The Second NPAFC-IYS Workshop on

Salmon Ocean Ecology in a Changing Climate

Date: May 18–20, 2019
Venue: The Embassy Suite by Hilton Portland Downtown
Portland, Oregon 97204-2726, USA
Host: The North Pacific Anadromous Fish Commission (NPAFC)
Partner: The Salmon Ocean Ecology Meeting (SOEM)

FIRST ANNOUNCEMENT and CALL FOR PAPERS

The North Pacific Anadromous Fish Commission (NPAFC; www.npafc.org) is pleased to invite you to the Second International Year of the Salmon (IYS) Workshop on "Salmon Ocean Ecology in a Changing Climate" to be held on May 18–20, 2019, at the Embassy Suite by Hilton Portland Downtown, Portland, Oregon, USA. The IYS Workshop will bring together scientists, managers and other stakeholders to consider the current status and future of salmon and their habitats for the conservation of anadromous populations in a changing world.

DEADLINE for ABSTRACT SUBMISSION is JANUARY 15, 2019

International Year of the Salmon (IYS)

The International Year of the Salmon (IYS) is a multiyear initiative launched by the North Pacific Anadromous Fish Commission (NPAFC) and North Atlantic Salmon Conservation Organization (NASCO). The IYS provides an international framework for collaborative outreach and research focusing on "Salmon and People in a Changing World". Through outreach efforts the IYS will raise awareness of what humans can do to better ensure salmon and their varied habitats are conserved and restored against increasing environmental variability. The IYS has six primary themes: (1) status of salmon; (2) salmon in a changing salmosphere; (3) new frontiers; (4) human dimension; (5) information systems; and (6) outreach and communication. The IYS will encourage research and leave a legacy of knowledge, information systems, research/analytical tools, and a new generation of scientists better equipped to provide timely advice to inform rational management of salmon. The IYS website (http://yearofthesalmon.org) is currently under construction and is expected to launch in mid September 2018. In the meantime, you can find more information on the IYS on the NPAFC website (https://npafc.org/iys/).

Workshop Objectives

- ✓ Improve current knowledge of the migration, distribution, growth and survival of salmon and their environment in the ocean;
- ✓ Increase understanding of the causes of variations in salmon production in a changing climate;
- ✓ Anticipate future changes in the distribution and abundance of salmon and their marine ecosystems;
- ✓ Develop and apply new technologies and analytical methods to research and management of salmon; and
- ✓ Invent integrated information/management systems to support research, sustainable management, and public understanding for the conservation of salmon.

Topic Sessions

Topic 1. Current status of salmon and their environments

Moderators: Jim Irvine, Michael Schmidt, and Ju Kyoung Kim

Time series of regional salmon production and biological and physical characteristics of key salmon populations and their ocean habitat provide broad scale perspectives necessary to examine the underpinnings of ocean salmon production and marine ecosystem conditions. The purpose of this session

is to understand and report: (1) the present status of Pacific salmon and their habitats, and (2) the factors influencing biological traits such as seasonal migration, distribution, abundance, growth, and survival.

1-1. Biological traits of key salmon populations
There is a continuing need to maintain and improve monitoring of spawning escapement, catch, smolt production, demographics, and other biological information for potential use in the forecasting of salmon return strength or ocean survival. Long-term time series are particularly valuable in understanding linkages between climate and Pacific salmon production.
(**Keywords:** key populations, spawning escapement, catch, body size, fecundity, smolt production, and other biological/habitat traits)

1-2. Migration and distribution
Anadromous salmon migrate in the ocean to maximize their growth and survival. Their seasonal migration and distribution are stock specific, and fundamental migration routes may be genetically fixed. Increasing information on seasonal ocean migration and distribution of key salmon populations contributes to: planning effective ocean monitoring surveys, better climate modelling and forecasting, better management to avoid incidental salmon bycatch, and efficient enforcement activities to protect salmon in the ocean.
(**Keywords:** seasonal migration model, migration mechanism, migration capacity, physical condition, bycatch, and others)

1-3. Growth and survival
Variation in the early marine survival of Pacific salmon has been hypothesized to have a major role in determining the numbers of adults that return to spawn. However, there has been limited evidence to support this hypothesis. We need to understand the causes of mortality at each stage of the salmon life cycle and evaluate whether any particular life history period is critical. With the potential of limited food resources in the ocean, it is important to understand the implications of habitat use by Pacific salmon populations at various levels of abundance, the productive capacity of habitats for each life stage, and the potential implications of density dependent effects.
(**Keywords:** ocean entry, critical period, feeding, growth, density dependence, fish health, predators, prey organisms, SST, ocean habitat conditions, and others)

Topic 2. Salmon in changing ocean conditions
Moderators: Ed Farley, Ric Brodeur, and Svetlana Naydenko
Climate change may result in significant variability in the carrying capacity and usable habitat (distribution) of salmon in the ocean, potentially leading to expanded use of the Arctic Ocean, at least seasonally. An improved understanding of linkages between environmental changes and salmon production will help to anticipate the economic consequences of these changes. The objectives of this session are to: (1) understand and quantify the effects of environmental variability and anthropogenic factors affecting salmon distribution and abundance, and (2) project future changes with efficient models.

2-1. Linkage between salmon production, climate and ocean changes
In recent years, there have been increases in the abundance as well as shifts in the distribution of salmon in northern regions, but some decreases at the southern edges of distribution along the Asian and North American continents. This sub-session aims to examine how geographical shifts in salmon distribution and abundance are related to climate-induced changes in habitat/environments operating at regional and local scales.
(**Keywords:** climate impact, marine survival mechanism, mismatch, carrying capacity, linkage between salmon, climate and ocean changes, and others)

2-2. Modeling the future for salmon
Reliable forecasting of salmon distribution, abundance and survival is important for sustainable resource management and for projecting future variations in production due to changing climate. Modelers are encouraged to develop statistical models as well as ecosystem models coupled with biophysical models to

estimate the impact of climate change on salmon populations, and to create future scenarios for salmon distribution and abundance.
(**Keywords:** short-term and long-term forecast models, energy budget models, biophysical models, salmon runs, shift of distribution and abundance, and others)

Topic 3. New technologies/integrated information systems for salmon research and management
Moderators: Brian Wells, Mark Saunders, and Shigehiko Urawa
With recent advancements in technology and analytical methods, new tools are available to better study and manage salmon. The IYS aims to further advance in the development of new and emerging technologies and analytical methods that are immediately available for salmon research and management. In addition, the IYS seeks to create open-access information systems for salmon research and management, and to develop management systems for the sustainable conservation of salmon in a changing climate.

3-1. New technologies
Novel stock and fish identification methods including molecular analyses, genomics, environmental DNA (eDNA), hatchery mass marking, intelligent tags, and remote sensing, continue to be developed, and these tools are integral to the formulation of effective models predicting the distribution and abundance of salmon populations.
(**Keywords:** genomics, environmental DNA, molecular identification, mass marking, intelligent tags, salmon observation systems, remote sensing, microchemistry, and others)

3-2. Integrated information and management systems
The IYS seeks to develop integrated information/management systems using new and existing data sets to increase the resiliency of salmon and people in a changing world, and support research and management as well as public understanding the role of salmon in ocean ecosystems. For the sustainable conservation of uncertain salmon populations, we need to deveop the integrated management systems including the ecosystem-based management, the management strategy of harvest and escapements, the conservation of genetic units and diversity, the restoration and protection of habitat, the control of diseases and pollutions, and the renovation of enhancement/hatchery technologies.
(**Keywords:** integrated information system, ecosystem-based management, management strategy of harvest and escapements, genetic conservation, habitat restoration and protection, control of diseases and pollutions, renovation of enhancement/hatchery technologies, and others)

Oral and Poster Presentations
The workshop will be conducted by oral and poster presentations in English.

Schedule
January 15, 2019:	Abstract submission due
Mid–February 2019:	Announcement of abstract selection to authors
Late–February 2019:	Second announcement of workshop and registrations including a program
Early–March 2019:	Workshop and hotel registrations open
Mid–April 2019:	Workshop and hotel registrations due
May 18–20, 2019:	Workshop
June 30, 2019	Extended abstracts due

Workshop Venue
The Embassy Suite by Hilton Portland Downtown
319 SW Pine Street, Portland, Oregon 97204-2726, USA
TEL: +1-503-279-9000
FAX: +1-503-497-9051

http://embassysuites3.hilton.com/en/hotels/oregon/embassy-suites-by-hilton-portland-downtown-PDXPSES/index.html

Registration and Hotel Accommodations

Registration and hotel information will be available on the NPAFC website (www.npafc.org) after early March 2019.

Submitting Abstracts

- ✓ Abstracts for oral and poster presentations must be received **by January 15, 2019** at the NPAFC Secretariat by e-mail (secretariat@npafc.org).
- ✓ Abstracts must be prepared according to the guidelines and sample format (see below).
- ✓ The Organizing Committee will select abstracts by mid-February 2018, and authors will be notified of the results by the NPAFC Secretariat.
- ✓ Presenters who had their abstracts selected will receive guidelines for their oral or poster presentations and a formatting guide for extended abstracts from the NPAFC Secretariat. Refer to "Workshop Proceedings" for extended abstracts.

Abstract Guidelines

- ✓ Limit the abstract to 400 words and submit using Microsoft Word according to the sample format shown below.
- ✓ Tables and figures are not included in the abstract.
- ✓ Indicate the intended topic session (and sub-session).
- ✓ Specify the presenter with an asterisk (*). Please use full first and last names for each author (not just first initial).
- ✓ State the preference for (1) oral, (2) poster, or (3) oral presentation but poster is acceptable. The Organizing Committee reserves the right to change the presentation from an oral to a poster depending on time constraints.
- ✓ The abstract should begin with a clear statement of the problem or objectives, give a brief summary of methods and the major results, and end with a substantial conclusion. Do not use vague statements, such as "results will be discussed".
- ✓ Accepted abstracts will be included in the program and abstract booklet for circulation at the workshop.
- ✓ Accepted abstracts for oral and poster presentations may not be edited before printing the abstract booklet. Authors are responsible for the clarity and accuracy of the information presented in the abstract.

Sample Format for Submitting Abstracts

Topic Session: Topic 1. Current status of salmon and their environments (1-3. Growth and survival).
Preferred Presentation Format: (1) oral

Title: Late ocean entry timing provides resilience to populations of Chinook and sockeye salmon in the Fraser River

Authors: Richard J. Beamish*, Ruston Sweeting, and Chrys Neville
Pacific Biological Station, Fisheries and Oceans Canada, 3190 Hammond Bay Rd., Nanaimo, B.C., V9T 6N7, Canada (*Email: richard.beamish@xxxx.ca; Tel: 1-250-756-xxxx; Fax: 1-250-756-xxxx)

Abstract: Most sockeye salmon from the Fraser River enter the Strait of Georgia by early May and most Chinook salmon by mid May. There are populations of Chinook salmon from the South Thompson River area and one population of sockeye salmon from the Harrison River that enter the Strait of Georgia almost two months later. The productivity of these species with a late ocean entry life history strategy has been exceptional in recent years. The reasons for the recent improved productivity of the late ocean-entry life history type are not known, but the success identifies the importance of a temporal spread in ocean entry

timing of the aggregate of populations. The recent success also reminds us that ocean entry timing of the aggregate of populations has evolved to be able to adapt to long-term changes in the timing of prey populations in the early marine period.

Workshop Proceedings

The extended abstracts will be compiled into the workshop proceedings and issued as a NPAFC Technical Report after the workshop. The Technical Report will be available online at the NPAFC website (https://npafc.org/technical-report/). Oral and poster presenters are asked to submit an extended abstract to the NPAFC Secretariat (secretariat@npafc.org) by June 30, 2019.

Organizing Committee

- Richard Brodeur, vice-chairperson (SOEM; Northwest Fisheries Science Center, NOAA, USA)
- Ed Farley, Jr., chairperson (Auke Bay Laboratories, Ted Stevens Marine Research Institute, NMFS, USA)
- Jim Irvine (Pacific Biological Station, DFO, Canada)
- Ju Kyoung Kim (Inland Life Resources Center, FIRA, Korea)
- Svetlana Naydenko (Pacific Scientific Research Fisheries Center; TINRO-Center, Russia)
- Mark Saunders, vice-chairperson (International Year of the Salmon (IYS) North Pacific Steering Committee, Canada)
- Michael Schmidt (SOEM; Long Live the Kings, USA)
- Shigehiko Urawa, vice-chairperson (Hokkaido National Fisheries Research Institute, FRA, Japan)
- Brian Wells, vice-chairperson (SOEM; Southwest Fisheries Science Center, NOAA, USA)
- Jeongseok Park (NPAFC Secretariat, Canada)

For More Information Contact:

Jeongseok Park, NPAFC Deputy Director
Suite 502, 889 West Pender Street, Vancouver, B.C., V6C 3B2 Canada
Tel: +1-604-775-5550, Fax: +1-604-775-5577
E-mail: secretariat@npafc.org; Website: http://www.npafc.org