

## Report of the Biological Oceanography Committee

The meeting of the Biological Oceanography Committee (BIO) took place from 18:00–20:00 h on Sunday, October 28, 2018 and 14:00–18:00 h on Wednesday, October 31, 2018, in Yokohama, Japan. The Chair, Dr. Se-Jong Ju, called the meeting to order and welcomed members and observers (*BIO Endnote 1*). All members in attendance introduced themselves and absent members were noted. The Chair reviewed membership changes and noted that Ms. Zijun Xu (China) and Prof. Ping Zhuang and members from Russia were unable to attend. Members from all other PICES member countries were present. The draft agenda was circulated. There were no changes/additions offered and the agenda was adopted (*BIO Endnote 2*). Dr. Akash Sastri agreed to act as rapporteur.



BIO participants at PICES-2018, front row from left: Julie Keister, Hye-Won Moon, Tsuneo Ono, Angelica Peña, Se-Jong Ju, Janelle Curtis, Kaoru Hattori, Taewon Kim. Back row from left: Wongyu Park, Motomitsu Takahashi, Atsushi Tsuda, Jinhui Wang, Akash Sastri.

### AGENDA ITEM 2

#### Membership changes

- **BIO:** Drs. Jinhui Wang and Zijun Xu are new members of BIO Committee replacing Profs. Song Sun and Yingjie Liu and representing China;
- **S-MBM:** Mr. Chao Song stepped down as a member representing China;
- **WG 32:** Dr. Zhuojun Ma and Ms. Shu Wang stepped down as members representing China;
- **WG 37:** Drs. Hyung-Ku Kang and Min-Chul Jang are new members representing Korea, and Dr. Russell Hopcroft is a new member representing USA.

## BIO-2018

### AGENDA ITEM 4

#### Annual review of BIO activities

- a) 2018 Inter-sessional symposia/sessions/workshops/meetings:
- NPFC/FAO Workshop on “*Protection of Vulnerable Marine Ecosystems in the North Pacific Fisheries Commission Area: applying global experiences to regional assessment*” (March 12–15, 2018; Yokohama, Japan). PICES co-sponsored and WG 32 member, Dr. Chris Rooper, participated in the workshop.
  - International Symposium on Pacific Transitional Area “*Understanding changes in transitional regions of the Pacific*” (April 22–26, 2018; La Paz, Mexico). BIO and S-CCME member, Dr. Angelica Peña was a member of the SSC and a co-convenor for Topic Session (S4) on “*Advances in understanding Pacific shelf-offshore transitional areas*”.
  - PICES/ICES/IOC/FAO 4th Symposium on “*The effects of climate change on the world’s oceans*” (ECCWO-4; June 4–8, 2018; Washington, DC, USA). BIO and S-CCME member, Dr. Angelica Peña was a member of the SSC and a co-convenor for Topic Session (S9) on “*Drifting into the Anthropocene: How will pelagic marine ecosystems be affected and what are the biogeochemical and lower trophic consequences*”. S-CCME member, Dr. Anne Hollowed, was Chair of the SSC.
  - PICES/ICES (S-CCME) Workshop on “*Political, economic, social, technological, legal and environmental scenarios used in climate projection modelling*” was convened June 9, 2018; Washington, DC, USA, immediately after ECCWO-4.
  - 2018 PICES Summer School on “*Coastal ocean observatory science*” (July 9–13, 2018; Victoria, Canada) WG 37 Co-Chair, and BIO and AP-NPCOOS member, Dr. Akash Sastri was a co-organizer.
- b) Publications
- PICES Scientific Report of WG 28 on *Development of Ecosystem Indicators to Characterize Ecosystem Responses to Multiple Stressors* (Editors: Motomitsu Takahashi and Ian Perry). Dr. Ju noted that the report is in review and may require some very minor revision.
  - PICES Special Publication (S-CC) on “*Ocean Acidification and Deoxygenation in the North Pacific Ocean*” (Leads: James Christian and Tsuneo Ono). In review.

### AGENDA ITEM 5

#### Selection of Best ECS presentations for BIO

PICES-2018 BIO Paper/Topic Sessions and Workshops, and selection of judges for BIO Best Presentation and Poster awards:

At the PICES-2018 Annual Meeting, BIO sponsored:

- A 1-day Topic Session (S2): *Fish production through food web dynamics in the boundary current systems;*
- A 1-day Topic Session (S4): *Indicators for assessing and monitoring biodiversity of biogenic habitats;*
- A 1-day Topic Session (S10): *Ocean acidification and deoxygenation and their impact on ocean ecosystems: Synthesis and next steps;*
- A 1-day Workshop (W1): *Ecological roles of gelatinous zooplankton: Evaluation, integration and future prospects in a more gelatinous ocean;*
- A ½-day Workshop (W4): *Synthesizing projected climate change impacts in the North Pacific;*
- A ½-day Workshop (W6): *Regional evaluation of secondary production observations and application of methodology in the North Pacific.*

Volunteers were appointed to evaluate oral (Dr. Curtis, Dr. Ju, Dr. Keister, Dr. Takahashi, and Dr. Tsuda) and poster (Dr. Ju, Dr. Peña, and Dr. Sastri) presentations. Rankings were compiled by the Chair before the Closing Ceremony. The Best Presentation Awards for a BIO-sponsored topic sessions (S4, S10 and BIO-Paper) were given to Ms. Jessica Cross (*Ocean acidification impacts on biogeochemistry and the decadal variability of Total Alkalinity in the North Pacific*) and BIO Best Poster Award (from S4, S10, BIO paper session and W6) to Mr. Takuyo Sato (*Nitrogen fixation and diazotroph community structure in the high latitude region around Hokkaido, northern Japan*) See also [Best Presentations at PICES-2018](#).

#### AGENDA ITEM 6

#### **Progress reports and future plans of BIO active groups**

The Chair asked BIO members about the International Quiet Ocean Experiment which monitors noise in the water column. The IQOE requested a PICES representative to act as a liaison. The Chair noted that there was a willing volunteer from MONITOR. However, it would be useful to also include an oceanographer with a biological background, such as a member of S-MBM. A decision has yet to be made on a second potential PICES representative to the IQOE.

a) S-CCME to FIS and POC and S-CC reported directly POC, in addition to presentations to BIO. PICES-ICES Section on *Climate Change Effects on Marine Ecosystems*

Dr. Angelica Peña gave an update on 2018 activities and accomplishments. S-CCME is chaired by 2 PICES representatives, Dr. Jackie King and Dr. Shin-ichi Ito, and 2 ICES representatives, Dr. John Pinnegar and Dr. Myron Peck. The Section hosted sessions at two meetings in 2018:

- 1) Climate Change and European Aquatic Resources (CERES) Annual Meeting, March 2018, Olhão, Portugal (coordinated by Dr. Peck and others, and attended by PICES S-CCME member, Dr. Anne Hollowed). The ICES-SICCME members met to review progress on future scenarios for EU fisheries as well as vulnerability assessments; and
- 2) The Fourth International Symposium on “*The effects of climate change in the world’s oceans*” (ECCWO-4), June 2018, Washington DC, USA. The symposium was organized by PICES, ICES, IOC, and FAO. S-CCME members were represented on the Scientific Steering Committee by Drs. Anne Hollowed (PICES/USA), Myron Peck (ICES/Germany), John Pinnegar (ICES/UK), Angelica Peña (PICES/Canada) and Kirsten Holsman (PICES/USA). S-CCME members hosted an ICES-PICES Workshop (chaired by Dr. John Pinnegar and convened by multiple S-CCME members) on “*Political, economic, social, technological, legal and environmental scenarios used in climate projection modelling*” immediately following the Symposium. The workshop initiated a synthesis paper based on 20 projects and scenario approaches and set forth to: a) compare scenario assumptions and specific model results; b) propose a workshop for MSEAS 2020; and c) convene a workshop, *Scenarios Forum 2019*, March 2019 in Denver, Colorado.
- 3) S-CCME members contributed two chapters to [FAO Fisheries and Aquaculture Technical Paper 627](#), July 2018: a) Chapter 5: North Atlantic and Atlantic-Arctic Marine Fisheries (Peck and Pinnegar); and b) Chapter 6: North Pacific and Pacific-Arctic Marine Fisheries (Holsman, Hollowed, King, Ito and Mueter). Dr. Peña noted that Chapter 6 represents a good description of S-CCME activities.
- 4) S-CCME hosted a theme session at the 2018 ICES Annual Science Conference (*Do participants at the ICES ASC know more about the marine climate change issues compared the wider European populace?* Chairs: Peck and Pinnegar) and a Workshop (W4: *Synthesizing projected climate change impacts in the north Pacific*, Chairs: Hollowed, Ito, King, and Peck) at the PICES-2018.

Dr. Peña provided a synopsis of activities for 2019 and noted that a 3-year Phase 3 (2018-2020) was submitted to PICES and ICES in March 2018.

## BIO-2018

### b) Section on *Carbon and Climate*

Dr. Tsuneo Ono gave an update on S-CC activities. Among the 2018 achievements was the completion of the PICES Special Publication draft on *Ocean Acidification and deoxygenation in the North Pacific Ocean*. The Section's major activity for 2018 was the International Symposium on "*Ocean Acidification*" hosted by the Ocean Policy Research Institute of the Sasakawa Peace Foundation with cooperation from PICES and the IOCCP-GOOS. The symposium was attended by 80 participants in Tokyo, Japan on October 28, 2018. S-CC members Richard Feely (USA) and Ishii (Japan) were keynote speakers; Dr. Ono moderated a panel discussion and Dr. James Christian was a participant in the panel. S-CC requests funding for participation in the 4<sup>th</sup> Global Ocean Acidification Observing Network meeting (GOA-ON, April 2019 in Hangzhou, China) as S-CC views this meeting as a good opportunity to connect with and align S-CC (PICES) activities with GOA-ON. S-CC also requests support for the SOLAS Open Science Conference (April 2019 in Sapporo, Japan).

### c) Section on *Marine Birds and Mammals*

S-MBM convened productive Workshop (W7) focused on prey consumption for MBM's at PICES-2018 on "*Diets, consumption, and abundance of marine birds and mammals in the North Pacific*". Other activities related to S-MBM during 2018 included:

- the Pacific Seabird Group meeting (February 2018, La Paz, Mexico);
- member attendance and oral presentation at the PICES International Symposium on "*Understanding changes in transitional areas of the Pacific*" (La Paz, Mexico, 2018);
- a Workshop entitled, "*What do seabirds reveal about climate change impacts on the world's oceans?*" at the PICES/ICES/IOC/FAO 4th Symposium on "*The effects of climate change on the world's oceans*" (June 2018).

Dr. Robert Suryan provided an update on the S-MBM Project (2015–2020): *Climate and Trophic Ecology of Marine Birds and Mammals*. Activities for the project include synthesis of new dietary information and estimates of food consumption using a new generation of bioenergetics models.

Dr. Kaoru Hattori sought BIO support for a ½-day Topic Session proposal on "*Implications of prey consumption by marine birds, mammals, and fish in the North Pacific*" and a ½-day Workshop proposal on "*Potential food competition between top predators and fisheries in the North Pacific*" at PICES-2019. S-MBM will also co-sponsor a 1-day Topic Session on "*Application of EBFM in the 21<sup>st</sup> century: progress and challenges in pelagic systems*" to be convened by Dr. Barb Muhling and others to be determined, if approved. S-MBM requires support to have better attendance from Russia and China at future meetings.

### d) WG 32: Working Group on *Biodiversity of Biogenic Habitats*

Dr. Janelle Curtis (WG 32 Co-Chair) presented an update on activities which included the final WG meeting held during PICES-2018. The meeting included an observer from the NPFC Secretariat. Dr. Curtis noted that most of the WG 32 Terms of Reference have been completed and requests a 1-year extension to complete the WG report. As part of future research initiatives, Dr. Curtis noted that the WG members would like to propose a new Working Group on the Biodiversity of Seamounts. This proposal was presented in detail by Dr. Curtis and discussed at the second BIO committee meeting on October 31, 2018 (see Agenda Item 10).

### e) WG 33: Joint PICES/ICES Working Group on *Climate Change and Biologically-driven Ocean Carbon Sequestration*:

Dr Ya-Wei Luo (WG 33) updated BIO on WG 33's activities on Sunday, October 28, 2018. BIO Chair, Dr. Ju, noted that this was a very productive Working Group and that the Chinese members in particular were instrumental in driving the terms of reference and success of this group forward. Among the activities summarized by Dr. Luo were: the WG kickoff meeting in the summer of 2016; a workshop held at PICES-

2017; and a final WG meeting held at PICES-2018. Dr. Luo presented titles and content of several WG-related publications and reports and examples of outside activities, including the establishment of an Artificial Upwelling System and the Marine Environmental Chamber Systems (MECS).

f) *WG 37: Working Group on Zooplankton Production Methodologies, Applications and Measurements in PICES Regions*

Dr. Akash Sastri (WG 37 Co-Chair) presented a status report on WG 37 activities. Since its establishment in 2016, WG 37 has:

- published a review paper: *Advances in biochemical indices of zooplankton production (Advances Marine Biology, 2017; DOI:10.1016/bs.amb.2016.09.001)*;
- prepared a manuscript: *Evaluation of trade-offs in traditional methodologies for measuring mesozooplankton growth rates: assumptions, advantages and disadvantages for field applications* for submission to the *Progress in Oceanography* Special Issue commemorating Dr. Bill Peterson;
- held workshops at PICES-2017 and PICES-2018;
- convened a [session](#) on zooplankton production methods at the Ocean Sciences Meeting in Portland, Oregon, USA in February 2018;
- organized a [Practical Workshop](#) (Phase 1) on traditional methods for secondary production for early career scientists at the Manazuru Research Station, Japan (19 participants from 5 PICES member countries) in the 2 days preceding PICES-2018.

A Phase 2 Practical Workshop focused on biochemical methods for measuring secondary production rates has been proposed to take place at the Hakai Institute Station on Quadra Island, BC in the 2 days preceding PICES-2019. Similar to the successful Phase 1 Practical Workshop, Phase 2 will consist of lectures, coastal sampling and laboratory exercises and will be co-sponsored by PICES, Hakai and Ocean Networks Canada.

WG 37 also proposed a 1-day joint ICES-PICES workshop on secondary production methods for the 2019 PICES Annual Meeting.

#### AGENDA ITEM 7

##### **Relation with other international organizations/programs**

Dr. Lisa Miller (SOLAS Chair) gave a short presentation on the SOLAS (Surface Ocean Lower Atmosphere Study) vision statement and two of its recent and upcoming activities: a) 7<sup>th</sup> SOLAS Summer School held July 23 to August 4, 2018 in Cargèse, Corsica, France. The Summer School hosted 64 students and 22 lecturers. Dr. Miller thanked PICES for sponsoring participation for two early career scientists from Canada to attend; b) SOLAS requests PICES to co-sponsor the SOLAS Open Science Conference, April 21-25, 2019 in Sapporo, Japan by providing support for invited speaker(s) or attendance of early career scientists. The meeting program is designed to build connections and develop new research initiatives and includes a dedicated an Early Career Scientist (ECS) session organized by ECS. Dr. Miller noted that SOLAS researchers are interested in potential contribution of volatiles (plastics degradation) to the atmosphere.

#### AGENDA ITEM 8

##### **FUTURE Program**

BIO Expert Group activities and relationship with FUTURE were presented by Expert Group members at the FUTURE plenary session on October 28, 2018 at the 2018 PICES Annual Meeting.

AGENDA ITEM 9

**Progress report on WG 35 – North Pacific Ecosystem Status Report3**

Dr. Ju reported that the Region 17 and Climate Sections of the NPSE3 have already been reviewed by Editorial Board Members. Dr. Sinjae Yoo (Co-Chair WG 35) presented an update of activities. The two main objectives of the WG are: 1) to publish NPSE3; and 2) establish an online system to develop a database of Ecosystem Time Series Observations (ETSO). Dr. Yoo noted that the system for writing and publishing the 3<sup>rd</sup> North Pacific Ecosystem Report has been changed relative to the first two editions. The goal was to publish an NPSE every 5 years, the most recent of which (NPSE 2) was published in 2010, so NPSE3 is behind. Dr. Yoo presented a suggested table of contents for NPSE 3 and noted the addition of new sections on *Biogenic Habitats* and *Human Dimensions*. WG 35 has revised its plan since the number of ETSOs currently submitted is less than was originally hoped for. The revised plan includes: hiring a specialist to handle ETSOs and communicate with lead authors; identifying a series of foundational ETSOs (*i.e.*, SST, SSS, oxygen, plankton and Chl-*a* datasets); and limiting the regional assessments to 30 pages, with an emphasis on information relevant to the synthesis chapter. NPSE3 is scheduled for completion in April/May 2019 as part of a synthesis and writing NPSE3 workshop. The goal is to submit NPSE3 for review during the summer of 2019 and present the publication at the PICES-2019.

AGENDA ITEM 10

**Review proposals of new Expert Groups**

A new proposed Working Group on Biodiversity of Seamounts was presented to BIO by Dr. Janelle Curtis (BIO, WG 32 Co-Chair). Seamounts represent 4% of the North Pacific seafloor and are hotspots of biodiversity with very high rates of endemism. The proposed WG would take advantage of the WG 32 efforts to develop maps of known and predicted benthic and pelagic biodiversity and provide a stronger position to predict seamount diversity on the basis of physical oceanography. The WG membership would consist of two Co-Chairs: Dr. Janelle Curtis (Canada) and Hye-Won Moon (Korea) and members representing each PICES member country. BIO discussed the merits of beginning a new (closely related) WG before the formal completion of WG 32. Several members suggested it would be better to wait until the WG 32 final report was completed. Following discussion of the merit and logistics of the proposed WG, Dr. Ju noted that BIO supports the proposed WG; however, the Science Board will make the final decision. Dr. Curtis discussed timing concerns with the Science Board Chair and informed BIO that she will delay the proposal until the PICES inter-session meeting in order to minimize overlap between the new WG and WG 32 activities.

AGENDA ITEM 11

**PICES 2019 Annual Meeting**

The next PICES Annual Meeting with the theme, “*Connecting science across communities in a changing North Pacific*”, will be held October 16–27, 2019 in Victoria, BC, Canada. BIO members revised and discussed all the proposed topic sessions and ranked them according to relevance. BIO assigned the highest ranks to the following three topic sessions:

- *Implications of prey consumption by marine birds, mammals, and fish in the North Pacific;*
- *Trends in ocean and coastal ecosystems and their services and its future;*
- *Identifying thresholds and potential leading indicators of ecosystem change: the role of ecosystem indicators in ecosystem-based management.*

BIO assigned the highest ranks to the following workshops:

- *Synthesis of bio-acoustics programs for monitoring zooplankton and fisheries in the North Pacific;*
- *Monitoring Non-indigenous species in PICES member countries: Towards best practices;*
- *PICES/ICES collaborative research initiative: Toward regional to global measurements and comparisons of zooplankton production using existing data sets;*
- *Potential food competition between top predators and fisheries in the North Pacific;*
- *Common Ecosystem Reference Points.*

#### AGENDA ITEM 12

##### **PICES-sponsored conference/symposia in 2018 and beyond**

BIO discussed and reviewed three upcoming PICES-sponsored meetings: a) The Marine Socio-Economic Systems (MSEAS) II conference, is tentatively scheduled for May 2020 in Yokohama, Japan; b) OceanObs'19, September 16-20, 2019, Honolulu, Hawaii; c) ICES International Shellfish Symposium, November 5-7, 2019, Trømsø, Norway; and completed NEOBIOTA 2018, September 4–7, 2018, held in Dublin, Ireland.

#### AGENDA ITEM 13

##### **Capacity Building**

a) Dr. Ju noted that the PICES/AP-CREAMS Summer School on physical processes for 2019 is now being considered by China. In 2018, PICES supported PEEC 2018 (February 23–25, 2018, Bamfield, Canada), PICES provided travel support for ECSs participating in SOLAS 7<sup>th</sup> Summer School (July 23–August 4, 2018, Kiel, Germany) and IMBeR ClimEco6 (August 1–8, 2018, Yogyakarta, Indonesia).

b) A practical training workshop Phase 1 was convened in October 2018 on “*Production methodologies and measurements for in situ zooplankton*”. This workshop was organized by WG 37 which is also planning a Phase 2 training workshop focused on “*Biochemical methods for the estimation of zooplankton production*”. The 2-day Phase 2 training workshop is proposed for 2019 immediately preceding PICES-2019.

#### AGENDA ITEM 14

##### **Documenting business meetings, topic sessions and workshops**

The Chair reminded BIO members and expert group (S-CCME, S-CC, S-MBM, WG 32, WG 33, WG 37) Chairs that summary reports should be submitted to the Secretariat within a month of the Annual Meeting.

#### AGENDA ITEM 15

##### **Other business**

Dr. Ju noted that Science Board elected Dr. Vera Trainer (USA) as the new Science Board Chair-elect during the PICES-2018. He also reminded BIO members that there will be a BIO Chair election at PICES-2019.

Dr. Ju initiated a discussion on a proposed PICES project on *Sea Turtle Ecology in Relation to Environmental Stressors in the North Pacific Regions* to be funded by the Korean sector of PICES. The project seeks to identify connectivity of green sea turtles in the North Pacific in an effort to identify the major environmental stressors experienced by these populations. The key questions addressed by this project are: (1) *How are the sea turtles found in Jeju Island, Korea, Kyusu Island, Japan, and Hong Kong, China connected to the other*

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*identified populations in the North Pacific areas?; and (2) What are the major environmental stressors to the sea turtles in the North Pacific regions?* Discussion on this project was led by Dr. Ju, and Dr. Suryan who spoke on behalf of S-MBM and asked questions about the association of this project with Korean regulatory agencies; legal issues surrounding hatch and release programs; and finally, given the geographical scope of this project, does the project team anticipate participation of non-Korean scientists?

### AGENDA ITEM 16

#### **Adoption of BIO report and recommendations to Science Board**

- The replacement of BIO Vice-Chair, Dr. Debra Iglesia-Rodriguez (USA) with Dr. Akash Sastri (Canada) due to her continual absence at PICES Annual Meetings;
- Better attendance of Chinese and Russian members at S-MBM meetings
- Support for SOLAS Open Science Conference
- Support for WG 37 Practical Training Workshop, Phase 2
- Support for a proposal for a new Working Group on *Biodiversity of Seamounts* after the completion of WG 32's final report.

#### **BIO Endnote 1**

#### **BIO participation list**

##### Members

Se-Jong Ju (Korea, Chair)  
Janelle Curtis (Canada)  
Kaoru Hattori (Japan)  
Julie Keister (USA)  
Taewon Kim (Korea)  
Hye-Won Moon (Korea)  
Wongyu Park (Korea)  
Angelica Peña (Canada)  
Akash Sastri (Canada)  
Motomitsu Takahashi (Japan)  
Atsushi Tsuda (Japan)  
Jinhui Wang (China)

##### Members unable to attend

China: Zijun Xu, Ping Zhuang  
Russia: Boris Kotenev, Alexei Orlov  
USA: Debora Iglesias-Rodriguez

##### Observers

Jackson Chu (Canada)  
Jennifer Fisher (USA)  
Christina Kong (Korea)  
Louis Legendre (WG 33 Co-Chair, ICES/France)  
Shufang Liu (China)  
Yawei Luo (China)  
Lisa Miller (SOLAS)  
Hye-Won Moon (Korea)  
Ken Morgan (Canada)  
Rob Suryan (USA)  
Sinjae Yoo (Co-Chair, WG 35, Korea)  
Samantha Zeman (USA)  
Zhimeng Zhuang (China)



**BIO Endnote 2****BIO meeting agenda**

1. Welcome, introductions, opening remarks
2. Membership changes
3. Adoption of agenda and appointment of rapporteur
4. Annual review of BIO activities
  - a) 2018 Inter-sessional symposia/sessions/workshops/meetings
  - b) Publications
5. Selection of Best ECS presentations for BIO
6. Progress reports and future plans of BIO active groups (S-CCME, S-CC, S-MBM, WG 32, WG 33, WG 37)
  - a) S-CCME and S-CC will report to FIS and POC, respectively.
  - b) S-MBM: Section on *Marine Birds and Mammals* (K. Hattori or P. O'Hara)?
  - c) WG32: Working Group on *Biodiversity of Biogenic Habitats* (J. Curtis or M. Kiyota)?
  - d) WG33: Joint PICES/ICES Working Group on *Climate Change and Biologically-driven Ocean Carbon Sequestration* (R. Rivkin or N. Jiao)
  - e) WG37: Working Group on *Zooplankton Production Methodologies, Applications and Measurements in PICES Regions* (A. Sastri or T. Kobari)
7. Relation with other international organizations/programs?
  - SOLAS, ICES, SCOR, NOWPAP, CLIVAR, IMBeR, IWC, Pacific Seabird Group, Future Earth FE-KAN
8. FUTURE Program (Sukyung Kang?)
9. Progress report on WG 35 – North Pacific Ecosystem Status Report3 (Sinjae Yoo?)
10. Review proposals of new Expert Groups (if any proposals submitted)
11. Planning PICES 2019 Annual Meeting (Victoria, Canada; Oct. 16–27, 2019)
  - Theme title: “Connecting science across communities in a changing North Pacific”
  - BIO-related sessions and workshops: discuss ranking and sponsorship (still no workshop proposed)
  - Proposed inter-sessional workshops: ranking & sponsorship (still none of workshops proposed)
  - Funding and prioritizing invited speakers. Provide feedback to SB

# Please keep in mind the deadline of the submission of session and workshop proposals for 2019 is Oct. 29, 2018.
12. PICES-sponsored conference/symposia in 2018 and beyond
  - a) MSEAS II
  - b) OceabObs'19
  - c) ICES International Shellfish Symposium
  - d) NEOBiota 2018
13. Capacity Building
  - a) Summer school;
  - b) Training Workshop – WG 37.
14. Documenting business meetings, topic sessions and workshops
  - a) Business meeting summary (S-CCME, S-CC, S-MBM, WG-32, WG-33, WG-37)
  - b) Topic Session/workshop summary: Conveners should submit outcome/summaries of their session/workshop to secretariat (hbatch@pices.int) by late-October.
15. Other business
  - SB Chair-elect election at PICES-2018;
  - # Remind that there will be also BIO Chair election at PICES-2019.
16. Adoption of BIO report and recommendations to Science Board