VENUE

Hotel Scandic City Bergen, Håkonsgaten 2-7, Bergen, 12 -14 June 2019
Reception 11 June 1800 hrs at the same address

ORGANISATION

**Co-conveners**: *Olav Sigurd Kjesbu*, Institute of Marine Research, Norway; *Iain Suthers*, School of Biological, Earth and Environmental Sciences, University of South Wales, Australia; *Jennifer Hubbard*, Department of History, Ryerson University, Canada, and *Vera Schwach*, NIFU, Nordic Institute for Studies in Innovation, Research and Education, Norway

**Scientific Steering Committee:** *Gregory Ferguson-Cradler*, University of Bergen, Norway; *Bronwyn M. Gillanders* (until medio April 2019), University of Adelaide, Australia; *Jane Aanestad Godiksen* (from medio April 2019), Institute of Marine Research, Norway; *Brian R. MacKenzie*, DTU Aqua, Denmark; *Tom J. Miller*, Chesapeake Biological Laboratory, University of Maryland, USA; *Helen Rozwadowski*, University of Connecticut, USA

**Local Organizing Committee:** *Olav Sigurd Kjesbu,* IMR; *Vera Schwach,* NIFU; *Andreas Angerman,* IMR; *Kathrin Gjerdevik,* IMR; *Anne Karin Hufthammer,* UIB*; Thassya C. dos Santos Schmidt,* IMR; *Martina Stiasny,* IMR*; Gunnar Sætra,* IMR*; Maik Tiedemann,* IMR*, Peter Tjørnevig,* IMR*, Kari Østervold Toft,* IMR *and Monica Tolleshaug,* IMR.

## TUESDAY 11 JUNE 2019

***18:00–19:30 Reception*** with canapés and ***Registration***
***19:30–22:00 Sightseeing onboard R/V Johan Hjort***, Nykirkekaien, Bergen. Refreshments/snacks will be provided.

## WEDNESDAY 12 JUNE 2019

***08:00–09:00 Registration***

**09:00–09:30** Welcome Speech on behalf of IMR, and Special Lecture: **Director/Professor Sissel Rogne, IMR**, Norway: State of the Ocean (In Norwegian with English translation)

***09:30–11:15 Session 1: Opening Session of the ICES Symposium:*** "Johan Hjort (1914): a Classic to Honour and Challenge". The opening of the ICES Symposium aims to explain the intention of this interdisciplinary history-marine research symposium and establish an overarching horizon.
*Session Chairs: Olav Sigurd Kjesbu, Iain Suthers, Jennifer Hubbard* and *Vera Schwach*

09:30–09:35 Welcome Speech on behalf of ICES: **Professor Brian R. MacKenzie, DTU-Aqua**, Denmark

09:35–09:45 Introduction by the co-conveners: Johan Hjort (1914). Why discuss a scientific legacy, and do it in an interdisciplinary context?

09:45–10:15 Keynote 01: **Professor Ray Hilborn, University of Washington**, USA: Extending and expanding the legacy of Johan Hjort in management of global fisheries

10:15–10:30 Oral 01: **Editor-in-Chief Howard Browman**, **ICES Journal of Marine Science**: Everything that you need to know about submitting your manuscript for publication in the Hjort Symposium issue of the *ICES Journal of Marine Science*

10:30–10:50 Oral 02: **Tiedemann et. al.** Norwegian spring-spawning herring *(Clupea harengus)* under double pressure: suppressed recruitment by ocean warming and intensified predation on larvae by northward migrating Atlantic mackerel (*Scomber scombrus*)

10:50–11:10 Oral 03: **Welicky et al.** Is marine disease of fishes on the rise? Using natural history collections to quantify change in fish-parasite infection over a century-long timescale

11:10-11:15 Room for extra questions

***11:15–11:30 Coffee break***

***11:30–13:15 Session 2a: Scientific legacy, theories and study species***
*Session Chairs: Gregory Ferguson-Cradler* and *Jane Aanestad Godiksen*
In this session we aim to explore theories, traditions and long trends in fisheries investigations. Any fish stock in the world could be addressed. We have selected commercially important categories of stocks to exemplify current and long trends in fisheries research and advice to be presented as keynotes by outstanding marine scientists. Each keynote will be followed by complementary presentations (oral and poster), but with flexibility to create stimulating and, perhaps controversial, discussions. This session will cover issues including vital rates (bioenergetics, natural mortality, growth, recruitment), intra- and interspecific stock dynamics, and how to implement environmental stressors in the era of ocean observing and climate change.

11:30–12:00 Keynote 02: **Principal Scientist Svein Sundby, IMR**, Norway: Hjort (1914) vs. Helland-Hansen and Nansen (1909) – cold case reopened 100 years later

12:00–12:30 Keynote 03: **Professor Akinori Takasuka**, **The University of Tokyo**, Japan **et al.**: Revisiting a paradigm of density-dependent effects in the life history of fish

12:30–12:50 Oral 04: **Plaganyi et al.** A perfect storm on the recruitment front

12:50–13:10 Oral 05: **Van Neste**: From superwhale to supertuna? Taking stock of Japan's experimental fishing and whaling programs

13:10-13:15 Room for extra questions

***13:15–14:00 Lunch***

***14:00–15:45 Session 2b: Scientific legacy, theories and study species***
Continuation of 2a
*Session Chairs: Gregory Ferguson-Cradler* and *Jane Aanestad Godiksen*

14.00–14:30 Keynote 04: **Director/Research Scientist, Robert L. Stephenson**, **DFO**, St Andrews Biological Station, Canada: Changing herring paradigms

14:30–14:50 Oral 06: **Berg et al**. Dynamics of young herring (*Clupea harengus*) and sprat (*Sprattus sprattus*) populations along the Norwegian Skagerrak coastline

14:50–15:10 Oral 07: **Enberg et al**. Eight decades of changes in herring reproductive investment: effects of fishing, environment, and conspecific density

15:10–15:45 Flash presentations (3 min) of Posters 01-08 (see below)

***15:45–16:00 Coffee and tea***

***16:00–17:30 Session 3: The making of fisheries scientists***
Here we turn to the fisheries scientists of today. This session explores how their cultural and disciplinary backgrounds shaped their decisions to go into this research field. Which factors influenced their choice of

career and topics; how did the personal ambitions and creativity impact fisheries science? Did fisheries collapses, environmental crises or "role models" play a part?
**Chair and Moderator: Professor Jennifer Hubbard, Ryerson, University**, Canada

***17:30–19:00 Session 4: Exhibition and poster session***
***Exhibition Part 1. Johan Hjort and the Bergen he saw***
A photo exhibition of the life and work of Johan Hjort in Bergen will be part of the symposium.
**Research Professor Vera Schwach, NIFU**, Norway will give an introduction.
***Exhibition Part 2. Modern readings of scales and otoliths.*** **Senior scientist Jane Aanestad Godiksen, IMR**, Norway will provide guidance on the techniques used today in marine laboratories and reading experts will demonstrate case studies.

***Poster session***
Refreshments and snacks will be served.

In addition, we offer the opportunity to visit also this evening the IMR's research vessel *Johan Hjort*, located in Bergen harbor, following the Poster session:

***19:00–22:00 Sightseeing onboard R/V Johan Hjort***, Nykirkekaien, Bergen. Refreshments/snacks will be provided.

## THURSDAY 13 JUNE 2019

***09:00–11:00 Session 5 On the shoulders of the giants of marine science***
*Session Chairs: Tom J. Miller* and *Helen Rozwadowski*
When should fisheries science revisit the past, and where should it search for new answers? This session examines and challenges the intellectual heritage and suggest ways forward. We want paper which search for a deeper insight in the present stage of scientific basis and encourage search for new ideas and scientific framework.

09:00–09:30 Keynote 05: **Killam Memorial Chair/Professor Jeffrey A. Hutchings, Dalhousie University**, Canada: Stretching the scales of fisheries science: adaptation, regime shifts, and recovery

09:30–09:50 Oral 08: **van Neste**: Inexhaustible optimism: T.H. Huxley and the invention of ignorant fishermen, state science, and the limitless bounty of the sea

09:50–10:10 Oral 09: **Prince**. Rescuing and operationalizing Beverton and Holt's misunderstood concept of life history ratios.

10:10–10:30 Oral 10: **Suthers & Everett:** Fine-scaling Hjort and Dannevig in time or space, for a seascape of low larval mortality, with the potential for stock enhancement

10:30-10:50 Room for extra questions

10:50-11:00 Announcements

***11:00–11:20 Coffee break***

***11.20–13:00 Session 2c: Scientific legacy, theories and study species***
Continuation from 2a-b:
*Session Chairs: Tom J. Miller and Helen Rozwadowski*

11:20–11:50 Keynote 06: **Senior Research Scientist, Karen Evans, CSIRO**, Tasmania, Australia: Multi-decadal variability in the spatial dynamics of southern bluefin tuna: insights from the past informing the future

11:50–12:10 Oral 11: **Fiksen & Reglero:** The enigmatic spawning strategy of bluefin tuna

12:10–12:30 Oral 12: **García-Seoane et al**. Vertical distribution and behavior of mesopelagic fauna

12:30–12:50 Oral 13: **Langbehn et al.** Poleward distribution of mesopelagic fish is constrained by seasonality in light

12:50-13:00 Room for extra questions

***13:00–14:00 Lunch***

***14:00–16:00 Session 6: Science and management, an uneasy pair?***
This session examines how science has influenced fisheries management decisions and fisheries policy, and the ways fisheries policy and management shaped fisheries/marine science. We welcome presentations (and papers) from marine scientists as well as managers emphasizing the value of past and on-going fisheries research in their daily operational decisions.
*Session Chairs: Tom J. Miller and Helen Rozwadowski*

14:00–14:30, Keynote 07: **Researcher Dorothy Jane Dankel, University of Bergen**, Norway: What would Hjort do? An analysis of Hjort's "Unity of Science" in light of current fisheries controversies

14:30–14:50 Oral 14: **Lam**: Seafood ethics: A values-based approach to sustainability

14:50–15:10 Oral 15: **Jørgensen et al**. Can a food systems approach redefine ecosystem-based fisheries management?

15:10–15:30 Oral 16: **Arkhipkin et al**. Cephalopods: fisheries science, stock assessment and management in the fast lane

15:30–15:50 Oral 17: **Pitcher & Lam:** Making management strategy evaluation ethical

15:50-16:00 Room for extra questions

***16:00–16:30 Coffee/tea, get ready for the walk***

***16:30–18:30 Johan Hjort and the Bergen he saw: A marine science walking tour through Bergen***
The marine science walk "*Across Bergen, in the footsteps of Johan Hjort*" will visit important historical sites for marine research. Start: Hotel Scandic, ending point: Fløibanen, bottom station

***18:30 Departure with Fløibanen***

***19:00 Conference Dinner at Fløien Folkerestaurant***

## FRIDAY 14 JUNE 2019

***09:00–11:00 Session 2d: Scientific legacy, theories and study species***
Continuation from 2a-c.
*Session Chairs: Gregory Ferguson-Cradler* and *Jane Aanestad Godiksen*

09:00–09:30 Keynote 08: **Science Leader/Principal Scientist Timothy M. Ward, SARDI**, Australia **et al**.: Paradigm of pragmatism: managing uncertainty in Australia's small pelagic fisheries

09:30–09:50 Oral 18: **Myrseth Aarflot et al.:** Bathymetry structures predator-prey dynamics between zooplankton and fish in marine pelagic ecosystems

09:50–10:10 Oral 19: **Dichmont et al**. Operationalising triple bottom line harvest strategies

10:10–10:30 Oral 20: **Håkonsrud Jensen et al**.: Apparent manipulation: How parasites may modify fish behaviour without using any tricks

10:30–10:50 Oral 21: **Skaug & Bravington:** Close kin mark recapture in fisheries

10:50-11:00 Room for extra questions

***11:00–11:30 Coffee/tea***

***11:30–13:00 Session 7 When historians meet marine scientists***
This is a special dialogue between historians and invited marine scientists. The goal is to investigate the past, present and to explore potential new directions. We plan to send out questions beforehand. The session may include questions and comments from the public.
Chair and moderator: **Associate Professor Helen Rozwadowski, University of Connecticut**, USA.

***Lunch 13:00–14:00***

***14:00–15:40 Session 2e*: *Scientific legacy, theories and study species***
Continuation from 2a-d.
*Session Chairs: Brian R. MacKenzie* and *Helen Rozwadowski*

14:00–14:20 Oral 22: **Michalsen et al**.: Vertical dynamics of spawning cod (*Gadus morhua* L.)

14:20–14:40 Oral 23: **Johansen et al.:** Genetic connectivity among Norwegian coastal cod in Borgundfjorden and other Atlantic cod ecotypes

14:40–15:00 Oral 24: **Frugård Opdal et al**.: Pre-programmed or flexible? Lab and field studies don't add up and suggest strong individual influence on spawning time in Atlantic cod

15:00–15:20 Oral 25: **Neuheimer et al.:** Using biologically relevant time-scales to identify timing controls and predict match-mismatch dynamics

15:20–15:40 Oral 26: **Haugen et al**. Interdisciplinary stock identification of North Atlantic porbeagle (*Lamna nasus*)

***15:40–15:55*** Summing up: First hands impressions from an interdisciplinary symposium: **Professor Brian R. MacKenzie, SCICOM ICES**

***15:55–16:00*** Closing of the Symposium, the Co-conveners

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## POSTERS

Poster 01 (incl. flash presentation): **Reid et al**.: Johan Hjort (1869–1948) and Harald Dannevig (1871-1914): Some surprising parallels

Poster 02 (incl. flash presentation): **Østgaard et al**. Spawning time fidelity of spring and autumn spawning herring, *Clupea harengus*

Poster 03 (incl. flash presentation): **Sharov**. The unknown Baranov. Forty years of polemics over the formal theory of the life of fishes

Poster 04 (incl. flash presentation): **Falch Sorø et al**. How does timing of hatching affect the survival of larval cod, *Gadus morhua*, in a changing environment?

Poster 05 (incl. flash presentation): **Deng et al**. Where are the prawns? Exploring methods to account for deviations in forecast catch in the Northern Prawn Fishery in Australia

Poster 06 (incl. flash presentation): **Miller & Dressel**. Determining the reproductive maturation of Pacific herring in Sitka Sound Alaska using scale measurements

Poster 07 (incl. flash presentation): **Stäbler**: Sensitivity of multispecies maximum sustainable yields to trends in the top (marine mammals) and bottom (primary production) compartments of the southern North Sea food-web

Poster 08 (incl. flash presentation): **Cao et al**. A simulation comparison of spatiotemporal and spatially-implicit size-structured models

Poster 09: **Claireaux et al**.: The Rosa Lee Phenomenon revisited: sampling and selectivity affect the apparent changes in growth rate

Poster 10: **Winter & Arkhipkin**. Science and management in the Falkland Islands: a small territory with a large industrial fishery

Poster 11: **Bogstad et al**. A comparison of the population dynamics of Northeast Arctic cod and haddock during the first three years of life

Poster 12: **Ljungström et al**. Parent-offspring conflict over reproductive timing: Ecological dynamics far away and at other times may explain spawning variability in Pacific herring

Poster 13: **Bologa**. Quasquicentennial development of marine sciences in Romania and its maritime Dobrogea

Poster 14: **Lajus et al**. Multi-decadal fluctuations of the White Sea threespine stickleback population and their correlations with climate in the Arctic

Poster 15: **Sun et al**.: The influence of environmental variabilities on early growth revealed by otolith microstructure for largehead hairtail (*Trichiurus japonicus*) in China Seas

Poster 16: **Vikebø et al**. Wind forcing is key to predict spring bloom dynamics under climate change

Poster 17: **Zhu et al**. Growth variations of young-of-the-year Japanese Spanish mackerel and their different response to environment in the Yellow Sea and Bohai Sea

Poster 18: **Stautland et al**. Modelling the switch between bite-feeding and filter-feeding in planktivorous fishes

Poster 19: **Acuña et al**. Spatial and temporal recruitment patterns of three demersal crustaceans off Northern Chile

Poster 20: **Zimmermann et al**. Common trends in recruitment dynamics of north-east Atlantic fish stocks and their links to environment, ecology and management

Poster 21: **Endo et al**. Long-term ichthyoplankton surveys reveal effects of climate and spawning stock structure on the spatial distribution of Northeast Arctic cod larvae

Poster 22: **Clemmesen et al**. Evaluation of match/mismatch scenarios between zooplankton prey fields and larval Baltic cod and potential consequences for recruitment

Poster 23: **de Jong et al**. Integrating existing knowledge to predict effects of anthropogenic noise on fish reproduction