

15 September 2005

### **Proposal for a PICES - ESSAS Workshop Comparing Sub-Arctic Seas**

Support from PICES is sought for a proposed Workshop to compare four Sub-Arctic marine ecosystems, those of the Okhotsk Sea/Oyashio region, the Bering Sea, the Newfoundland/Labrador Shelf and the Barents Sea. This would thus include areas with currents both to and from the Arctic and those with marginal ice zones at quite low and rather high latitudes. PICES and ESSAS share the goal of developing comparative studies of the Sub-Arctic Seas and understanding how climate variability will affect their productivity and ability to support sustainable commercial and subsistence harvests. The goals of the workshop will be: 1) to lay the groundwork for developing the data sets needed to achieve the appropriate comparisons and, 2) to commence developing the teams necessary to synthesize available data and develop models for predicting the effects of climate variability on these ecosystems.

It is expected that the workshop will build upon extant syntheses and on-going and planned synthesis efforts. For example, the syntheses in the PICES North Pacific Ecosystem Status Report, and the ESSAS Science Plan and the Appendix to the ESSAS Science Plan that assembled data from each of the Sub-Arctic Seas should provide much basic information. Additionally, papers such as those by Aydin et al. (2002) examining the similarities and differences between the eastern and western Bering Sea, Hunt and Megrey's (In Press) comparison of the Bering and Barents Sea ecosystems, and the recent work by Ciannelli et al. (In Press) comparing the Barents Sea and the Gulf of Alaska systems will provide a solid basis for moving forward with the analyses of these ecosystems. The workshop will also take advantage of advances made in a planned PICES CFAME January 2006 workshop on developing indices for North Pacific comparisons, and the results of workshops in the Norwegian funded program, Norway-Canada Comparisons of Marine Ecosystems (NORCAN), to be held in the autumn of 2005 and the late spring of 2006. The NORCAN workshops will develop specific plans for comparisons between the Barents Sea and the Labrador Shelf, including the use of

biophysical models, and will initiate research on physical forcing, zooplankton dynamics and climate impacts on fish populations in these subarctic seas.

Many of the synthesis products available to date have provided excellent compendia of information about a particular sub-arctic ocean basin, but few have explicitly compared mechanisms and responses to climate forcing across basins or between Atlantic and Pacific systems. If the comparative method is to be used successfully, it will be necessary to identify important underlying structuring features of the ecosystems and how climate forcing, acting on those mechanisms, will result in ecosystem change. It will also be necessary to develop data sets that can be used in predictive modeling efforts. These data sets will have to be sufficiently closely aligned that inter-regional comparisons will be fruitful. Although all systems are unique, there must be a search for basic elements common to many, if not all, that can be usefully employed in a comparative approach.

The proposed Workshop will be a significant step in achieving the goals of the CFAME task team in PICES of putting “Particular emphasis... on testing ecosystem-level hypotheses, through review and examination in a collaborative environment, of (i) comparisons between regional and/or basin ecosystems, (ii) linkages in time, space, or seasonality between climate and ecosystems, and (iii) responses of regional ecosystems to basin-scale forcing.” The Workshop will, through its review of the existing syntheses of North Pacific data sets and comparisons with data from North Atlantic systems, provide a solid basis for the development of revisions and updating of the first version of the PICES North Pacific Ecosystem Status Report.

## **Specifics**

**Goals:** 1) Produce a report that:

- a) Outlines fruitful approaches to assessing which processes, mechanisms, or aspects of populations are most sensitive to the expected changes in physical forcing that will result from climate change.
- b) Identifies studies or data sets that will allow evaluation of the responses of specific mechanisms or population characteristics to climate forcing.
- c) Develops methodologies for comparing responses of the different Sub-Arctic seas to climate variability. Do similar changes in climate cause similar responses in all of the Sub-Arctic seas?

- 2) Begin the assembly of Working Groups to synthesize knowledge and build comparisons of what we know about ecosystem function with respect to fishing and climate variability in the Sub-Arctic seas.
- 3) Develop mechanisms for coordinating and enhancing cooperation and collaboration between the efforts undertaken by the PICES CCCC program, the ICES CCC program, and the ESSAS program.

**Dates:** Three days within the week of **12 to 16 June, 2006**; the adjoining two days would be used for an ESSAS SSC meeting.

**Venue: St. Petersburg or Moscow, Russia:** These cities are reasonably easy to get to, and by being in Russia, it may ease the way for more of our Russian colleagues to participate. Since the Okhotsk, western Bering and Barents seas are all areas of active Russian research, it will be critical to the success of this workshop to have a strong representation of Russian scientists.

**Structure of the Workshop:** In a three-day meeting, one day would be devoted to talks and two days to examining avenues for building a set of comparative studies of the ESSAS regions and for strengthening the next edition of the PICES North Pacific Ecosystem Status Report.

**Participants:** An attendance of 25 to 35 people is anticipated. There would be a need for individuals with experience in each of the several regions subject to comparisons, and there will be need for expertise in physical oceanography and biological oceanography spanning from phytoplankton to fish, birds and mammals. There should be a mix of observationalists and modelers, including those involved with modeling fish populations and fisheries impacts.

**ESSAS SSC Members who are expected to attend:**

Erica Head	Canada	Newfoundland/Labrador Shelf	Zooplankton
Ken Drinkwater	Norway	Newfoundland/Labrador shelf	Physics
George Hunt	USA	Eastern Bering Sea	Marine Birds
Astrid Jarre	Denmark	West Greenland	Fisheries
Jim Overland	USA	Arctic and Sub-Arctic	Climate/Physics
Egil Sakshaug	Norway	Barents & Bering Seas	Primary prods.
Yasunori Sakurai	Japan	Oyashio & Sea of Okhotsk	Squids/Mesopelagics

**Additional Participants:** Depending upon the availability of funds, we anticipate inviting one person from each region to present an initial overview talk. These people will have their travel expenses covered. In addition, we anticipate inviting several additional people from each region to provide basic regional and disciplinary coverage. We expect that these individuals would pay their own way to the workshop. We will provide open access to the workshop up to a total of 35 participants.

**Funding:**

GLOBEC IPO has agreed to provide \$6,000 for travel of ESSAS SSC members lacking funds

PICES: It is requested that PICES arrange the venue and provide travel for four persons to the workshop. See attached e-mail from Alex Bychkov.

Other: We expect to approach other potential funding agencies, such as the North Pacific Research Board for support of travel.

**Conveners:**

George L. Hunt, Jr. and Kenneth Drinkwater

**Contact:**

George L. Hunt, Jr.  
School of Aquatic and Fishery Sciences  
Box 355020  
University of Washington  
Seattle, WA 98121

[geohunt2@u.washington.edu](mailto:geohunt2@u.washington.edu)

Phone: 206-221-6118 work U W

360-378-6748 home, Friday Harbor, WA

206-441-6109 home, Seattle, WA

It is okay to call me at the home numbers as I often work at home.

Date: Thu, 15 Sep 2005 13:02:13 -0700  
From: Alex Bychkov <bychkov@pices.int>  
Subject: Re: Draft proposal to PICES for Workshop  
To: glhunt@uci.edu  
Cc: drinkwater Ken <ken.drinkwater@imr.no>  
Reply-to: bychkov@pices.int  
X-Mailer: Microsoft Outlook IMO, Build 9.0.6604 (9.0.2911.0)  
Importance: Normal  
X-Greylist: Delayed for 00:22:32 by milter-greylist-1.6 (mx2.service.uci.edu [128.200.59.180]); Thu, 15 Sep 2005 13:06:09 -0700 (PDT)  
X-UCIRVINE-MailScanner: No viruses found  
X-UCIRVINE-SpamScore: s  
X-NACS\_ES-MailScanner: No viruses found  
X-MailScanner-From: bychkov@pices.int

Dear George,

Thank you for sending me a draft proposal on a PICES-ESSAS Workshop Comparing Sub-Arctic Seas to be held in 2006. I expect getting the final version that includes changes we discussed with you on phone shortly. The final proposal will be sent to all PICES Committees and other relevant groups to be reviewed at PICES XIV in Vladivostok. In this email, I only would like to point out that given PICES interest to the development of comparative studies of the Sub-Arctic Seas and understanding how climate variability will affect their productivity and ability to support sustainable harvests, the PICES Secretariat will be prepared to work with Russian colleagues to arrange the appropriate venue in St. Petersburg or Moscow.

With best regards, Alex.