

NPAFC holds the First International Year of the Salmon Workshop in Khabarovsk, Russia: Wrap-up summary and subsequent activities

By Mark Saunders
IYS Director for the North Pacific

The North Pacific Anadromous Fish Commission (NPAFC) convened the First NPAFC-IYS Workshop on Pacific Salmon Production in a Changing Climate for two days, following its 26th Annual Meeting in Khabarovsk, Russia. Twenty-six oral presentations, including the three keynote oral presentations, and eight posters were presented. A total of 67 participants from Canada, Japan, Korea, Russia, and the USA, gathered in Khabarovsk on the banks of the Amur River on May 26–27. We welcomed 16 Russian participants, many of whom were new to the NPAFC and brought a wealth of knowledge. Oral and poster presentations given at the workshop are currently available at <https://npafc.org/presentations-workshop-2018/>. Extended abstracts are being compiled in Technical Report 11, which will be available online in the fall.

The IYS workshop in Khabarovsk is the first of a series of four IYS workshops that will be held in conjunction with NPAFC annual meetings through 2021. One of the reasons for hosting IYS workshops at successive annual meetings is to provide an opportunity to build awareness of the IYS in each NPAFC country and to encourage greater participation by researchers from host countries.

I was both excited and nervous as this workshop represented the beginning of a new process that we expect to be transformative for our approach to research. NPAFC research is guided by a five-year Science Plan that includes goals and research themes. In the past, each country reported annually on activities related to each theme and in the final year of the plan the Science Sub-Committee summarized progress. This retrospective process was quite challenging. The current plan runs from 2016–2020 and was designed to complement the International Year of the Salmon (IYS) and its five research themes/outcomes. It was decided that annual IYS workshops would provide a good opportunity to document progress on each of the themes and facilitate continuous learning over the four years of the initiative.



Mark Saunders

currently works for the NPAFC Secretariat as the Director for the North Pacific Region of the International Year of the Salmon (IYS) initiative. In 2016 he retired from the Canadian Department of Fisheries and Oceans

(DFO) where he headed up a Salmon, Aquaculture and Freshwater Ecology Division at the Pacific Biological Station in Nanaimo, BC, with staff working on salmon stock assessment, freshwater habitat, molecular genetics, fish health, and marine ecology. Mark has been active at NPAFC since 2009, serving as CSRS Chairperson from 2011–2014, and he is currently the Chairperson of the International Year of the Salmon (IYS) Working Group.

Continuous learning is an important element of the IYS, where over its lifetime we want to use a combination of research projects and Workshops/Symposia to achieve IYS outcomes that will collectively establish the conditions for the resilience of salmon and people. This first workshop focused on the outcome “*Status of Salmon*”, framed for the North Pacific as “*Status of Pacific Salmon and Steelhead Trout*”. It will inform subsequent work over the next year to plan and seek funding for projects.

Often when we attempt to hold plenary sessions of this type, those most fluent in English often dominate. In this instance I was very pleased with the lively discussion and scientific debate that engaged people from every country, despite the fact that it was at the end of a very long week for most of us.



INTERNATIONAL
YEAR OF THE SALMON

IYS OUTCOMES

<i>Status of salmon</i>	<i>The present status of salmon and their environments is understood.</i>
<i>Salmon in a changing salmosphere</i>	<i>The effects of natural environmental variability and human factors affecting salmon distribution and abundance are understood and quantified.</i>
<i>New frontiers</i>	<i>New technologies and analytical methods are advanced and applied to salmon research. Research is carried out to fill gaps in poorly studied regions of the salmosphere.</i>
<i>Human dimensions</i>	<i>Communities, Indigenous Peoples, youth, harvesters, scientists and resource managers across the Northern Hemisphere share knowledge and collaborate in the development of new tools and approaches to restoring, managing and sustaining salmon.</i>
<i>Information systems</i>	<i>Freely available information systems contain historic and current data about salmon and their environment.</i>
<i>Salmon outreach and communication</i>	<i>People understand the value of healthy salmon populations and engage to ensure salmon and their varied habitats are conserved and restored against the backdrop of increasing environmental change.</i>

***I had the pleasure of chairing a panel discussion at the end of the two days where I asked:
What did we learn with respect to our research outcomes?
What gaps and resulting priorities did we identify?***

As mentioned earlier, the “*Status of Salmon*” topic was a focus for the workshop. We learned that:

- Status appears to be documented to a degree in all regions, with at least catch statistics present to infer status
- Stocks are generally doing better in the north
- Some common trends in many stocks include declining size at age, and shifts to younger age classes
- Chinook exhibit a general trend of poor status
- North American and Russian chum and pink stocks are generally doing well or very well
- Japanese and Korean chum have exhibited declines in recent years
- There is a gap in information on steelhead trout

It was agreed that the status of salmon in the North Pacific is not well understood and there is a need for collated and standardized data on the status of salmon to be made available. There is also a need for an atlas and other tools to tell the “*salmon story*” in simple and compelling ways to the informed public and the general public.



*Sue Grant giving her oral presentation about an introduction to Canada's new state of the salmon program.
Photo Credit: NPAFC Secretariat*

The “Pacific Salmon and Steelhead Trout in a Changing North Pacific Ocean” topic was thought-provoking, which is not surprising given the title of the workshop. We learned:

- There are a range of approaches being used in the western and eastern North Pacific to link climate and salmon production, and there is a need to synthesize these methods
- Sea Surface Temperature is the common currency to examine local and regional linkages to a changing environment
- There is a need to investigate the mechanisms behind linkages to climate indices
- There is a need to resolve the "critical period hypotheses"
- Impact of competition is a key topic, especially if carrying capacity is reached
- Year class strength is set at different times depending on the ecosystem
- That anomalous 2015–2017 conditions are breaking down long standing relationships with ocean and climate indices
- Continued warming of the North Pacific Ocean will likely affect migration routes and predicted available area for distribution in the future but to what extent?
- There is improved understanding of chum migration in Japan and Korea
- Pink/chum/sockeye are migrating into the Arctic and have potential as a sentinel species. An interesting human dimension project is underway to explore the impact of these changes on northern Indigenous Peoples. There is genetic work underway to determine where the sockeye and pink are coming from.
- There is increasing focus on linking behaviour of individuals to physiological triggers
- Effects of freshwater extreme events are having significant impacts
- Algal blooms are affecting salmon populations and we could learn from documenting events across the basin. It is unknown what specifically triggers blooms.



Participants at the first NPAFC-IYS Workshop.
Photo Credit: NPAFC Secretariat



Scientists from our five member countries attend the workshop in Khabarovsk. Photo Credit: NPAFC Secretariat

The third topic covered the remaining three themes New technologies, Management, and Information systems. We learned:

- Forty percent of salmon biomass in the North Pacific are hatchery fish
- Adaptive hatchery management will be needed in the face of uncertain environments
- Japan is developing new strategies varying holding methods and time of release
- Survey indices can effectively predict returns when they survey a life history stage where cohort strength is set and subsequent ecosystems are stable
- There is a need to incorporate environmental conditions into forecasts
- There is a need for independent research for steelhead assessments
- There is a need to engage fisheries and resource managers in the IYS



Sergey Zolotukhin explaining his collection of rare postage stamps issued from 1980 to 2010 in the Soviet Union and Russian Federation dedicated to the protection of aquatic resources during the poster session.
Photo Credit: NPAFC Secretariat

There were several suggestions for improvement of workshop organization that should be mentioned, including:

- We should consider using technology to make sure the broader community of scientists across the hemisphere have an opportunity to learn from these meetings. We publish abstracts from workshops and proceedings from symposia but there are additional ways to engage a broader audience. As a matter of course, we could be webcasting and recording talks so that people can watch them later. Facebook has the capacity to broadcast live and engage audiences if desired. Language is a barrier, but countries could add an interpreter soundtrack later.
- Each talk should start with a Google Map that zooms into the area of interest for the talk
- The task of providing a more detailed synthesis of what is learned from each session could be accomplished by:
 - Asking members of the Theme Counsel Groups to draft the synthesis for their related theme/outcome
 - Ask presenters to assess the contribution of their work to the research theme/outcome



*Mark Saunders giving his wrap-up presentation.
Photo Credit: NPAFC Secretariat*



Presenters and participants at the first IYS-NPAFC Workshop. Photo Credit: NPAFC Secretariat



Brian Riddell posing a question.
Photo Credit: NPAFC Secretariat

I would like to acknowledge the hard work of the Workshop Organizing Committee, particularly the co-chairs Alexander Bugaev and Shigehiko Urawa as well as NPAFC Secretariat staff, including Jeongseok Park, Jennifer Chang, Alanna Harlton and Mariia Artushkina who did a great job in ensuring the workshop ran smoothly.

Organizing Committee

- Alexander Bugaev, co-chairperson (Kamchatka Fishery and Oceanography Research Institute, Russia)
- Ed Farley, Jr. (Auke Bay Laboratories, Ted Stevens Marine Research Institute, NMFS, USA)
- Ju Kyoung Kim (Inland Life Resources Center, FIRA, Korea)
- Denis Kotsyuk (Khabarovsk Department, TINRO-Center, Russia)
- Svetlana Naydenko (Pacific Scientific Research Fisheries Center; TINRO-Center, Russia)
- Mark Saunders (International Year of the Salmon (IYS) North Pacific Steering Committee, Canada)
- Shigehiko Urawa, co-chairperson (Hokkaido National Fisheries Research Institute, FRA, Japan)
- Jeongseok Park (NPAFC Secretariat, Canada)



Hayato Saneyoshi presenting at the poster session of the Workshop. Photo Credit: NPAFC Secretariat

I would like to particularly recognize Shigehiko Urawa who continues to be a force behind every NPAFC workshop with his excitement about the science and his unwavering commitment to keeping us on track with timelines!!

Time flies and planning is well underway for our second IYS Workshop that will be held in May 18–20, 2019, following our 2019 Annual Meeting in Portland, Oregon, USA. You can see the first call for this workshop entitled “*Salmon Ocean Ecology in a Changing Climate*” page 30 We are pleased to be combining forces with the Salmon Ocean Ecology Meeting that is a fixture every spring in the Northeast Pacific. The three topic sessions will be:

- Current status of salmon and their environments (Biological traits of key salmon populations; Migration and distribution; and Growth and survival)
- Salmon in changing ocean conditions (Linkage between salmon production, climate and ocean changes; Modeling the future for salmon)
- New technologies/integrated information systems for salmon research and management (New technologies; Integrated information and management system)

Prior to the 2nd Workshop in 2019, we will officially announce the International Year of the Salmon in Vancouver through an official media event on October 11th. It will feature official IYS announcements from dignitaries from NPAFC member countries and will bring together other partners from across the Pacific Rim to build momentum for the 2019 focal year. The primary objectives will be to generate awareness and support for the IYS with respect to outreach and research agendas. Speakers will include Canadian and US government officials, including the Honorable Jonathan Wilkinson, the Minister of Fisheries, Oceans and the Canadian Coast. Representatives from Japan, the Republic of Korea, the Russian Federation, the Province of BC and US state governments will also be invited. Three Local First Nations (Squamish First Nation, Tsleil-Waututh First Nation, and Musqueam First Nation, British Columbia, Canada) will be represented at the event, and Indigenous Peoples from other areas around the North Pacific may also attend. To start the event, there will be a performance by a local Indigenous dance group. At present, we are also investigating the possibility of streaming of the Opening Event on social media. For more information on event specifics and event updates, refer to the event description on Facebook.

I look forward to seeing all of you at the IYS opening event in Vancouver in October 2018 and in Portland, USA, in 2019—the focal year of the International Year of the Salmon.