PICES report on the *Marine ecosystems of the North Pacific*: why, how, and what's needed next.

R. Ian Perry

Fisheries & Oceans Canada
Pacific Biological Station,
Nanaimo, B.C. Canada

perryi@pac.dfo-mpo.gc.ca

Skip McKinnell

PICES Secretariat
% Institute of Ocean Sciences
Sidney, B.C. Canada

mckinnell@pices.int

MONITOR & the PICES Convention

- *Advance scientific knowledge* about the ocean environment, global weather and climate change, living resources and their ecosystems, and the impacts of human activities
- *Promote the collection and rapid exchange* of scientific information on these issues

Objectives

To describe:

1) how the Ecosystem Report came about;

2) what worked and what needs improving;

3) our view of the significant data gaps;

4) considerations for the next report/update

as suggestions and a guide to PICES and the MONITOR Technical Committee for consideration in producing the second report

PICES SPECIAL PUBLICATION

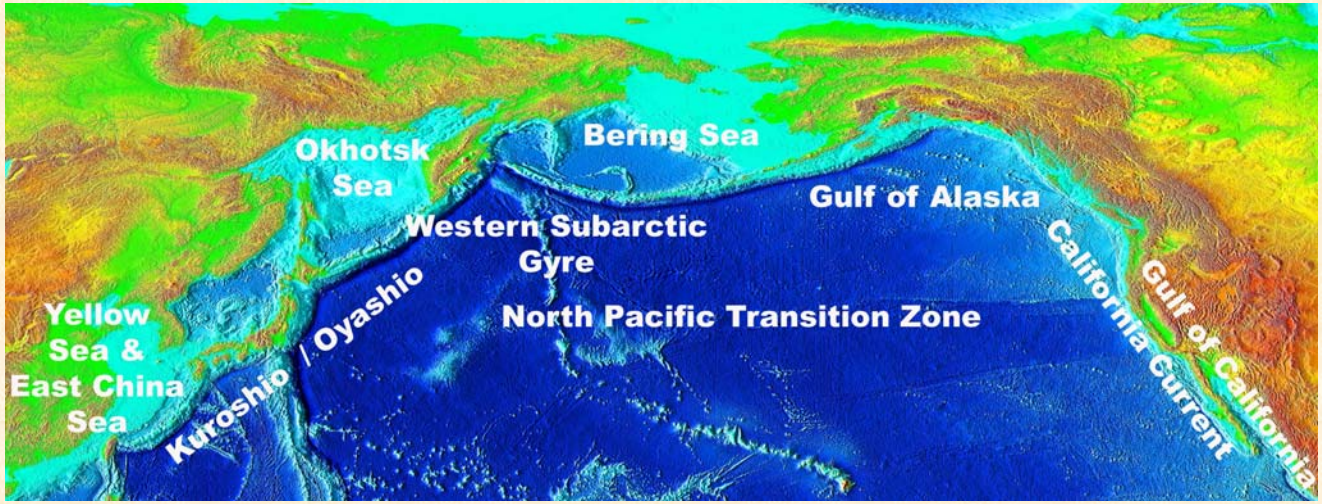
Marine Ecosystems of the North Pacific

Published in Dec. 2004 as PICES Special Report Number 1

NPESR Pilot Project

- Concept brought to Science Board by Pat Livingston (SB Chair) and approved by Governing Council (GC) in October 2001; target for completion was end of 2003.
- new SB chair in 2001 (Ian Perry)
- SB creates Working Group on NPESR (October 2002)
- draft report prepared for discussion by PICES in September 2003
- final report approved by Science Board in May 2004; published in December 2004

Chapters



- Synthesis
- Ocean/climate
- Yellow & East China seas
- Japan/East Sea
- Okhotsk Sea
- Oyashio/Kuroshio
- Western Subarctic Gyre
- Bering Sea
- Gulf of Alaska
- California Current
- Gulf of California
- North Pacific Transition Zone
- Fisheries Commissions (IATTC, IPHC, NPAFC)

Chapter structure

- Background (setting)
- Climate
- Hydrography
- Nutrients
- Plankton
  - Phytoplankton (chlorophyll)
  - Zooplankton
- Fish/invertebrates
- Seabirds
- Marine mammals
- Issues
- Critical factors causing change

Chapter structure

Emphasis was on the “most recent” data/information

- i.e. conditions over the past 5 years (if available), put into the context of the existing time series

Readership was assumed to be interested marine scientists, and possibly the interested public/NGO’s

Approach to producing each chapter

- where possible, information was drawn from existing ocean status reports (e.g. Canada) and ecosystem summaries (e.g. California Current, Bering Sea)
- where such reports were not available, regional workshops were convened with local experts to present and synthesize recent information
- individual “countries” were invited to convene local experts to develop the various Chapter sections

Approach to producing each chapter

Existing reports:

- California Current
- Bering Sea

Workshops:

- CREAMS/PICES (Japan/East Sea) - Seoul National University (August 2002) .
- Okhotsk Sea – TINRO Center (June 2003).
- Yellow/East China seas – PICES XII (October 2003) (delayed by SARS)

“National” reports:

- Eastern Subarctic Gyre (Alaska)
- Oyashio/Kuroshio; Western Subarctic Gyre (Japan)
- Gulf of California (Mexico)
- Tuna, Pacific halibut, salmon (Fishery Organisations)

Lead Authors

- Steven Bograd (California Current)
- Elena Dulepova / Vladimir Radchenko (Okhotsk Sea)
- Yukimasa Ishida (Oyashio/Kuroshio and W. Subarctic Gyre)
- Pat Livingston (Bering Sea)
- Salvador Lluch-Cota (Gulf of California)
- Franz Mueter (Gulf of Alaska)
- Ian Perry (Synthesis and Working Group Chair)
- Mike Seki (Transition Zone)
- Sinjae Yoo (Yellow/ East China seas)
- Fisheries Commissions (salmon, tuna, halibut)

+ Skip McKinnell (Japan/East Sea) and Editor

For MONITOR consideration

- production of next report "should" be easier now that a first version exists
- next report could be:
  - a major re-write/update (most data in existing report from 2002 and earlier), or
  - online updates to specific sections of the existing report
- **NOTE**: production of the final product was not trivial!
  - McKinnell (> 50% his time over 2 years= 1 person-year)

What are the significant data gaps?

Unevenness of regional coverage of some chapter components

- e.g. **chemical oceanography** (especially nutrients) lacking or minimal in most chapters
- **benthos** lacking or minimal in most chapters
- **harmful algal blooms** (PICES HAB Section)

Do these represent

- actual lack of data, or
- lack of awareness of data ?

Fill data gaps by convening workshops of disciplinary experts (e.g. on nutrients) ?

What is lacking ?

- contaminants
- ecosystem-level salmon status and trends
- Inter-tidal / sub-tidal ecosystems
- “human dimensions” (e.g. fishing effort, etc.)
- large, basin-scale physical oceanography / circulation analyses (in particular with Argo data)
- weak in contributions by some nations

Should PICES conduct its own analyses and develop indicators?

A number of PICES activities now produce their own data and/or summarize "status and trends" type information, e.g.

- CPR zooplankton program
- Harmful algal bloom monitoring
- WG19 on Ecosystem-based Management

Initial NPESR Study Group report recommended PICES develop "Regional Analysis Centres"

Place for reporting on GOOS observations

Know your readers / clients

Clearer identification of the readers and clients of this report is needed

- provide a basis for selection of information and level (detail) of presentation
- indicate best formats to present the report and its contents
  - e.g. a “glossy brochure” type summary publication
- should the report provide “advice” (e.g. FERRRS brochure) ?

Summary considerations

1) Is the previous approach the most effective, now that a core report exists;

2) How to fill the significant data gaps? Do they represent actual missing information or a lack of awareness of existing data;

3) Development of significant themes that were poorly or not covered, e.g. contaminants, benthos, near-shore;

4) Should PICES conduct its own analyses and develop indicators;

5) Better definition of clients and users of the report, and the best formats to present the information.