA ITEM 8

Update on WG 35 Status Report and FUTURE SSC liaison update on FUTURE

1. Working Group on *Third North Pacific Ecosystem Status Report* (WG 35)
 - WG 35 is on time with its Implementation Plan and action items.
 - WG 35 has identified numerous ecosystem time series observations (ETSOs) that would be of importance to the upcoming status report, for which FIS Committee members may be able to help identify or submit;
 - The online database system was opened earlier this year, but only 65 ETSOs have been submitted which is much lower than expected and there is imbalance between regions and disciplines, *i.e.*, there are many ETSOs from the eastern side, and there are more physical oceanographic ETSOs than biological;
 - No ETSOs from Japan and China have been submitted yet.
2. FUTURE
FUTURE SSC Co-Chair, Dr. Sukyung Kang, presented an update:
 - FUTURE is the parent of WG 36 (*Common Ecosystem Reference Points across PICES Member Countries*), established at PICES-2016;
 - FUTURE Plenary (S10) would be held mid-week, on September 27, 2017, at the PICES Annual Meeting, and Committee members were encouraged to attend and provide opinions on FUTURE activities;
 - FUTURE SSC is currently writing a synthesis paper on the PICES’ science contributing to the research themes of its Science Plan, and will be published next year.

AGENDA ITEM 9

Selection of Best ECS presentations for FIS-sponsored sessions

1. Dr. Lisha Guan from China was awarded the Best Oral Presentation for her report on “*Improving estimations of fish species abundance and distribution via accounting for the effects of diel vertical movements*” in FIS-sponsored Topic Session S5 on “*Coastal ecosystem conservation and challenge*”.
2. Dr. Akira Hayashi from Japan was awarded the Best Poster award for his poster on “*Evaluation of the increasing trend of Japanese sardine Sardinops melanostictus recruitment in the waters north and west off Kyushu island, Japan*” in the FIS Paper Session.

AGENDA ITEM 10

Rankings of Topic Sessions and Workshops for PICES-2018, and inter-sessional workshops

FIS agreed to co-sponsor:

1. Topic Sessions:
 - *Fish production through food web dynamics in the boundary current systems* (High priority);
 - *Applying ecosystem considerations in science advice for managing highly migratory species* (High priority).
2. Workshops:
 - *Synthesizing projected climate change impacts in the north Pacific* (High priority);
 - *Identifying common reference points and leading indicators of ecosystem change*.

3. Inter-sessional Workshops:
 - *Quantifying thresholds in driver-response relationships to identify reference points;*
 - NPESR3.

AGENDA ITEM 11

Proposals for new FIS expert groups

1. Proposal from Dr. Jie Kong (China) for a Study Group on “Impacts of Mariculture on Coastal Ecosystems” (*FIS Endnote 3*): FIS supports the establishment of this Study Group, to be co-sponsored by the HD Committee, to explore PICES’ interest to establish a Working Group on impacts of mariculture on coastal communities and ecosystem services.
2. Proposal from (China) for a Study Group on “Impacts on Coastal Ecosystems by Hatchery Fish”: FIS does not support this new Expert Group.

AGENDA ITEM 12

Other business

No other business was discussed.

FIS Endnote 1

FIS participation list

Members

Elena P. Dulepova (Russia)
Tetsuichiro Funamoto (Japan)
Xianshi Jin (China, Chair)
Jie Kong (China)
Sukgeun Jung (Korea)
Jacquelynnne (Jackie) King (Canada, Vice-Chair)
Mikhail A. Stepanenko (Russia)
Naoki Tojo (Japan)

Members unable to attend

Canada: Anya Dunham
China: Jiahua Cheng
Japan: Masahito Hirota
Korea: Jaebong Lee, Chang-Ik Zhang
Russia: Alexander I. Glubokov
USA: John C. Field, Gordon Kruse, Elizabeth A. Logerwell

Observers

Zhengguo Cui (China)
Gerard DiNardo (USA)
Lisha Guan (China)
Anne Hollowed (USA)
Sukyung Kang (Korea)
Qun Lin (China)
Shufang Liu (China)
Mitsutaku Makino (Japan)
Xianhong Meng (China)
Xiujuan Shan (China)
Chi-Lu Sun (Chinese Taipei)
Cody Szuwalski (USA)
Changan Xu (China)
Sinjae Yoo (Korea)

FIS Endnote 2

FIS meeting agenda

Sunday, September 24, 18:00–20:00

1. Introductions and adoption of agenda
2. Nomination of a rapporteur
3. Changes to FIS membership
4. Election of FIS Chair and Vice-Chair
5. Volunteers for ECS Award for PICES-2017
6. Status reports of FIS-sponsored expert groups (S-CCME, WG 34)

Wednesday, September 27, 14:00–18:00

7. Relations with other organizations and programs and (All) and PICES-MAFF project by Dr. Mitsutaku Makino).
8. FUTURE SSC Liaison update on FUTURE and WG 35 report.
9. Selection of Best ECS presentation for FIS-sponsored sessions
10. Rankings of Topic Sessions and Workshops for PICES-2018, and inter-sessional workshops
11. Proposals for new FIS working groups, study groups and special projects.
12. Other business

FIS Endnote 3

**Proposal for a new Study Group on
Impacts of Mariculture on Coastal Ecosystems**

Objectives

To identify the impacts in coastal ecosystems that arise from regional- and large-scale mariculture in North Pacific.

Motivation

Mariculture, especially large-scale mariculture, is an important factor affecting coastal ecosystem. Studies on genetic and biological variables of mariculture and coastal ecosystem will reveal the impacts of culture activities. The working group aims to improve the understanding of microbial composition and quantities in both mariculture and coastal ecosystem, focusing on the impacts of genetics and pathogenic or harmful organisms to the coastal ecosystems. There has been no systematic and synergistic attempt to study the effects of pathogenic and harmful organism derived from mariculture on coastal marine ecosystem, which is a primary goal of the PICES FUTURE science plan. The new PICES working group will leverage the international expertise within PICES to “identify the impacts in coastal ecosystems that arise from regional- and large-scale mariculture.”

Terms of Reference

1. Obtain the information and changes of large-scale mariculture physical and biological variables.
2. Provide the information and changes of coastal microbials.
3. Identify the impacts of pathogenic organism to natural population.
4. Improve the impacted mariculture ecosystems.
5. Contribute to the FUTURE program.

Proposed Chair

Jie Kong, Senior researcher, Yellow Sea Fisheries Research Institute, CAFS, China

Proposed Membership

Xianhong Meng, Senior researcher, Yellow Sea Fisheries Research Institute, CAFS, China

Li Qi, Professor, Ocean University of China

Zhenmin Bao, Professor, Ocean University of China

Members from Canada, Japan, Korea, Russia and USA TBD

Proposed parent Committees: FIS and HD