



# PACIFIC HERRING SUMMIT

## MEETING PROCEEDINGS

RICHMOND, BRITISH COLUMBIA, CANADA

JUNE 8-10, 2015

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UNIVERSITY *of*  
WASHINGTON



*Northwest Fisheries  
Science Center*  
NOAA FISHERIES SERVICE



Fisheries and Oceans  
Canada



## **MEETING PLANNING COMMITTEE**

### **NOAA Northwest Fisheries Science Center**

Phil Levin

### **University of Washington**

Tessa Francis

André Punt

### **Fisheries and Oceans Canada**

Nathan Taylor

### **Facilitator**

Susan Abs

### **Graphic Recordings**

Sam Bradd

## Participant List

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<b>First Name</b>	<b>Last Name</b>	<b>Affiliation</b>
Adrian	Stier	NOAA Fisheries
Alec	MacCall	
Alejandro	Frid	CCIRA
André	Punt	University of Washington
Andy	Webster	Ahousaht First Nation
Andy	Olson	Tseshat First Nation
Anna	Weinstein	Audubon Society
Anne	Salomon	Simon Fraser University
Archie	Little	Nuchatlaht First Nation
Ashleen	Benson	Landmark Fisheries, CFRN
Bob	Rezansoff	HIRB, HCRS
Brenda	Spence	Fisheries and Oceans Canada
Brent	Campbell	Ahousaht First Nation
Brigitte	Dorner	Driftwood Cove Designs
Caihong	Fu	Fisheries and Oceans Canada
Carmel	Lowe	Fisheries and Oceans Canada
Caroline	Fox	Raincoast/University of Victoria
Carrie	Humchitt	Gladstone/Heiltsuk Nation
Catherine	Rigg	Haida Nation
Chad	Ormond	Q'ul-Ihanumutsun Aquatic Resources Society
Christine	Gruman	Huu-ay-aht Nation
Cindy	Boyko	Haida Nation
Corey	Jackson	Fisheries and Oceans Canada
Dan	Okamoto	Simon Fraser University
Dana	Lepofsky	Simon Fraser University
Davin	Holen	Alaska Department of Fish and Game
Dennis	Chalmers	BC Ministry of Agriculture
Divya	Varkey	UBC
Don	Hall	Nuu-chah-nulth Tribal Council
Doug	Hay	Fisheries and Oceans Canada emeritus
Earl	Newman	Heiltsuk Nation
Eleni	petrou	University of Washington
Éva	Plagányi	CSIRO Australia
Floyd	Campbell	Ahousaht First Nation
Gary	Vigers	Heiltsuk Science Advisor
Geoff	Shester	Oceana
George	Frank	Hesquialt Fisheries
Greg	Thomas	Herring Industry Advisory Board



Gus	Brown	Heiltsuk Nation
Harvey	Humchitt	Heiltsuk Nation
Harvey	Kitka	Sitka Tribe of Alaska
Helena	Frank	Hesquialt Fisheries
Hilary	Thorpe	Parks Canada
Iain	McKechnie	University of Oregon, Simon Fraser University
Jaclyn	Cleary	Fisheries and Oceans Canada
Jake	Schweigert	HCRS
Jameal	Samhourai	NOAA Fisheries
Jean	Landry	Fisheries and Oceans Canada
Jeff	Kennedy	Fisheries and Oceans Canada
Jeffery	Scott	UBC
Jennifer	Boldt	Fisheries and Oceans Canada
Jessica	Gill	Sitka Tribe of Alaska
Jim	Lane	Nuu-chah-nulth Tribal Council
Jimmy	Thomson	Hakai Institute
Johanna	Vollenweider	NOAA Fisheries
John	Bolton	Heiltsuk Tribal Council - Marine Portfolio
John	Trochta	University of Washington
Josh	Silberg	Hakai Institute
Katie	Matthews	Pew Charitable Trusts
Keith	Gladstone	Heiltsuk Nation
Kelly	Brown	Heiltsuk Nation
Kray	Van Kirk	Alaska Department of Fish and Game
Kristen	Wong	Fisheries and Oceans Canada
Larry	Greba	Kitasoo First Nation
Laura	Brown	Fisheries and Oceans Canada
Lingbo	Li	University of Washington
Lorenz	Hauser	University of Washington
Lynn	Lee	Simon Fraser University
Margot	Hessing-Lewis	Simon Fraser University
Marilyn	Slett	Heiltsuk Nation
Megan	Hinzman	Univ of Saskatchewan
Megsie	Siple	University of Washington
Melissa	Evanson	Fisheries and Oceans Canada
Melissa	Poe	Washington Sea Grant
Michael	Schmidt	Long Live the Kings
Michael	Baines	Sitka Tribe of Alaska
Michelle	Washington	Sliammon First Nation
Mike	Reid	Heiltsuk Fisheries
Natalie	Ban	University of Victoria



Nathan	Taylor	Fisheries and Oceans Canada
Norm	Sloan	Parks Canada
Ole	Shelton	NOAA Fisheries
Paul	Ryall	Fisheries and Oceans Canada
Paul	Starr	HRCS
Penny	White	CCIRA
Peter	Hall	Fisheries and Oceans Canada
Phil	Levin	NOAA Fisheries
Philip	Loring	University of Saskatchewan
Rajeev	Kumar	UBC
Rebecca	Martone	Center for Ocean Solutions, Stanford University
Reg	Moody	Heiltsuk Nation
Rob	Morley	Canadian Fishing Co., HCRS
Rod	Carswell	Nuchatlaht First Nation
Roger	Kanno	Fisheries and Oceans Canada
Ron	Tanasichuk	Heiltsuk Science Team
Ron	Hientz	NOAA Fisheries
Russ	Jones	Haida Nation
Ryan	Bartling	California Department of Fish and Wildlife
Sahir	Advani	UBC
Sam	Bradd	Drawing Change
Sarah	Harper	UBC
Scott	Wallace	David Suzuki Foundation
Scott	Pegau	Prince William Sound Science Center
Sherri	Dressel	Alaska Department of Fish and Game
Steve	Carpenter	HCRS
Steve	Marx	Pew Charitable Trusts
Steven	Groves	Fisheries and Oceans Canada
Susan	Abs	Eclipse Environmental Consulting
Suzanne	von der Porten	Simon Fraser University/Hakai
Tessa	Francis	University of Washington Tacoma
Thomas	Thornton	Oxford University
Tim	Kulchyski	Cowichan Tribes
Tom	Greiner	California Department of Fish and Wildlife
Tom	Carruthers	The University of British Columbia
Tony	Pitcher	The University of British Columbia
Wade	Smith	UBC/Hakai
Walter	Michael	Nuchatlaht First Nation

## Introduction

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The Ocean Modeling Forum (OMF), in collaboration with Fisheries and Oceans Canada, convened a Pacific Herring Summit from June 8-10, 2015, Richmond, British Columbia. Over 115 people from along the west coast of North America attended the Summit, including representatives from 14 First Nations/Tribes; 5 federal, state and provincial agencies; 11 academic institutions; 5 NGOs; and 4 fishing industry organizations.

The Summit served as the launch of the OMF's Pacific Herring Working Group which will focus on incorporating dimensions of human wellbeing and traditional knowledge into formal herring fishery assessments. That working group will conduct the technical work of comparing multiple models and evaluating the role of Pacific herring in the social-ecological system, and asking how human dimensions can be included in management. The Herring Working Group will meet in a series of workshops over 1-2 years, beginning in early 2016.

## Aims and Objectives

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The Pacific Herring Summit convened modelers, technical experts, managers, representatives from Canadian First Nations and United States Tribes, and key stakeholders from the West Coast of North America (California to Alaska) to launch the OMF Pacific Herring Working Group, and to inform the OMF working group efforts.

The key objectives of the Herring Summit were:

- develop a framework of the herring social-ecological system, including identifying ecological, social, cultural, economic and environmental connections to Pacific herring;
- identify the key social-ecological issues on the West Coast related to herring;
- identify opportunities to integrate traditional ecological knowledge into herring fisheries assessment and management decisions;
- identify areas of uncertainty and knowledge gaps common among herring fisheries assessments Coast-wide; and
- direct the efforts of the OMF Working Group.

## Proceedings

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The Summit was opened with a welcome by Mr. Larry Grant, an Elder from the Musqueam First Nation in Vancouver, BC. Following Mr. Grant's welcome were presentations by representatives of Canadian First Nations and United States Native American tribes, offering their perspectives on cultural, ecological, and economic connections to herring, and on changing herring populations. These presentations were recorded graphically by Sam Bradd, resulting in stunning images that were displayed in the meeting room to provide context and content for the remainder of the Summit. Those images are available for viewing [here](#).



Presentations on the second day of the Summit addressed the role of herring in the social-ecological system, including oceanographic influences on herring, the role of herring in the food web, relationships between herring and human wellbeing, the spatial structure of herring populations, and archaeological perspectives on herring abundance and distribution. All told, during the Summit there were presentations by 22 experts, offering presentations related to the social, ecological, and economic role herring play along the west coast of North America. Presentations from the Summit are viewable [here](#).

A series of four small group discussion sessions was held during the Summit, focused on both individual components of the herring social-ecological system and the system as a whole. Participants were aggregated into 13 pre-assigned groups of 8-9 people, each with an appointed discussion facilitator and note taker, to jointly respond to a series of questions posed by the Summit organizers. The group membership varied over the 4 discussion sessions, so that the knowledge shared was neither always the result of a shared belief system among common backgrounds, nor limited by any restrictions felt in mixed-background groups. Groups shared the results from their discussions after each discussion session.

### **Speakers:**

Russ Jones, Haida Fisheries Program  
Don Hall, Nuuchahnulth Tribal Council  
Larry Greba, Kitasoo/Xaixai First Nation  
Kelly Brown, Heltsuk Integrated Resource Management Department  
Michael Baines, Sitka Tribal Council  
Tim Kulchuski, Cowichan Tribes  
Eva Plaganyi, CSIRO, Australia  
Megsie Siple, University of Washington (for Tim Essington)  
Seimthlut (Michelle Washington), Sliammon First Nation  
Jennifer Boldt, Fisheries and Oceans Canada  
Ron Heintz, NOAA Alaska Fisheries Science Center  
Iain McKechnie, University of British Columbia  
Lorenz Hauser, University of Washington  
Harvey Kitka, Sitka Tribe of Alaska  
Tom Greiner, California Department of Fish and Wildlife  
Kurt Stick, Washington Department of Fish and Wildlife (by Tessa Francis)  
Nathan Taylor, Fisheries and Oceans Canada  
Ron Tanasichuk  
Sherri Dressel, Alaska Department of Fish and Game  
Davin Holen, Alaska Department of Fish and Game  
John Trochta, University of Washington

### **Roundtable Discussions:**

How are herring connected to the social-ecological system from California to Alaska?  
What are the major threats to herring stocks?  
Perspectives on uncertainty in herring spatial structure  
Perspectives on regional assessment approaches  
Opportunities for traditional knowledge to contribute to key issues  
Development of a social-ecological framework for herring  
Development of conceptual models of the herring social-ecological system  
Defining the focus of the Ocean Modeling Forum's Pacific herring working group

## Outcomes

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Outcomes from the Herring Summit included:

1. improved understanding of the West Coast herring social-ecological system, including the spatial structure of herring populations and how communities are connected to local herring populations;
2. a list of key knowledge gaps in our understanding of the West Coast herring social-ecological system;
3. a conceptual model of the herring social-ecological framework, including key social, cultural and ecological components, based on West Coast experiences and perspectives; and
4. recommended next steps in developing the full OMF case study.

## Products

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- The final Summit agenda.
- A final list of Summit attendees.
- The Sam Bradd graphic recording images.
- Presentations from the Summit.

## Next Steps

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The Summit organizers are writing a manuscript for publication in a scientific journal based upon the findings of the Herring Summit, and specifically presenting the Pacific herring social-ecological conceptual framework and the key knowledge gaps identified.

The OMF is presently forming its Pacific Herring Working Group, which will focus on incorporating dimensions of human wellbeing and traditional knowledge into formal herring fishery assessments. The working group will conduct the technical work of comparing multiple models and evaluating the role of Pacific herring in the social-ecological system, and asking how human dimensions can be included in management. The Herring Working Group will meet in a series of workshops over the next 1-2 years, beginning in early 2016. Questions can be addressed to tessa at uw dot edu.<sup>1</sup>

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<sup>1</sup> **The Pacific Herring Summit was convened as the result of generous funding from the Pew Charitable Trusts and the David and Lucile Packard Foundation.**



**Pacific Herring Summit**  
 June 8-10, 2015  
 Executive Airport Plaza Hotel, Richmond, BC  
 Westminster Room  
**Agenda**

**June 8**

10:30 am – 10:45 am	Welcome	<i>Morgan Guerin, Musqueam First Nation</i>
10:45 am – 11:00 am	Introduction and goals for the day	<i>Phil Levin, Ocean Modeling Forum and NOAA Northwest Fisheries Science Center Nathan Taylor, Fisheries and Oceans Canada</i>
11:00 am – 11:45 pm	Presentations: Regional Perspectives on Changing Herring Populations Haida Gwaii Herring: Historical trends and sustainability concerns	<i>Russ Jones, Haida Fisheries Program</i>
11:45 pm – 12:30 pm	Observations on WCVI herring	<i>Don Hall, Nuu-chah-nulth Tribal Council</i>
12:30 pm – 1:30 pm	LUNCH	
1:30 pm – 2:15 pm	Kitasoo/Xaixais perspectives on Herring management	<i>Larry Greba, Kitasoo/Xaixais First Nation</i>
2:15 pm – 3:00 pm		<i>Kelly Brown, Heiltsuk Integrated Resource Management Department</i>
3:00 pm – 3:30 pm	BREAK	
3:30 pm – 4:15 pm	Yaa Khusgé Yaaw Woogoo: The Knowledge of Herring	<i>Michael Baines, Sitka Tribal Council</i>
4:15 pm – 5:00 pm	Herring importance from a Cowichan perspective	<i>Tim Kulchyski, Cowichan Tribes</i>
5:00 pm – 5:30 pm	Wrap up and plans for tomorrow	<i>Summit Organizers</i>

**June 9**

8:30 am – 8:45 am	Recap from Day 1 and goals for Day 2	<i>Summit Organizers</i>
8:45 am – 9:30 am	Keynote Address: Integrating traditional socio-cultural considerations into fisheries assessment and management : Torres Strait tropical lobster fishery example	<i>Eva Plaganyi, CSIRO, Australia</i>
9:30 am – 10:00 am	How do we measure the importance of species in food webs, and why do we sometimes get it wrong?	<i>Tim Essington, University of Washington</i>
10:00 am – 10:30 am	The role of herring in culture and human wellbeing	<i>Siemthlut (Michelle Washington), Sliammon First Nation</i>
10:30 am – 10:45 am	BREAK	
10:45 – 11:45 am	Roundtable Discussions: How are herring connected to the social-ecological system from California to Alaska?	
11:45 am – 12:15 pm	The role of climate and ocean drivers in fish productivity	<i>Jennifer Boldt, Fisheries and Oceans Canada</i>
12:15 pm – 1:15 pm	LUNCH	
1:15 pm – 1:45 pm	Effect of Predators on Pacific Herring in the Gulf of Alaska	<i>Ron Heintz, NOAA Alaska Fisheries Science Center</i>
1:45 pm – 2:45 pm	Roundtable Discussions: What are the major threats to herring stocks?	
2:45 pm – 3:15 pm	Towards An Archaeological Baseline for Pacific Herring	<i>Iain McKechnie, University of British Columbia</i>

4:30 pm – 5:30 pm	Roundtable Discussions: Perspectives on uncertainty in herring spatial structure	
5:30 pm – 5:45 pm	Wrap up and plans for tomorrow	<i>Summit Organizers</i>

**June 10**

8:30 am – 8:45 am	Recap from Day 2 and goals for Day 3	<i>Summit Organizers</i>
8:45 am – 9:00 am	Presentations: Regional assessment approaches Monitoring and Management of California’s Pacific Herring Fisheries	<i>Tom Greiner, California Department of Fish and Wildlife</i>
9:00 am – 9:15 am	Herring Assessment and Fishery Management in Washington State, USA	<i>Washington Department of Fish and Wildlife (by proxy)</i>
9:15 am – 9:30 am	Assessment approaches for BC herring	<i>Nathan Taylor, Fisheries and Oceans Canada</i>
9:30 am – 9:45 am	Forecasting the return of British Columbia’s Central Coast herring	<i>Ron Tanasichuk</i>
9:45 am – 10:00 am	Pacific herring in Alaska: population surveys, stock assessments, and commercial harvest strategies	<i>Sherri Dressel, Alaska Department of Fish and Game</i>
10:00 am – 10:15 am	BREAK	
10:15 am – 10:30 am	Fisheries as culture: subsistence herring fisheries in Alaska	<i>Davin Holen, Alaska Department of Fish and Game</i>
10:30 am – 10:45 am	Transitioning toward a Bayesian assessment model of the Pacific herring in Prince William Sound, AK	<i>John Trochta, University of Washington</i>
10:45 am – 11:15 am	Group Discussion re: Regional assessment approaches	
11:15 am – 12:15 pm	Facilitated Discussion: Observations on the opportunity for traditional knowledge to contribute to key issues	<i>Anne Salomon, Simon Fraser University</i>
12:15 pm – 1:15 pm	LUNCH	
1:15 pm – 2:15 pm	Group Discussion: Development of a social-ecological framework for herring	<i>Phil Levin, Ocean Modeling Forum and NOAA Northwest Fisheries Science Center</i>
2:15 pm – 3:15 pm	Roundtable Discussions: Development of conceptual models of the herring social- ecological system	
3:15 pm – 3:45 pm	BREAK	
3:45 pm – 4:45 pm	Group Discussion: Social-ecological conceptual models	<i>Phil Levin, Ocean Modeling Forum and NOAA Northwest Fisheries Science Center</i>
4:45 pm – 5:15 pm	Group Discussion: Moving forward – Defining the focus of the Ocean Modeling Forum’s Herring Working Group	<i>Phil Levin, Ocean Modeling Forum and NOAA Northwest Fisheries Science Center</i>
5:15 pm – 5:30 pm	Wrap up	<i>Summit Organizers</i>