

ICES – PICES Cooperation:

Past, present and how shall we proceed?

Cornelius Hammer



Science for sustainable seas

ICES in a nutshell

International Council of the Exploration of the Sea
Conseil International de la Exploration de la Mer (CIEM)



International Organization for
scientific Cooperation in the
North Atlantic and the Arctic
since 1902;
20 Member States;
1964 Convention,
2002 Copenhagen Declaration



Science regarding the ocean, requires international cooperation



ICES six main fields of operation (tasks)

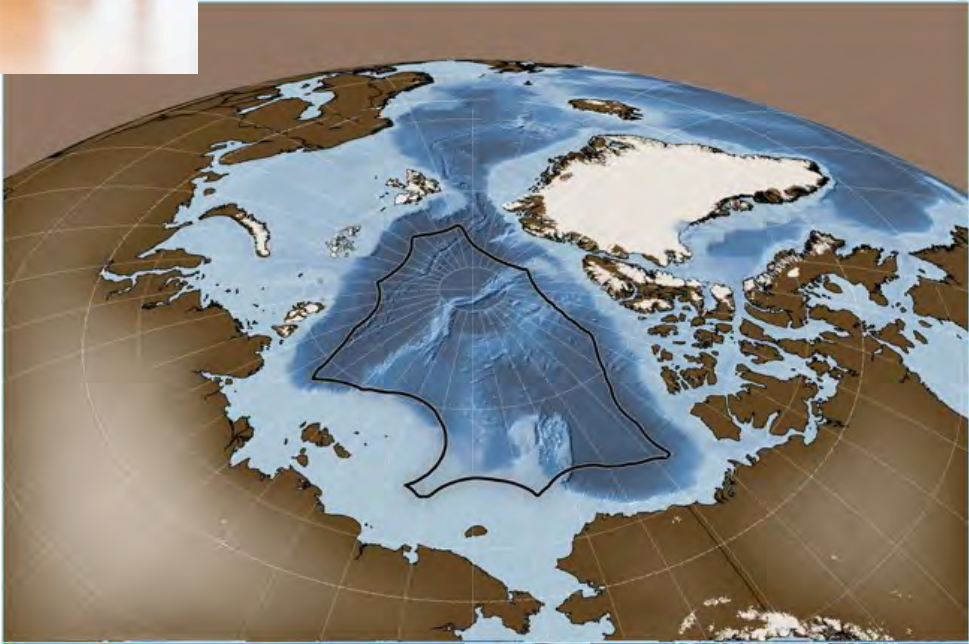
- 1. Scientific research of marine systems; to produce integrated ecosystem assessments, making the ecosystem approach operational*
- 2. Politically independent integrated, fisheries and ecosystem advice*
- 3. Collective ocean observations, accessible data, and information products*
- 4. Strategic areas*
- 5. Training programme*
- 6. Publications, and ocean literacy*



Strategic areas – Integrated Ecosystem Assessments, Aquaculture, Arctic, and Trans-Atlantic Cooperation



2013 Galway Statement



ICES – PICES Cooperation since 1998



**MEMORANDUM OF UNDERSTANDING BETWEEN
THE NORTH PACIFIC MARINE SCIENCE ORGANIZATION AND
THE INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEA**

Cooperation in scientific work through:

- ✓ Joint working groups, workshops, and Strategic initiatives, joint conferences
- ✓ Co-sponsored theme sessions
- ✓ Strategic planning
- ✓ Early Career Scientist Conferences

P/ICES Study Group on Strategic Planning (2011)



To develop a **framework for scientific cooperation in the northern hemisphere on marine Science**. The group identified 4 long-term research priority areas for the P/ICES Cooperation.

1. Climate Change
2. Ecosystem Assessment (including ecosystem modelling)
3. Ocean acidification and hypoxia/anoxia
4. Marine Spatial Planning

And more operational issues

1. Training
2. Knowledge Exchange/Communications

(Today one would probably add Marine Plastics and Ocean Literacy)

ICES-PICES Strategic Co-operation



PICES

Collected highlights of cooperation (1)



Theme Sessions co-sponsored by PICES at the ICES 2016 Annual Science Conference 2016, Riga, Latvia

- Theme Sessions co-sponsored by PICES at 2016 ICES Annual Science Conference September 19–23, 2016, Riga, Latvia):
- Theme Session I on “*Seasonal-to-decadal prediction of marine systems: Opportunities, approaches and applications*” (Co-convenor Desiree Tommasi, USA);
- Theme Session O on “*When is enough – enough?*” *Methods for optimising, evaluating and prioritising of marine data collection*” (Co-convenor Robyn Forrest, Canada).
- Immediately after the 2016 ASC there was a S-CCME workshop (Co-convenor Anne Hollowed).

Topic Sessions co-sponsored by ICES at PICES-2016:

- POC/TCODE/MEQ Topic Session (S7) on “*New stage of ocean acidification studies: Responses of oceanic ecosystem including fisheries resources*”;
- FIS/TCODE Topic Session (S9) on “*Resilience, transitions and adaptation in marine ecosystems under a changing climate*”.

ICES and PICES collaboration on symposia/workshops:

- 3rd PICES/ICES/IOC Symposium on “*Effects of climate change on the world’s oceans*”, March 23–27, 2015, Santos, Brazil;



Collected highlights of cooperation (2)



- PICES/ICES/IOC/SCOR GEOHAB Symposium on “*Harmful algal blooms and climate change*”, May 19–22, 2015, Göteborg, Sweden;
- ICES Symposium on “*Understanding marine socio-ecological systems: Including the human dimension in Integrated Ecosystem Assessments*”, May 30–June 3, 2016, Brest, France (co-sponsored by PICES)
- 6th ICES/PICES Zooplankton Production Symposium on “*New challenges in a changing ocean*”, May 9–13, 2016, Bergen, Norway;
- ICES/PICES Workshop on “*Understanding the impacts and consequences of ocean acidification for commercial species and end-users*”, December 5–9, 2016, Copenhagen, Denmark;
- PICES/ICES Symposium on “*Drivers of small pelagic fish resources*”, March 6–11, 2017, Victoria, Canada;
- 4th PICES/ICES/IOC Symposium on “*Effects of climate change on the world’s oceans*”, spring 2018, location TBD, USA.



PICES

Collected highlights of cooperation (3)



Capacity building events organized by PICES and ICES include:

- ICES/PICES Conference for Early Career Scientists on “*New frontiers in marine science*”, June 26–29, 2007, Baltimore, USA;
- 2nd ICES/PICES Conference for Early Career Scientists on “*Oceans of change*”, April 24–27, 2012, Majorca, Spain;
- 3rd ICES/PICES Conference for Early Career Scientists on “*Climate, oceans and society: Challenges and opportunities*” May 30-June 2, 2017, Busan, Korea

PICES/ICES expert group collaborations:

- Joint PICES/ICES Working Group on *Forecasting Climate Change Impacts on Fish and Shellfish* (WG-FCCIFS/WG 25; Oct. 2008–Oct. 2011);
- Joint P/ICES Study Group on *Developing a Framework for Scientific Cooperation in Northern Hemisphere Marine Science* (SG-SP; Oct. 2009–Oct. 2011); Section on *Climate Change Effects on Marine Ecosystems* (S-CCME; Oct. 2011– 2020);
- Joint PICES/ICES Working Group on *Climate Change and Biologically-driven Ocean Carbon Sequestration* (PICES WG 33; Oct. 2015-Oct 2018).

Regular exchange of observers at each other’s annual meetings:

- Drs. Laura Richards (PICES Chair) and Thomas Therriault (Science Board Chair), represented PICES at the SCICOM meetings held in conjunction with the 2016 ICES ASC;
- Dr. Cornelius Hammer is representing ICES at PICES-2016.

ICES - PICES Strategic Initiative on Climate Change effects on Marine Ecosystems (SICCCME)



Science for sustainable seas





Co-chairs



Anne Hollowed (USA – PICES)



Shin-ichi Ito (Japan – PICES)



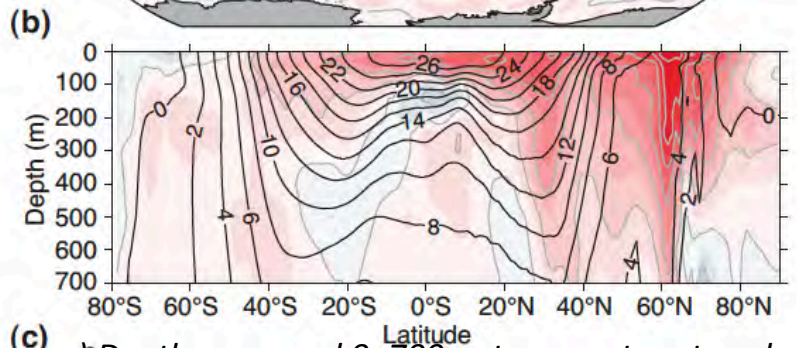
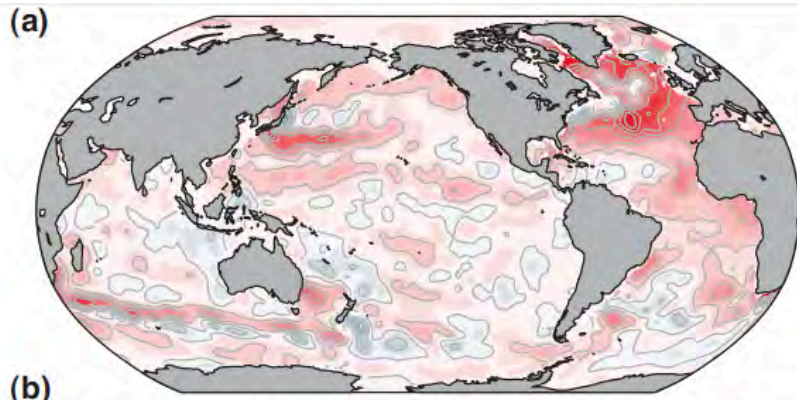
John Pinnegar (UK – ICES)



Myron Peck (Germany – ICES)



STRATEGIC INITIATIVES: Climate Change and Marine Ecosystems (SICCME)



(a) Depth-averaged 0–700 m temperature trend for 1971–2010 (contours in $^{\circ}\text{C}$ per decade). (b) Zonally-averaged temperature trends (in $^{\circ}\text{C}$ per decade) for 1971–2010, with zonally averaged mean temperature over-plotted (black contours in $^{\circ}\text{C}$). (IPCC 5AR)

Two ICES/PICES/IOC Conferences on Climate Change Impacts on the World's Oceans (Korea and Brazil)

Three workshops on climate modelling and forecasting (USA and Brazil)

Leadership, from ICES: John Pinnegar, CEFAS, UK and Myron Peck, University of Hamburg, Germany and from PICES: Shin-ichi Ito, Japan and Anne Hollowed, USA



WKSICCME_Econ...

The ICES/PICES Workshop on **Economic Modelling of the Effects of Climate Change on Fish and Fisheries** (WKSICCME_Econ), was chaired by Alan Haynie (USA), John Pinnegar (UK), Lisa Pfeiffer (USA), Mitsutaku Makino (JPN), Jörn Schmidt (DE), and Sophie Gourget (France)

- Identify the socioeconomic data and features of the suite of representative future fishing and ecosystem scenarios.
- Identify how fisheries management policies will interact with climate change.
- Identify suites of bioeconomic and spatially explicit models of fishery behavior.





SICCME Workshop





WKSICCME_Phase1...



The ICES/PICES Workshop on Phase 1: **Modelling Effects of Climate Change on Fish and Fisheries** (WKSICCME_Phase1), chaired by Anne Hollowed(USA), John Pinnegar (UK), Myron Peck (DE), and Mark Payne (DK)

A full-day open workshop was held in conjunction with the ICES ASC in Riga, Latvia, September 2016

- a) Meet with other SICCME investigators in ICES member countries to review progress on projected impacts of climate change on fish and fisheries.
- b) Identify new analytical approaches that could be used in other regional nodes.
- c) Review challenges in comparing suites of single species climate enhanced projection models, multispecies climate enhanced projection models, full food web and ecosystem models.





PICES ASC...



PICES workshop W5, Phase 1: Modelling Effects of Climate Change on Fish and Fisheries

Friday November 4th at the PICES annual meeting in La Jolla, California.

A full-day open workshop to review regional models and preliminary results on the PICES side.

Co-Convenors: Anne B. Hollowed, Shin-ichi Ito,
Invited Speaker: John Pinnegar



North Pacific
Marine Science
Organization
2016 Annual Meeting

25 Years of PICES:
Celebrating the Past, Imagining the Future
November 1 – 13, 2016
San Diego, USA

PICES Secretariat:
4460 W. Samish Road,
Dorrey, B.C., Canada V9L 4R2
Phone: (1-250) 263-5344
Fax: (1-250) 263-5627
E-mail: secretariat@pices.int
Website: www.pices.int



PICES

ICES Annual Science Conference 2016

Theme Session I



Seasonal-to-decadal prediction of marine ecosystems: opportunities, approaches, and applications

Co-sponsored by PICES

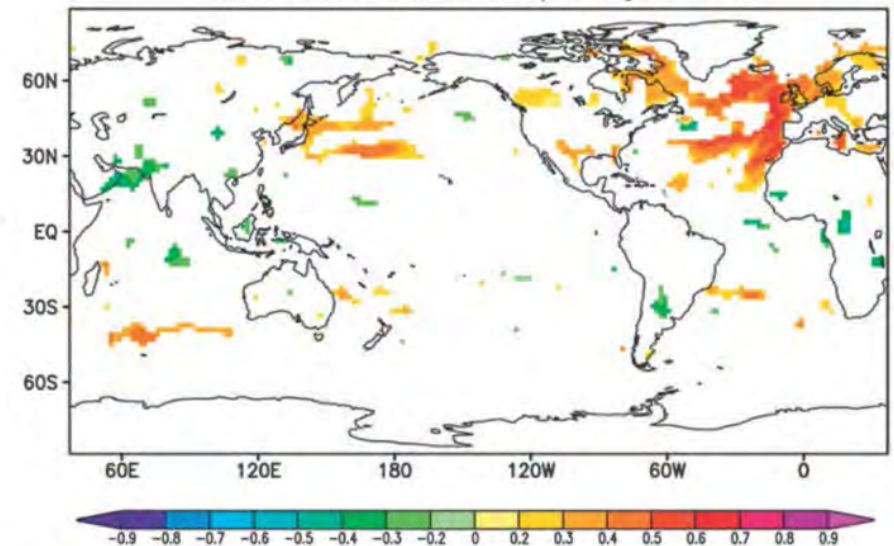
Conveners:

Mark Payne (Denmark), Desiree Tommasi (USA)

Alistair Hobday (Australia)

This session aims to provide an overview of marine forecasting at seasonal-to-decadal scales, a scientific field that is still in its infancy, and allow researchers to share their experiences

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ICES Annual Science Conference 2016

Theme Session O



“When is enough, enough?”

Methods for optimizing, evaluating, and prioritising the marine data collection

Co-sponsored by PICES

Conveners:

J.H. Vølstad (Norway)

Mike Armstrong (UK)

Marie Storr-Paulsen (Denmark)

Robyn Forrest (Canada)

This session aims to bring together fisheries scientists and statisticians with expertise in survey sampling design and analysis, practical experience with data collections, stock assessment modelling, harvest control rules, simulation studies, and statistical analysis to assess our current ability to quantify uncertainty in input data, and to track how uncertainty in input data propagates through stock assessment models to affect harvest rules.



What next? - 2017



ICES Annual Science Conference in Fort Lauderdale, Florida, 18.-21.09. 2017

ICES-PICES-CIEM session: *Bio-invasion trajectories and impacts in contrasting marine environments*



What next? – 2017 ICES ASC...



...in Fort Lauderdale: Theme session **“Projected impacts of climate change on marine ecosystems, wild captured and cultured fisheries, and fishery dependent communities”**

Conveners: Jon Hare (USA); John Pinnegar (UK); Myron Peck (Germany).



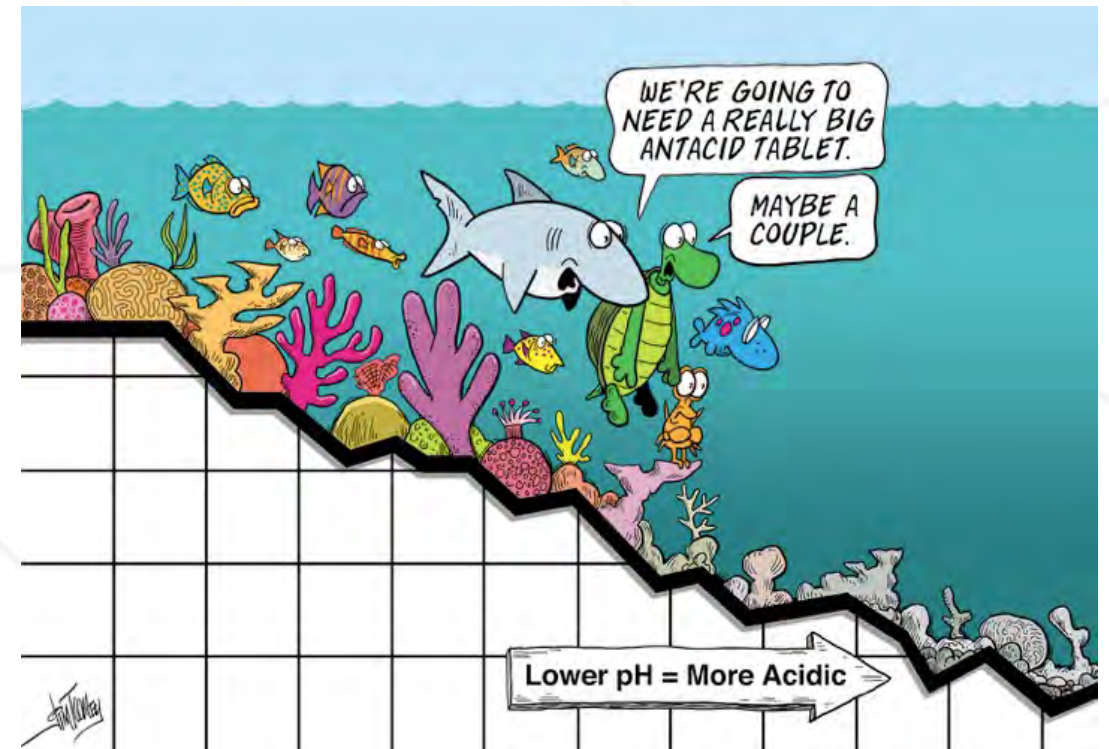
What next? - 2016



ICES-PICES sponsored Theme Session S7:
Tuesday, November 8th 2016. **New Stage of Ocean Acidification Studies: Responses of oceanic ecosystems including fisheries resources.**

Conveners: Tsuneo Ono (Japan), Jun Kita (Japan), Debby Ianson (Canada), John Pinnegar (ICES / UK). Invited speakers: Georg Waldbusser (USA), Steve Widdicombe (UK).

Considering over 20 years of progress on ocean acidification studies.



What next? - 2016



ICES/PICES Workshop on *Understanding the Impacts and Consequences of Ocean Acidification for Commercial Species and End-users* (WKACIDUSE)

December 2016, Copenhagen

Cooperation in practice

What next? - 2017



PICES



ICES
CIEM



International Symposium

Victoria, BC, Canada
March 6-11, 2017

Drivers of dynamics of small pelagic fish resources



ORGANIZERS

Primary International Sponsors



PICES

North Pacific Marine Science Organization



ICES

International Council for the Exploration of the Sea

Local Sponsor



Fisheries and Oceans
Canada

Pêches et Océans
Canada

Co-Sponsoring Organizations



- Scope
- Organizers
- Plenary and Invited Speakers
- Scientific Program
- Schedule
- Registration
- Registration Summary
- Abstract Submission
- Submitted Abstracts
- Publication
- Financial Support
- Venue
- Transportation

Cooperation in practice

What next? - 2017



SCIENCE SYMPOSIA

- › Symposium sponsorship
- › Publishing results from Symposia
- › Previous symposia
- › Other science conferences

ESSAS Symposium on Moving in, out and across the Subarctic and Arctic-shifting boundaries of water, ice, flora, fauna, people and institutions

12–15 June 2017, Tromsø, Norway

Conveners:

Ken Drinkwater (Norway)

Franz Mueter (USA)

Sei-Ichi Saitoh (Japan)

Cooperation in practice

What next? - 2017



SCIENCE SYMPOSIA

› Symposium sponsorship

› Publishing results from Symposia

› Previous symposia

› Other science conferences

3rd ICES/PICES Early Career Scientist Conference

Climate, Oceans and Society: Challenges & Opportunities
30 May – 2 June 2017, Busan, Korea

Conveners:

Hal Batchelder (PICES)

Wojciech Wawrzynski (ICES)

#ECSC17

Background and objectives

To encourage the participation of young scientists in international scientific investigations and to promote their involvement in the management and stewardship of the marine environment.

Themes

- Climate effects on physical, chemical and biological processes
- Anthropogenic effects on the marine environment
- Patterns and processes in marine ecosystems

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Cooperation in practice



And more? - 2018

Fourth International Symposium on the Effects of climate change on the world's oceans

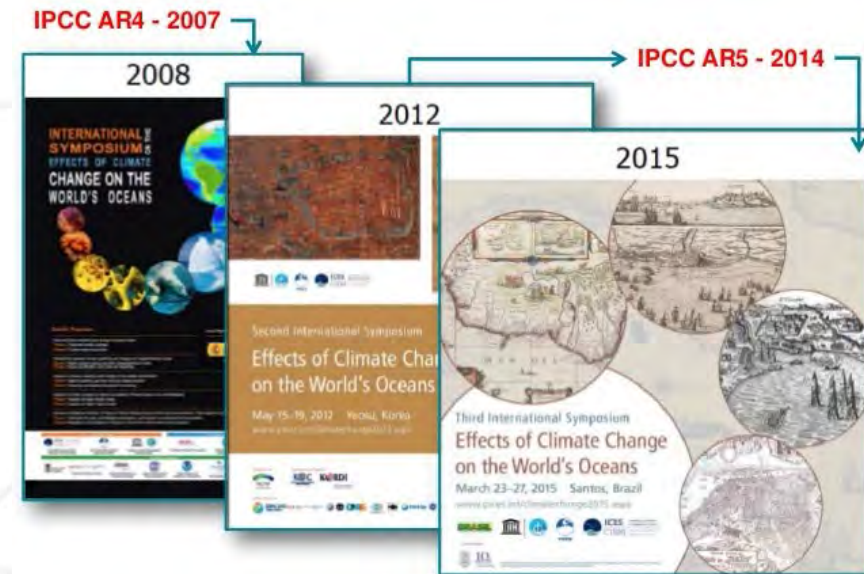


June 2018, at Washington D.C. (USA) with the support of IOC, PICES and ICES, NOAA

Conveners: Jason Link, USA (ICES), Shin-Ichi Ito, Japan (PICES), and NN (IOC) as conveners.

Symposium coordinators are the IOC Head of Ocean Science, the PICES Executive Secretary and the ICES Head of Science Support, as well as a NOAA representative.

AC working groups as well as IASC asked to link the Washington symposium with the **Arctic Science Summit Week (ASSC)** in June 2018, (organized by the Scientific Committee on Antarctic Research and the International Arctic Science Committee).



Cooperation going forward



- Identify themes of common interest, that are linked to strategic priorities within the organizations
- Support these themes through joint scientific work (Expert Working Groups/symposia/conferences)
- Consider actions to help facilitate mobility between experts in our networks

Defining the direction



continue supporting and organizing scientific events through conference series, workshops, working groups, theme sessions etc.

shall we....

- plan these strategically ?
- elevate the planning process to a more political and strategic level?
- Consult each other when setting directions in our strategic plans?

Perspectives of Cooperation

Arctic and the Human Dimension?



In addition to the identified research priorities by the P/ICES Study Group on Strategic Planning (2011)

- * Climate Change, * Ecosystem Assessment (including ecosystem modelling)
- * Ocean acidification and hypoxia/anoxia, * Marine Spatial Planning

Need to consider: should Sub-Arctic cooperation be explicitly included to this list, e.g.:

- ? Should an ICES/PICES joint Working Group be established to work on specific issues (e.g., fish stocks or ecosystem functioning and dynamics) be established for the Sub-Arctic Ocean?
- ? Should PICES participate/co-chair the ICES/PAME Working Group on Integrated Ecosystem Assessment (IEA) for the Central Arctic Ocean (PICES then maybe for Sub-Arctic issues) ?
- ? Should the human dimension be included, e.g.: Understanding marine socio-ecological systems, and their relation to Integrated Ecosystem Assessments?

Cooperation is pulling in one direction



Shall we Re-establishment the P/ICES Study Group on Strategic Planning on the leadership-level (especially with regards to Sub-Arctic issues)?

Great parts of what is Arctic today is likely to be Sub-Arctic tomorrow

Perspectives of Cooperation

PICES and ICES Cooperation

Work together

Walk together

Talk together



Science for sustainable seas

