

## REPORT OF OPENING SESSION

### AGENDA ITEM 1

#### **Opening by the Chairman of PICES**

The Opening Session started at 09:00 hours on October 14, 2013. Dr. Laura Richards, Chairman of PICES, welcomed delegates, observers and researchers to Nanaimo and formally declared that the PICES Twenty-Second Annual Meeting (PICES-2013) was open. The session agenda is appended as *OP Endnote 1*.

### AGENDA ITEM 2

#### **Welcome address on behalf of the host country**

Ms. Susan Farlinger (Regional Director General, Pacific Region, Fisheries and Oceans Canada) welcomed participants on behalf of the host country (*OP Endnotes 2*).

### AGENDA ITEM 3

#### **Remarks by the Chairman of PICES**

Dr. Richards thanked Ms. Farlinger for her remarks, and addressed the participants on behalf of PICES (*OP Endnote 3*).

### AGENDA ITEM 4

#### **Wooster Award presentation ceremony**

Dr. Sinjae Yoo, Chairman of Science Board, and Dr. Richards conducted the Wooster Award presentation ceremony. Dr. Yoo introduced the award and announced that the 2013 award was being given to Prof. Vera Alexander (University of Alaska, Fairbanks, U.S.A.) for a career of sustained excellence in marine science that has spanned nearly 50 years. (*OP Endnote 4*). Reading of the Science Board citation was accompanied by a slide show dedicated to Dr. Alexander. A commemorative plaque was presented to Dr. Alexander (a permanent plaque identifying all Wooster Award recipients resides at the PICES Secretariat), who accepted the award with the following remarks of thanks:

*I was completely surprised and astonished to receive this prize and yet nothing could have pleased me more. PICES has been an incredibly important part of my life, and in developing the Organization under the wise leadership of Warren Wooster, I learned so much. Preparing for PICES seemed to take a long time, but once it was signed, the forward movement was amazing. Others, too numerous to mention, played important roles as well, but I particularly want to mention Dick Beamish and Bill Aron for introducing me to the world of fisheries science and international policy most effectively. I owe them and PICES a major debt. It would be negligent not to mention Alex Bychkov and his excellent staff; they are highly effective and a pleasure to work with. It is good to find that PICES is prospering and continuing to do good and timely work. I am humbled in receiving the Wooster Award, but also extremely grateful and happy for this recognition. Thank you very much.*

### AGENDA ITEM 5

#### **PICES Ocean Monitoring Service Award presentation ceremony**

Drs. Yoo and Richards also conducted the presentation ceremony of the PICES Ocean Monitoring Service Award (POMA). Dr. Yoo introduced the award and announced that the 2013 award was being given to the

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A-line Monitoring Program for its contributions to understanding the past and future oceanography of the North Pacific (*OP Endnote 5*). Reading of the Science Board citation was accompanied by a slide show dedicated to A-line Monitoring Program. A commemorative plaque (a permanent plaque identifying all POMA recipients resides at the PICES Secretariat) and a certificate were presented to Dr. Hiroshi Kuroda (Hokkaido National Fisheries Research Institute, Fisheries Research Agency, Japan). Dr. Kuroda provided the following remarks of appreciation:

*Thank you very much for this award. I am the newest participant of the A-line monitoring, but I do not have a strong constitution against seasickness. Whenever I feel seasick on a ship, I am always mindful of the conditions that crew and researchers must work under. I respect and am very proud of all of the participants and contributors, particularly, captains, officers and crew of Research Vessels Hokko-maru and Wakataka-maru. This award will encourage us – all the participants and contributors. I would like to thank PICES deeply.*

### AGENDA ITEM 6

#### **PICES “Year-in-Review” 2013**

Dr. Yoo reviewed PICES’ scientific accomplishments since the Twenty-First Annual Meeting (PICES-2012) in Hiroshima, Japan. An article on the state of PICES science for 2013 will be published in the 2014 winter issue of PICES Press (Vol. 22, No. 1).

The 2013 keynote lecture entitled “*Canada’s changing Pacific marine ecosystems: Forecasts, uncertainties, potential consequences, and communication*” was given by Dr. R. Ian Perry (Fisheries and Oceans Canada, Pacific Biological Station) as part of the Science Board Symposium on “*Communicating forecasts, uncertainty and consequences of ecosystem change*”. The abstract of this talk is appended to the report as *OP Endnote 6*.

### AGENDA ITEM 7

#### **Closing remarks and announcements**

The session was adjourned at 10:00 a.m., after announcements related to the logistics of the Annual Meeting made by Dr. Stewart (Skip) McKinnell, Deputy Executive Secretary of PICES.

**OP Endnote 1****Opening Session agenda**

1. Opening by Dr. Laura Richards, Chairman of PICES
2. Welcome address on behalf of the host country by Ms. Susan Farlinger (Regional Director General, Pacific Region, Fisheries and Oceans Canada)
3. Remarks by Dr. Laura Richards, Chairman of PICES
4. 2013 PICES Wooster Award presentation ceremony
5. 2013 PICES Ocean Monitoring Service Award presentation ceremony
6. *PICES "Year-in-Review" 2013* by Dr. Sinjae Yoo, Chairman of Science Board
7. Closing Remarks/Announcements

**OP Endnote 2****Welcome address**

**by Ms. Susan Farlinger (Regional Director General, Pacific Region, Fisheries and Oceans Canada)**

Good Morning. Welcome to Canada, and welcome to Nanaimo.

My name is Susan Farlinger, and I work for Fisheries and Oceans Canada (DFO) as the Director General of the Pacific Region, which of course includes Nanaimo. The Minister of Fisheries and Oceans Canada, the Honorable Gail Shea, sends her warmest greetings to all delegates to the Annual Meeting of the North Pacific Marine Science Organization, also known as PICES. The Minister is excited and pleased that the marine science community from our North Pacific Ocean neighbors, China, Japan, Korea, Russia and the United States, has again come to conduct this important international exchange in Canada.

In my opening remarks, I should have said welcome back to Canada and Nanaimo, as this rotational meeting was held six years ago in Victoria. It is a privilege to host PICES in Nanaimo again in 2013. The last time that the PICES Annual Meeting was held in Nanaimo was in 1996 (the 5<sup>th</sup> Annual Meeting). That meeting had about 235 participants, compared to the almost 400 participants that are expected this week. PICES outgrew Nanaimo, and we had to wait for the completion of this beautiful new Conference Centre before we were able to welcome all of you back to this city.

Many of you will know that Nanaimo is home to one of our key centres for marine research in western Canada. Not far from here is the Pacific Biological Station. It is one of our largest research centres in the country and has been in continuous operation for over 100 years now. Of course, not far from here either, in Sidney, is the Institute of Oceans Sciences, which is another DFO research facility. This is the home as well of the PICES Secretariat, led by Executive Director, Dr. Alexander Bychkov and his staff. These two facilities form the backbone of the Canadian government's capacity on the Pacific Coast, and provide a base from which we can readily and regularly work with the universities and other science-based organizations that collectively conduct marine research in Canada.

I should also note that this is the first Annual Meeting of PICES where Dr. Laura Richards will serve as Chairperson. Laura has had a stellar career at DFO and a long association with PICES. I will congratulate her here again on her election as Chairperson at your last meeting. I want you to know that your organization is in good hands.

PICES members know well that the North Pacific Ocean and its regional seas are a shared resource. Recent events have again shown us that, and it is clear that the broad oceanic processes at play are well suited to collaborative study. One such event was the arrival of debris on the Pacific coast of Canada and the United States. Many organisms were attached to this debris, generated by the tsunami from the great 2011 Great East Japan Earthquake. The organisms were identified with the aid of the Atlas of Nonindigenous Marine and Estuarine Species in the North Pacific developed by one of PICES working groups.

PICES is the key organization for the North Pacific with regard to scientific collaboration and learning in marine matters. We all share a need for science knowledge to underpin oceans management and policy. To that end, the current scientific focus of PICES is the FUTURE science program - *Forecasting and Understanding Trends, Uncertainty and Responses of North Pacific Marine Ecosystems*. This type of initiative is critical for Canada. The exhaustive Cohen Commission of Inquiry into the Decline of Sockeye Salmon in the Fraser River was a response to the difficulty and importance of understanding our key resources well enough to make reasonable predictions, at a time when the ecosystems of which those resources make part are themselves changing.

Of course, the theme of this year's conference, "Communicating forecasts, uncertainty and consequences of ecosystem change", is well-aligned with the direction of FUTURE. Ecosystem change is becoming the underlying concept of our times. Like Canada, a number of scientists from PICES member countries would have contributed to the recent International Panel on Climate Change report. That exercise and the PICES Annual Meeting here this week feature a vital characteristic in common – Communication. As we deal with our respective pressures and challenges related to oceans, especially in this context, the Pacific, it is vital that we work together to understand our common problems and develop common solutions. PICES represents an incredible opportunity to communicate amongst experts in different countries; amongst experts in different disciplines; amongst scientists and "clients" – fisheries and oceans managers, policy makers, industries, First Nations, the public. All of these people have a thirst for this information, but a limited capability to deal with all the details and technicalities.

These are challenging times for many countries – not all of the PICES member economies are as strong as they recently were, and we recognize that. In some ways, this makes the operation of an organization like PICES more challenging. But collaboration is an inherently efficient approach, and the benefits of strong international cooperation of common science issues become even more compelling in times like these.

So, on behalf of the Government of Canada and Minister Shea, I wish well in your 2013 Annual Conference and associated meetings that I know are scheduled for this week. I also know that the local organizing committee headed by Ms. Brenda Fair has designed a schedule of other diversions during the week that will allow you to experience a bit of the great Nanaimo area.

I wish you every success in your Annual Meeting.

### **OP Endnote 3**

#### **Welcome address by Dr. Laura Richards (Chairman of PICES)**

On behalf of PICES, I would like to thank Fisheries and Oceans Canada for hosting this meeting, working in conjunction with the PICES Secretariat. In particular, as Ms. Farlinger already mentioned, I would like to thank Ms. Brenda Fair as Chair of the Local Organizing Committee.

It is a special privilege for me to open PICES Annual Meeting for the first time as the Chair in my home town of Nanaimo. I would also like to acknowledge that this meeting is being held on the traditional territory of the Snunemuxw First Nation.

Today is a special day. It is a holiday in Canada where traditionally we give thanks for the year's harvest. In modern times, the holiday is celebrated as a time for families to get together and share a dinner of stuffed turkey and cranberry sauce with pumpkin pie for dessert. I would like to thank and acknowledge those Canadians who have chosen to give up their family dinner and to spend this Thanksgiving here with PICES. Perhaps some of you visiting Canada this week will have an opportunity today to try a traditional Canadian Thanksgiving dinner for the first time.

Thanksgiving is also a good time for us to get together and celebrate the PICES family. We have achieved a great deal in the 22 years since PICES was formally established in 1992 and the 18 years since PICES was last held in Nanaimo in 1996. As Ms. Farlinger mentioned, at the previous Nanaimo meeting, we had 235 participants and the meeting was held in the Coast Bastion Hotel down the street where some of you may be staying. Today, we are expecting about 400 participants to PICES-2013. In 1996, PICES had 14 official expert groups or committees involving 210 individuals, while today we have 24 groups involving 285 individuals. PICES has outgrown our former meeting space in Nanaimo, but we have a new conference centre which I hope will be a perfect size for our meeting.

Of course, progress does not come without challenges. PICES has an ambitious Strategic Plan, as do each of the scientific committees. We have much to still accomplish within these strategic plans as well as on our main science program FUTURE. You will hear more about that and about the work of PICES over the past year when the Chairman of the Science Board gives his report. In particular, you will hear about preparations for the FUTURE Open Science Meeting next April in Hawaii.

The work of PICES is built on solid scientific cooperation. For PICES to progress and succeed as an organization, we must all continue to work as a team. I know that for some of you that means you must sometimes take on your less-than-favorite committee tasks for the overall good, and your efforts are truly appreciated. Because we all come from different backgrounds, we may sometimes use different words or expressions to say the same thing. You must be willing to hear other points of view and sometimes agree to compromise in order to move ahead. But in the process, you will meet wonderful people who share your enthusiasm for scientific progress.

In this spirit of scientific cooperation, I would like to pose three challenges to each of you here today for you to accomplish by Friday.

The first challenge is to attend a scientific presentation in a field of study which is different from your own. For example, if you are a physical oceanographer, then you could attend a presentation in a session sponsored by the Fishery Science Committee. Similarly, a fishery biologist could attend a presentation in a session sponsored by the Physical Oceanography Committee. I do not expect that you will find this challenge very difficult because many of the sessions are jointly sponsored by different committees.

The second challenge is to attend at least one scientific presentation by a scientist from each of the six nations within PICES.

The third challenge is to meet new people and to get to know one scientist from each of the six nations within PICES, ideally a scientist that you had not previously met.

Before I close, I would like to make some announcements. Dr. Skip McKinnell, the PICES Deputy Executive Secretary, has decided to retire in early 2014. Skip has been Deputy Executive Secretary since 1999 and has been very active at PICES meetings, providing support to the science program. I would like to acknowledge his contribution and say thanks on behalf of PICES.

Over the summer, the Executive Secretary led a staffing process for a new Deputy Executive Secretary. I am pleased to announce today that the next Deputy will be Dr. Hal Batchelder. I am sure that Dr. Batchelder is very well known to many of you. He has had many leadership roles, including Co-Chairman of the Climate Change and Carrying Capacity Program and a member of Science Board from 2001–2009 and a member of Governing Council since 2012. I would like to offer a warm welcome to Dr. Batchelder who will start his new position on March 1, 2014.

Unfortunately, PICES lost a close friend a few days ago. Professor Mingyaun Zhu from China's State Oceanic Administration passed away tragically on Friday, October 11, in Nanaimo. Professor Zhu was a long-time member of the Biological Oceanography Committee and a member of the Section on Harmful Algal Blooms

since its establishment in 2003. On behalf of PICES, I would like to offer our most heartfelt condolences to Professor Zhu's family, friends and colleagues. PICES has placed a sympathy book at the Registration Desk which I would encourage you to sign and write messages to Prof. Zhu's family.

I would also like to take a moment to acknowledge another two of our former colleagues who passed away during 2013. Dr. C.S. Wong (Canada) was a long-time member of the PICES Physical Oceanography and Climate Committee and Co-Chairman of the Advisory Panel on Iron Fertilization Experiment between 1998–2007. Dr. Yutaka Nagata (Japan) was deeply involved in PICES from the beginning. He was the first chairman of the Physical Oceanography and Climate Committee, Co-Chairman of the Climate Change and Carrying Capacity Program, and member of Working Group 1 on Okhotsk Sea, along with an important role in the formation of the Technical Committee on Data Exchange. He received the PICES Wooster Award in 2002.

In honour of Professor Zhu, Dr. Wong and Dr. Nagata, we will now hold one minute of silence.

#### **OP Endnote 4**

##### **Science Board citation for the 2013 Wooster Award**

The Wooster Award is the highest recognition of individual scientific achievement offered by PICES. Its name honors the first Chairman of PICES, Prof. Warren S. Wooster. The award is given to an individual who has made significant contributions to North Pacific marine science, especially to understanding and predicting how humans and climate affect marine ecosystems. In making its decision, the PICES Science Board looks for sustained excellence in research, teaching, and administration of marine science. It is my great pleasure to announce that Prof. Vera Alexander of the University of Alaska, Fairbanks (UAF) is the recipient of the 2013 Wooster Award for a career of sustained excellence in marine science that has spanned nearly 50 years.

Vera was born in Budapest, Hungary, but left with her family to England just before the start of World War II. There she developed a love for music and became an accomplished pianist. Early in life, she also developed an interest in agriculture and a love for the outdoors. Her family moved to the U.S. east coast, but Vera kept going west to attend the University of Wisconsin where she earned a bachelor degree in 1955. In 1965, she became the first woman to receive a Ph.D. at the University of Alaska. She became an associate professor at the new Institute of Marine Science on the Fairbanks campus.

Vera was a scientific pioneer. She was among the first to use the N-15 isotope to study nitrogen fixation in lakes. At the time, everyone thought that bacteria were the primary source of fixed nitrogen, but Vera found that most of it was fixed in lakes by blue green algae. Since this groundbreaking effort, this same process has been found in other environments including tundra terrestrial ecosystems, where lichens fix nitrogen.

Vera is also known worldwide for her pioneering research on the role of sea ice in the Bering Sea, by discovering that the ice was a critical factor determining spring productivity in the arctic region. The importance of Vera's work on Arctic phytoplankton and sea ice algae cannot be overstated. Many of her studies, such as heterotrophy of sea ice algae, or developing appropriate techniques to measure ice algal activity, were firsts in marine science. She and her colleagues, helped to lay a foundation for the current US Bering Sea Ecosystem Program that is further developing our understanding of biological processes in polar seas. Vera has published more than 70 papers in the refereed literature, most of which are recognized for scientific excellence with many having more than 50 citations.

Vera is known internationally and deeply appreciated for her administration of many regional, national, and international marine science programs. In 1980, she became the director of the Institute of Marine Science where she was instrumental in bringing fisheries scientists and oceanographers together. When the School of Fisheries and Ocean Sciences was formed at the University of Alaska in 1987, Vera became its first dean and served in that role for nearly 20 years.

A crowning achievement in Vera's career was the construction and launch of the 261-foot research vessel (R/V) *Sikuliaq*, one of the most advanced research vessels in the world. The *Sikuliaq*, owned by the US National Science Foundation and operated by the University of Alaska Fairbanks, is the first ice-strengthened research vessel in the U.S. academic fleet. She and Bob Elsner were involved with the planning and development of this ship for several decades. Vera's vision and involvement was recognized when she was invited to christen the ship at its launching in 2012. Vera and Bob's initials have been welded into a steel plate that is affixed to its keel.

In the course of her illustrious career, Vera Alexander has received numerous honors, including election as Fellow of the American Association for the Advancement of Science, to the Arctic Institute of North America, the Explorers Club, and was given the Walter and Ermalee Hickel Lifetime Achievement Award from the Alaska Marine Leadership Council. Vera was honored recently by the naming of the Vera Alexander Learning Center, which is the most technologically advanced classroom on the UAF campus.

Her service to science spans many organizations, including, 16 years as a commissioner on the United States Marine Mammal Commission, 10 years on the Science Panel of the North Pacific Research Board, and 12 years on the International Scientific Steering Committee (SSC) of the Census of Marine Life (COML). She also received an honorary Doctorate of Laws degree from Hokkaido University in recognition of her work in promoting international scientific cooperation.

Vera is a founder of PICES where she served as U.S. Delegate from 1992–2002, before becoming Vice-Chairman from 1998–2002, and Chairman from 2002–2006. Her dedication and contributions to PICES are deeply appreciated by all of us.

Ladies and Gentlemen, please join me in congratulating Dr. Vera Alexander as the 2013 recipient of the Wooster Award.

## **OP Endnote 5**

### **Science Board citation for the 2013 PICES Ocean Monitoring Service Award**

The Oyashio is a cold western boundary current flowing southward from the Kurile Islands to Hokkaido, Japan. “Oya” in Japanese means “parents” or “source” and “shio” means “current”. Thus, Oyashio means “a current that provides rich marine products”. This area is known as a good fishery ground for Japanese sardine, walleye pollock and other species. Because of its high productivity, Oyashio has fascinated biological oceanographers, fisheries scientists, and physical oceanographers. Not so long ago, there was relatively little information about its physical properties, ecosystem structure and mechanisms for maintaining its high productivity. It was clear that a continuous ocean monitoring system was needed to begin to understand fisheries oceanography in Oyashio area.

Twenty-six years ago in 1987, the first of many A-line observations was made by scientists at the Hokkaido National Fisheries Research Institute, led by Dr. Makoto Kashiwai (the second Science Board Chairman of PICES). The 3-year project on “Oyashio water” focused on its physical oceanography. The “A” in A-line is taken from the first letter of Akkeshi Bay, near the first station of the A-line. This project ended in 1990, but the enthusiasm of a new group of scientists expanded A-line monitoring to include physical, chemical and biological properties of the Oyashio ecosystem and the search for key factors associated with its high productivity. In 2002, the Tohoku National Fisheries Research Institute joined the effort and has been conducting 5-7 cruises per year up to the present. During that time, A-line monitoring program has made outstanding achievements related to understanding the Oyashio and its ecosystem.

An important characteristic of the A-line monitoring program is the close cooperation among scientists of different disciplines. It inspired the development of ecosystem models by the MODEL Task Team in PICES. The NEMURO model and its daughter models are now used in marine sciences all over the world. The A-line

was also the site of iron fertilization experiments coordinated by the PICES Advisory Panel on *Iron Fertilization Experiment in the Subarctic Pacific Ocean*. They found that iron controlled the productivity of the North Pacific and found east-west differences in iron concentration and iron species composition. Repeated monitoring in the A-line region discovered that the Sea of Okhotsk is an important source of iron in the western subarctic Pacific. Long-term observations have helped to clarify relationships between the physical environment and living marine resources, and revealed the mechanisms for long term variation of ocean ecosystems of the western North Pacific in relation to the global warming and/or Pacific Decadal Oscillation.

A-line Monitoring Program has fostered oceanography and fisheries science in the western North Pacific, with many papers presented annually at PICES Annual Meetings and symposia and workshops sponsored by PICES. A-line monitoring will continue to provide important data to understand the future ecosystem change related to the global change and contribute to the development of ocean science of the North Pacific.

PICES Science Board is honouring the A-line Monitoring Program with the 2013 PICES Ocean Monitoring Service Award for its contributions to understanding the past and future oceanography of the North Pacific. Congratulations!

### OP Endnote 6

#### ***“Canada’s changing Pacific marine ecosystems: Forecasts, uncertainties, potential consequences, and communication”***

(Abstract of the keynote lecture by Dr. R. Ian Perry, Fisheries and Oceans Canada, Pacific Biological Station)

The theme for this 2013 PICES Annual Meeting is “communicating forecasts, uncertainty and consequences of ecosystem change”. This theme was chosen to feature the PICES integrating program *Forecasting and Understanding Trends, Uncertainty and Responses of North Pacific Marine Ecosystems* (FUTURE), and in particular to highlight its central question of “What is the future of the North Pacific given current and expected pressures?” The goal of this presentation is to propose how PICES may move forward with this theme and these issues, using examples largely (but not exclusively) from Canada and the NE Pacific.

Canadian marine waters provide good examples of these issues, since its marine ecosystems are different now than they were 50, even 25, years ago. This presentation illustrates how Canadian marine systems have changed, and discusses potential drivers for these changes including climate and human influences. Linking drivers and pressures to specific changes can be difficult, although approaches such as the Driver-Pressure-State-Impact-Response, pathways of effects, and Bayesian Network models show promise including, for some approaches, the explicit consideration of uncertainties. These approaches, along with statistical and simulation models and constructing alternative scenarios, can be used to project the drivers, pressures and ecosystem states into the future, from which the human and ecosystem consequences and implications can be evaluated and different management actions explored. Ultimately, these findings need to be communicated to inform scientific, policy, and public discussions of the decisions and trade-offs that will be required to attain desirable, or avoid undesirable, potential futures.

Communicating scientific findings is a core element of this meeting theme and of the FUTURE program. PICES has been very effective at communicating scientific knowledge and advances to other scientists, but perhaps less effective at communicating these advances to decision-makers and the public. Much has been learned recently about the psychology of communicating science, in particular from the issue of climate change. Key questions include communicating what, why, how, and to whom. But the first requirement is to ‘know your message’. Knowing your message includes understanding current conditions, how these may change in the future (forecasts), their uncertainties, and the potential consequences of current and future conditions. The Canadian Science Advisory process provides one example of how Canada develops scientific knowledge on marine issues and then integrates that knowledge into public discussions and decision-making. The ultimate goal of these Canadian activities, and of the PICES FUTURE program, is to ensure a North Pacific that is productive and resilient to the pressures and uncertainties of a changing world.