

## REPORT OF OPENING SESSION



The Opening Session was called to order at 8:30 a.m. on October 13, 2005, by the Chairman, Dr. Vera Alexander, who welcomed delegates, observers and researchers to the PICES Fourteenth Annual Meeting (PICES XIV).

### **Welcome addresses on behalf of the host state**

Prof. Victor Gorchakov (Vice-Governor of the Primorye Region) welcomed participants on behalf of the host state (*OP Endnote 1*).

### **Remarks by representatives of Contracting Parties and the Chairman of PICES**

Dr. Alexander invited Dr. Laura Richards (Regional Director of Science, Pacific Region, Fisheries & Oceans Canada) to make a statement on behalf of the Canadian Government. Dr. Richards addressed the session and her remarks are appended to the report in *OP Endnote 2*.

Dr. Alexander called upon Dr. Tokio Wada (Counselor, Resources Enhancement Promotion Department, Fisheries Agency, Japan) to speak on behalf of the Japanese Government. Dr. Wada addressed the session and his remarks are appended to the report in *OP Endnote 3*.

Dr. Alexander then asked Mr. Zhi-Xin Chen (Division Director, Department of International Cooperation, Ministry of Agriculture, People's Republic of China) to make a statement on behalf of the Chinese Government. Mr. Chen addressed the session and his remarks are appended to the report in *OP Endnote 4*.

Dr. Alexander invited Dr. Ig-Chan Pang (Director, Headquarters for Marine Environment, National Fisheries Research & Development Institute, Ministry of Maritime Affairs and Fisheries, Republic of Korea) to speak on behalf of the Korean Government. Dr. Pang addressed the session and his remarks are appended to the report in *OP Endnote 5*.

Dr. Alexander called upon Dr. Samuel Pooley (Director, Pacific Islands Fisheries Science Center, National Oceanic and Atmospheric Administration, United States of America) to speak on behalf of the Government of the United States of America. Dr. Pooley addressed the session and his remarks are appended to the report in *OP Endnote 6*.

Dr. Alexander asked Dr. Lev N. Bocharov (Director, Pacific Scientific Research Fisheries Center, Federal Agency on Fisheries, Russian Federation) to make a statement on behalf of the Russian Government. Dr. Bocharov addressed the session and his remarks are appended to the report in *OP Endnote 7*.

Dr. Alexander thanked Prof. Gorchakov and all the delegates for their remarks and spoke on behalf of PICES. The text of her address is appended to the report in *OP Endnote 8*.

### **Wooster Award presentation ceremony**

Dr. Alexander and the Science Board Chairman, Dr. Kuh Kim, conducted the Wooster Award presentation ceremony. Dr. Kuh Kim read the following Science Board citation for the 2005 Wooster Award (reading of the Science Board citation was accompanied by a special slide show dedicated to Dr. Daniel Ware):

*The Wooster Award was established in 2001 to honour Dr. Warren S. Wooster, the principal founder and first Chairman of PICES, and world-renowned researcher and statesman in the area of climate variability and fisheries production. The award is given annually to an individual who:*

- *has made significant scientific contributions to North Pacific marine science;*
- *has achieved sustained excellence in research, teaching, administration or a combination of these in the area of the North Pacific;*

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- *has worked to integrate the various disciplines of the marine sciences;*
- *someone who is, or has been, actively involved in PICES activities.*

*The late Professor Michael M. Mullin (U.S.A.), Prof. Yutaka Nagata (Japan), Prof. William Pearcy (U.S.A.) and Prof. Paul H. LeBlond (Canada) were honoured with the Wooster Award from 2001-2004.*

*In April of this year, the Science Board evaluated the nominations and selected Dr. Daniel Ware as the recipient of the Wooster Award in 2005. Sadly, Dr. Ware passed away in late July of this year, but we are fortunate that his wife, Madeleine, is able to join us for this celebration of Dr. Ware's accomplishments.*

*Dr. Ware began his scientific career in 1967 at the University of British Columbia where his doctoral research was part of a multidisciplinary study of food web structure and dynamics in a lake ecosystem. A move to the Atlantic coast for a decade at the Marine Ecology Laboratory allowed Dr. Ware to conduct theoretical and field research on fish bioenergetics, fisheries oceanography, stock-recruitment theory, and early life history biology of cod, mackerel, and herring. He returned to the Pacific Coast as a scientist at the Pacific Biological Station and served for a period as Head of the herring research section. He collaborated with Japanese scientists in a comparative study of the Oyashio and British Columbia marine ecosystems. Dr. Ware was Adjunct Professor at both the Simon Fraser University and the University of British Columbia. Following his retirement from Fisheries and Oceans Canada in 2000, he was the President of Aquatic Ecosystem Associates, and Chairman of the Science Panel of the Herring Conservation and Research Society.*

*Dr. Ware is unique among the recipients of this award in that his career was spent in government rather than academia. He tackled both theoretical topics in marine ecosystem science as well as scientific problems associated with the management of fisheries. During the course of his career, he either wrote or*

*contributed to over 50 articles in the primary scientific literature. The most recent of these appeared this year in the prestigious journal, Science. Co-authored with Dr. Richard Thomson of Fisheries and Oceans Canada, the paper demonstrated a strong bottom-up level link between primary productivity and resident commercial fish yield for the entire west coast of North America, extending from the California Bight to the western Aleutian Islands. As an example of the breadth of his scientific interests, his first paper in Nature in 1974, coincidentally with the former PICES MEQ Committee Chairman, Dr. Richard Addison, was on contaminants in plankton.*

*Dr. Ware is also unique in being the first person to hold the position that I now occupy, Chairman of Science Board. He led PICES through its formative years and was a leading force in the establishment of the PICES/GLOBEC Climate Change and Carrying Capacity Program, or the CCCC Program. After serving his 3-year term at the helm, he continued with the CCCC/MODEL Task Team during the development of the now well-known ecosystem model, NEMURO. He was particularly interested in the role of microbial processes. A special issue of Ecological Modelling to be published in 2006 will be the first major publication on NEMURO and NEMURO.FISH models, and this issue will be dedicated to Dan.*

*In June of this year, Dr. Ware received the Timothy R. Parsons Ocean Science Award from Fisheries and Oceans Canada. It is given to residents of Canada for distinguished accomplishments in multidisciplinary facets of ocean sciences either during their lifetime or for a recent outstanding achievement. Dan was the first recipient of this Award after Dr. Parsons.*

*Dr. Warren Wooster was the Chairman of PICES during the period when Dr. Ware served as the Science Board Chairman, and they developed a special working relationship.*

*Dr. Alexander read the following tribute sent by Dr. Wooster:*

*To a taxonomist, the word “holotype” designates the single specimen used as the basis for the original description of a species. In re-reading the criteria for the Wooster Award, I realized that Dan Ware must have been its holotype. His research was certainly interdisciplinary as it focused on important aspects of ecosystem response to human and climate interactions. This was a central theme of PICES from the beginning and one that he significantly advanced as first Chairman of the PICES Science Board and then as active participant in its working groups. Both his scientific contributions and his sustained efforts on behalf of our organization clearly qualify him to receive the award. He was a valued friend and colleague, and one who will be greatly missed.*

Dr. Alexander presented a commemorative plaque to Ms. Madeleine Ware (a permanent plaque identifying Wooster Award winners resides at the PICES Secretariat in Sidney, British Columbia, Canada), who accepted the award with the following remarks:

*In Daniel’s name, I would like to thank you all for this award. I do remember how pleased and honoured Dan was when he heard about the nomination. He was truly looking forward to travelling to Vladivostok and to reconnect with his colleagues and friends. PICES, or rather the people connected and involved with it, were close to his heart.*

*Dan was passionate about his research, and he believed strongly that solid marine ecological research was paramount to manage fish stocks responsibly. He saw his duty as being twofold: firstly, to guarantee the survival of the resource, and secondly, to guarantee the survival of the fishing industry.*

*Dan wrote his personal “Code of Ethics” that always guided his approach to research as well as the interpretation of the data. Here are his words:*

1. *Always err on the side of the Resource.*
2. *Produce a high quality product.*
3. *Always tell the client the “truth”, whether he/she wants to hear it or not.*
4. *Work co-operatively with all clients to come up with the best advice.*

*Dan was passionate about his work, and he felt fortunate that his work connected him with so many dedicated and talented people, many of whom became close personal friends. I know he would have acknowledged you all by name and thanked you for your support and the myriad ways in which your vision influenced his research.*

*I would like to close by quoting Dan when he accepted the Timothy Parsons award in Vancouver this spring “I want to thank you all for this award. It is an honour to be acknowledged by your colleagues and peers.”*

Ms. Marija Krunic, a close friend to Dan and Madeleine, then got on stage and read Madeleine’s remarks in Russian.

### **PICES “Year-in-Review” 2005**

Dr. Kuh Kim reviewed PICES’ scientific accomplishments since the Thirteenth Annual Meeting (*OP Endnote 9*).

### **Keynote lecture**

The Science Board Chairman introduced the keynote speaker, Dr. Vladimir I. Radchenko (Sakhalin Research Institute of Fisheries and Oceanography, Russian Federation), who gave a keynote lecture titled “*Far-eastern sea shelf ecosystems of yesterday, today, and tomorrow*”. The abstract of his presentation is appended to the report in *OP Endnote 10*.

The Opening Session closed at 11:00 a.m.

**OP Endnote 1**

**Welcome addresses on behalf of the host state by Prof. Victor Gorchakov**

Dear colleagues, dear organizers and participants of the PICES Fourteenth Annual Meeting, dear foreign visitors! I am glad to welcome all of you to Primorye.

The Opening of the Fourteenth Annual Meeting of the North Pacific Marine Science Organization (PICES) in Vladivostok, which is devoted to problems concerning the world scientific community today, is an important event for the Primorye region, for the Russian Far East and for the whole of Russia. The Primorye region has had positive experience in conducting similar meetings. In 1999, Vladivostok hosted the PICES Eighth Annual Meeting, conducted under the Primorye region Administration patronage, which was also very successful. The upcoming Annual Meeting with the overall theme on the "Mechanisms of climate and human impacts on ecosystems in marginal seas and shelf regions" signifies the enormous work which has been done for today within the context of global tendencies.

There are various aspects of cooperation of the Russian Federation with the largest international scientific fisheries organizations on problems of fishery, marine researches, marine bioresources stock condition, marine biological resources preservation and rational usage in various areas of the World Ocean. In Russia, perspectives of further development of international activities are planned in the field of fishery. In particular, new multilateral agreements (for example, the Convention on preservation and management of fish resources in the southeastern part of Atlantic Ocean (SEAFO)) will also increase the activity of the Russian scientists and experts within the framework of international fishery organizations.

The science must help to keep, increase and correctly use resources of the World Ocean, and not break natural balance and ecological conditions. Complex study of the World Ocean is necessary within the coordination of marine research works conducted by the various countries. There is no doubt that the conducting

of scientific conferences is especially significant for the training of the young staff, for the education of highly skilled researchers and scientists, for the attraction of wider scientific scopes, for the propagation of advanced information in the field of ocean science and for the consolidation of scientific cooperation at the international level.

Since the international management of the usage of biological resources of the oceans and seas directly infringe on the interests of the Russian fishery, active Russian participation in international scientific projects, expeditions, conferences and symposia which are connected to commercial fisheries will allow Russian scientists and experts to support a high level of research work and provide protection of the Russian fishermen's interests.

Participation at this meeting by scientists of our country and our neighbors in the Pacific region: Canada, U.S.A., Japan, Republic of Korea and the People's Republic of China, and also representatives of other countries in Europe and Asia, gives a special value to the meeting and helps to consolidate mutual understanding, and creates opportunities of further cooperation in joint research work. The exchange of experiences between experts during the sessions and workshops and generalization of results of this Annual Meeting will not only help to consolidate international connections of our scientists, but will also promote wider international integration of scientific knowledge on various marine disciplines. International cooperation makes it possible to get new data and fundamental and applied knowledge of Pacific Ocean and adjacent seas where scientific monitoring and resource research works by Russian research vessels alone is impossible for now.

I express my hope, that participants of the Annual Meeting, besides discussions of results of the already executed research, will find future directions in which efforts of scientists should be concentrated. In the long-term, it will help

leaders of our country and our commercial fishing industry to manage biological resources more effectively in the Russian economic zone, and to build a strategy of reviving the Russian commercial fishing in the World Ocean.

I wish participants of this meeting fruitful work, useful contacts and productive discussions. Thank you.

## **OP Endnote 2**

### **Remarks at the Opening Session by Dr. Laura Richards (Canada)**

Madam Chairman, distinguished guests and colleagues: On behalf of Canada and the Canadian delegation, I would like to thank TINRO-Centre and the Russian Federation for inviting us here to Vladivostok.

In particular, I would like to congratulate the TINRO-Centre Foundation on the occasion of their 80<sup>th</sup> anniversary which was celebrated just this past week. These events remind us of the long history of research in oceanography and fisheries science in the North Pacific – a history of which PICES can now be proud to continue and grow.

PICES has been very active over the past few years. The strategic plan was approved last year and committees are developing their own action plans for future activities to fit within the Strategic plan. Also last year, in 2004, PICES agreed, for the first time in its history, to provide formal advice at the request of a Contracting Party, in this case, the United States. The quality and relevance of the Study Group advice

was a testament to the strength of PICES as an organization.

But change will be a necessary part of future growth. We need to bring new people and fresh ideas into PICES in order to maintain the vibrant and dynamic organization that PICES has become. One important opportunity to achieve this goal is through the new integrative program which will succeed the CCCC Program, now moving towards the synthesis stage. I look forward to intense discussions and debates here in Vladivostok on the various ideas for the new integrative program (or programs), such as ecosystem sustainability, that will make PICES relevant for the years to come. The decision on this program will set the future direction for PICES. I hope that all of you will take part in these discussions so that we can benefit from the experience and expertise of all PICES members.

Let's build on our success and ensure a vibrant and dynamic organization! Thank you.

## **OP Endnote 4**

### **Remarks at the Opening Session by Dr. Tokio Wada (Japan)**

Madam Chairperson, distinguished delegates, ladies and gentlemen! On behalf of Japan and the Japanese delegation, I would like to thank the Government of the Russian Federation, the Government of the Primorye Region, and the TINRO-Center for kindly hosting the Fourteenth Annual Meeting of PICES here in Vladivostok.

I would also like to extend my warmest congratulations to Dr. Bocharov and members of the TINRO-Center for celebrating the 80<sup>th</sup>

anniversary. The TINRO-Center has accomplished many remarkable achievements on fisheries science and oceanography. The TINRO-Center has also been a leader of various PICES activities and a good partner with the Japanese fisheries research institutes. I would like to express my sincere respects to the TINRO-Center for its great contribution to North Pacific marine science, and I hope that the TINRO-Center will continue to play its important role in PICES.

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During the last decade, we have observed several ecological changes in the North Pacific. One of those is jellyfish blooming. It has been observed in the Bering Sea during the 1990s, and recently it has become a serious problem in the East China Sea and Japan Sea. The ecological changes, such as jellyfish blooming, are signs of ecosystem's response to climatic changes and various human impacts. Marine science is expected to examine both climate and human impacts on marine ecosystems and to elaborate integrated management approaches in order to balance conservation and sustainable utilization.

Integrated ecosystem management is an urgent matter in coastal regions that have high productivity and rich biodiversity but have suffered due to various human activities. PICES has been extending its activities to coastal issues

including harmful algal blooms, marine aquacultures, and ecosystem-based management. Dealing with the issues in coastal regions and marginal seas would be a new expected dimension of PICES activities.

Within the context, the theme of this Annual Meeting "Mechanisms of climate and human impacts on ecosystems in marginal seas and shelf regions" is quite a timely one covering various coastal issues. I hope that all presentations and discussions will provide us with comprehensive understandings of the North Pacific marginal seas and shelf regions, and with suggestions on how we can harmonize conservation and sustainable use of their ecosystems. I also believe that these understandings and suggestions would stimulate the discussions on future integrative scientific programs of PICES. Thank you very much.

### OP Endnote 4

#### Remarks at the Opening Session by Mr. Zhi-Xin Chen (People's Republic of China)

Madam Chairman, ladies and gentlemen! Good morning. My colleagues and I have the pleasure to attend the Fourteenth Annual Meeting of PICES in Vladivostok. First of all, I would like to thank the Government of Vladivostok and the Russian delegation for hosting this important meeting in this beautiful city. In preparation for this meeting, the concerned people have made tremendous efforts. This will contribute to the success of the meeting.

In the year 2005, PICES has successfully implemented its work plan. Through the cooperative activities, the member countries have been more closely linked, and the scientific

research has contributed to the development of fishery and oceanic sector in respective countries. All these have become true under the leadership of PICES' Chairman, Science Board Chairman and Executive Secretary. Here on this occasion, I would like to extend appreciation to all the efforts they made.

Further, I hope that PICES' future activities could be more oriented to the priorities of the member countries. And I believe that PICES' future will be bright and promising. In conclusion, I wish this Annual Meeting a success.

### OP Endnote 5

#### Remarks at the Opening Session by Dr. Ig-Chan Pang (Republic of Korea)

The Chairperson of PICES, Dr. Vera Alexander, distinguished delegates, guests, colleagues and ladies and gentlemen! On behalf of the Republic of Korea and Korean delegation, it is my great honor to welcome all of you to this Fourteenth Annual Meeting of PICES. I would

like to express our sincere thanks to the Government of Russia, the Chairperson of PICES, Dr. Vera Alexander, Executive Secretary of PICES, Dr. Alexander Bychkov, and the local organizing committee for hosting this meaningful meeting.

The North Pacific is densely populated and has high economic activities, which may cause serious pollution and diminishing marine resources in this area. In recent years, rapid changes in the atmosphere, ocean, and earth have caused impacts on human activities. As we attain more and more scientific knowledge, we realize that in every aspect, human and natural activities are related to each other. We need more international and interdisciplinary scientific cooperation as we do under PICES Convention.

Scientific activities in PICES take the lead in fulfilling scientific productivity in North Pacific Ocean in climate change, ecosystem, fisheries, carbon cycling, and so on. The Government of the Republic of Korea realized the importance of international cooperation in ocean science through PICES. Now, our government is getting more interested in PICES and is encouraging

young scientists to participate in PICES activities through supporting national programs. We hope the Korean young scientists can play an important role in PICES in the future.

As one of PICES' projects, CREAMS/PICES Program was approved at the Thirteenth Annual Meeting of PICES held in Honolulu in October 2004, as CREAMS' scope was expanded to study effects of climate and long-term changes in the biotic and abiotic environments in the East Asian Marginal Seas. The Government of the Republic of Korea is willing to support this program and will cooperate with PICES member countries to accomplish PICES purposes as the major organization of marine science in the Pacific.

I wish all of you successful achievement at this Fourteenth Annual Meeting with PICES spirit. Thank you.

#### OP Endnote 6

##### Remarks at the Opening Session by Dr. Samuel Pooley (U.S.A.)

Dr. Alexander, distinguished delegates and fellow scientists! On behalf of the United States, I would like to express our appreciation and thanks to the Russian Federation for inviting us here to Vladivostok. We are certain this will be a very productive meeting for PICES.

First, let me say that the United States greatly appreciates the outpouring of assistance from the world community for the relief of the destructive hurricane *Katrina*. These generous offers, including those from our host country here today and other members of PICES, are doing much to alleviate the human suffering caused by this storm. Thank you very much.

Second, the challenges facing the international scientific community to enhance our understanding of climate change and marine ecosystems remain daunting, as is turning this understanding into appropriate conservation and management of living marine resources both nationally and on a regional basis. The collaborative nature of the PICES scientific

community is a critical step in this regard.

This year PICES will decide on a new integrative scientific program. We view this as an important initiative, and its selection could well mark the direction of PICES itself over the next decade. So we look forward to those deliberations.

We also continue to strongly support the PICES Intern Program and other opportunities for young scientists, which not only support PICES as an organization but also build capacity in our member countries and bring fresh insights from the younger generation into this organization. We welcome all of you younger scientists here today.

Finally, we look forward to seeing many of you again in Honolulu next spring at the symposium on "Climate variability and ecosystem impacts on the North Pacific: A basin-scale synthesis", co-sponsored by PICES and GLOBEC. Thank you.

**OP Endnote 7**

**Remarks at the Opening Session by Dr. Lev N. Bocharov (Russian Federation)**

Distinguished Madam Chairman, Dr. Vera Alexander, esteemed member country representatives, participants, ladies and gentlemen! First of all, with great pleasure I would like to welcome you in Vladivostok, which is the biggest scientific center in the Russian Far East.

I would like to make a special note on the excellent work of the local organizing committee, and express my gratitude to all who made arrangements for this meeting.

During the past thirteen years, the scope of PICES activities has multiplied. Extensive and elaborate work is being done now even between Annual Meetings. The relations and cooperation with other international organizations have significantly strengthened. PICES is being more and more attentively regarded by the international scientific community. The proof of it is the presence of many guests and observers from other scientific organizations which are concerned with the exploration and exploitation of the World Ocean.

Exploration of the World Ocean is an essential priority of the Russian Federation, therefore the creation of PICES and its further development as an international scientific organization has been a priority in Russia.

For the people of the Russian Far East, hosting PICES Annual Meeting in our region is

especially important. There is no other Russian region where the economical prosperity and social stability depend so much on marine resources, sea transportation, recreational projects and so on. Conducting two prominent commercial fishing forums in Vladivostok in 2004 and 2005 confirms that. The last of these forums was completed just two weeks ago.

There is no doubt that during the first decade of the 21<sup>st</sup> century, large challenges will take place in fishery science. The progressive ecosystem management approach would be widely used by all countries for ocean studies, marine resources exploitation and in the development of aquaculture.

I also want to mention that only integrated results are important in international research work in the field of mechanisms of climate and human impacts on ecosystems in marginal seas and shelf regions. Such results give us more realistic basis for the long-term forecasting of marine resources and their exploitation.

Autumn is the best season in the Primorye region. I hope that the meeting participants will not only work on scientific sessions but will also have time to get to know our city more.

At the end of my opening remarks I want to wish all participants of the PICES Fourteenth Annual Meeting productive work. Good luck to the Annual Meeting and thank you.

**OP Endnote 8**

**Welcome Address by Dr. Vera Alexander, Chairman of PICES**

The Honorable Professor Gorchakov, distinguished delegates, ladies and gentlemen of the PICES family and welcome guests, it gives me great pleasure to greet you. On behalf of all the PICES members, I thank our hosts for welcoming us to Vladivostok, a city that is not only beautiful, but which has a long tradition of leadership in scientific studies of the North Pacific Ocean. The timing of our meeting here

is particularly appropriate, since TINRO has just celebrated its 80<sup>th</sup> anniversary. Congratulations, TINRO, and best wishes for the next decades. We recognize your excellent contributions and PICES looks forward to our continued productive relationship.

PICES is still a young organization. I suppose we can characterize it as a teen-aged entity.

Compared with our sister organizations such as ICES, we lack a long tradition, but what we do have is a vibrant forward-looking character, open to innovation and responsive to the broad needs for North Pacific marine science.

Political, economic, social, cultural, climate, and conservation issues all relate to the North Pacific Ocean. This vast and awe-inspiring body of water is so huge and has such a strong influence on the nations bordering its shores, that its influence in all these realms cannot be ignored. But PICES is concerned with none of these, but contributes to all. This is the key to the effectiveness of PICES. As a purely scientific organization, PICES can and, indeed, does address all the scientific background issues. The decision that there should be no direct role in the political or commercial aspects of international relations, while remaining open to providing advice when asked, helps to maintain the integrity of the scientific work.

The vast, magical Pacific Ocean unites us. We share it, and it plays an important role in all our lives and in the pulse of the whole planet, influencing its health and sustainability. We must keep in mind the tremendous impact of the Pacific Ocean on the sustainability of life on Earth, and acknowledge the vast impact of climate change.

I see this as an encouraging time. Many good things are happening, albeit clouded by natural and human-induced disasters—hurricanes, typhoons, terrorism, war and famines. So why am I so optimistic? It is because there is increasing and widespread emphasis on improved ways of dealing with and managing resource development, recognizing the fragility of our world and the need to apply complex scientific approaches to activities such as fisheries management. The mantra of ecosystem-based management is not an idle political ploy, but recognizes a true need, even as we don't yet know how to accomplish it. PICES will help.

About 75% of the global capture fisheries are carried out in the Pacific Ocean, 90% of the aquaculture, and 70% of the world's global

consumption of fish production. I am not sure how much of this is actually in the North Pacific, but I suspect it is a substantial proportion. While PICES focuses on a specific portion of the North Pacific Ocean, it is open to the broader connections that must be made. Unfortunately, our attempts to recruit Mexico as a member have so far not been successful, but nevertheless, Mexican scientists are involved in PICES activities, and PICES activities have included the California Current as an important region. Increasingly, we are networking with other international organizations such as ICES and IOC, jointly addressing issues of mutual concern. As we approach the International Polar Year in 2007-2008, we may well become involved at more northern latitudes than has been the case previously. In any event, we welcome the attendance at this meeting of representatives from many cooperating organizations, symbolic of our breadth of involvement in world ocean affairs.

Milestones have passed. We have issued the first Ecosystem Status Report for the North Pacific Ocean. PICES has responded to the first request by a member nation for specific advice concerning the management of fisheries in the context of regime shifts. In a few days we will have available a newly published book on the history of PICES. Perhaps the most important, a new group has been established to develop the next major program for PICES (the Future Integrative Scientific Program); we will be hearing about some of its activities at this meeting.

On the other hand, there is also sad news. Dr. Dan Ware, today's recipient of the Wooster Award, passed away recently. He was a PICES pioneer, first Chairman of the Fisheries Science Committee, and subsequently Science Board Chairman. You will hear more about him shortly. Also, I am sad to tell you that our colleague Prof. Al Tyler died unexpectedly three weeks ago at his home in Salt Spring Island, Canada. He had participated in many meetings of PICES, and chaired the working group on the Bering Sea. He served as my Associate Dean at the University of Alaska for ten years, and was a very close friend.

Now, we should move forward with the meeting. Once again, thank you to our hosts, the Government of Primorye and the Association of Scientific Institutions of TINRO, chaired by Dr.

Bocharov. Once again, I offer a warm welcome to all delegates, participants and observers. Thank you.

#### OP Endnote 9

##### PICES “Year-in-Review” 2005 by Dr. Kuh Kim, Chairman of Science Board

PICES has grown rapidly since its inception in 1992 and has become the primary organization of marine sciences in the North Pacific. In 2005, PICES has built further upon its remarkable history with activities designed to meet the mandate of the Organization stated clearly in Article III of its Convention: firstly, to promote and coordinate marine scientific research in order to advance scientific knowledge of the area concerned and of its living resources, and secondly, to promote the collection and exchange of information and data related to marine scientific research in the area concerned.

PICES is known for its excellent publications. The CCCC/BASS Workshop on “*Linkages between open and coastal systems*” held at PICES XII in Seoul, in 2003, produced 9 papers in *Deep-Sea Research, Part II*. Selected papers from the 2004 Symposium on “*Quantitative ecosystem indicators for fisheries management*”, co-sponsored by IOC, SCOR, PICES, GLOBEC, etc., were published in the *ICES Journal of Marine Science*. In the coming year, 3 special issues are expected to be published in *Progress in Oceanography*, *Deep-Sea Research II*, and *Ecological Modeling*.

It is remarkable that the North Pacific Ecosystem Status Report was published as *PICES Special Publication No. 1* in December 2004, taking only two and a half years. Many of you here were involved in this important task by participating in workshops and meetings and as 14 lead authors and 67 contributors for chapters on Synthesis, Ocean and Climate Changes, and 13 regions in the North Pacific. This report lays a foundation for future scientific activities of PICES.

A parallel collaborative effort between PICES and the Census of Marine Life made it possible

to publish “*Marine Life in the North Pacific: The Known, Unknown, and Unknowable*” as *PICES Special Publication No. 2*. This publication was edited by Drs. Ian Perry and Skip McKinnell, who also put in months for the publication of the North Pacific Ecosystem Status Report. PICES should be proud of these two marine scientists who worked so hard and effectively for the last three years to produce the two *PICES Special Publications*.

Completion of the North Pacific Ecosystem Status Report opened the door for new missions. A Study Group on *Fisheries and ecosystem responses to recent regime shifts* was formed to respond to the first ever, formal request (from the U.S. National Marine Fisheries Service) to PICES for scientific advice on the implication of a potential 1998 regime shift. The Study Group, comprised of 21 members from 6 PICES member countries and the PICES Secretariat, published the report as *PICES Scientific Report No. 28*, edited by Dr. Jacquelynne R. King. An executive summary of this report was also published as PICES’ first Advisory Report.

The PICES Scientific Report Series has reached 30 volumes. *PICES Scientific Report No. 27* is the proceedings of the MODEL Task Team Second Workshop which was held in March 2003, in Yokohama, Japan, in order to develop a marine ecosystem model of the North Pacific Ocean that includes pelagic fish. *PICES Scientific Report No. 29* is the final report of the Study Group on *Ecosystem-based management science and its application to the North Pacific*, established under FIS and MEQ. *PICES Scientific Report No. 30* is the final report of the Working Group 14 on *Effective sampling of micronekton to estimate ecosystem carrying capacity*.

PICES also fulfills its mandate through scientific meetings. Examples are:

- The first CREAMS/PICES Workshop on “*East Asian Seas Time-series (EAST)*” was held in April 2005, in Seoul, Korea, as part of the CREAMS/PICES Program which was approved by the Science Board last year. Establishing permanent observation stations in the Japan/East Sea was discussed as an initial focus of the Program.
- In May 2005, a 2-day OECOS (Oceanic Ecodynamics COMparison in the Subarctic Pacific) Workshop on “*An east-west comparative study of lower trophic level pelagic ecology in the subarctic Pacific Ocean*” was convened in Corvallis, U.S.A., and co-sponsored by PICES and the Oregon State University.
- Another 2-day CCCC/CFAME Workshop was held also in May 2005, in Victoria, Canada, to develop a workplan for future CFAME (Climate Forcing and Marine Ecosystem Response) Task Team activities and hypothesis for CCCC synthesis.
- PICES and GLOBEC co-sponsored a 5-day symposium on “*Climate variability and sub-Arctic marine ecosystems*” in May 2005, in Victoria, Canada.
- Close collaboration between PICES and ICES continues, and this year, two theme sessions were jointly organized at the ICES Annual Conference which was held just two weeks ago in Aberdeen, Scotland; “*Multidisciplinary approaches to the identification of stock structure of small pelagics: Implications for assessment and sustainable management*” and “*Regional ecosystem pilot projects, ecosystem forecasting, and operational oceanography: Comparing and contrasting scientific tools, strategies, outputs, and applications*”.

In conjunction with PICES XIV, four workshops are organized: “*Review of selected harmful algae in the PICES region: I. Pseudo-nitzschia & Alexandrium*” (by MEQ), “*Filling the gaps in the PICES North Pacific Ecosystem Status Report*” (by MONITOR), “*Modeling and iron biogeochemistry: How far apart are we?*” (by IFEP-AP and MODEL) and “*Introduced species in the North Pacific*” (jointly with ICES).

PICES is developing successful cooperation with regional organizations such as the North Pacific Research Board (NPRB). Through funding from NPRB, a new project has been initiated on “*Integration of Ecological Indicators for the North Pacific with emphasis on the Bering Sea*”, and further updates to the North Pacific Ecosystem Status Report will be made. The Continuous Plankton Recorder Monitoring Program for the Eastern North Pacific and Southern Bering Sea will be continued. NPRB also co-sponsored the Symposium on “*Climate variability and sub-arctic marine ecosystems*” and committed funds for the PICES/GLOBEC Symposium on “*Climate variability and ecosystem impacts on the North Pacific: A basin-scale synthesis*”.

PICES evolves as needs arise and new groups emerge. Working Group 19 on *Ecosystem-based management science and its application to the North Pacific* is in place under MEQ and FIS. A Section on *Carbon and climate* is established under BIO and POC, recognizing that PICES has proven its expertise and leadership through earlier activities of Working Groups 13 and 17, to coordinate the scientific problem of carbon cycling in a bottom-up approach on a regional scale, which could then be put into a global scale. PICES now has an Advisory Panel for *the CREAMS/PICES Program in the East Asian Marginal Seas*. Objectives of the CREAMS/PICES Program are first to initiate and oversee a program to study the hydrography, circulation, and biology and their variability in the East Asian Marginal Seas and the effect of climate and long-term changes in the abiotic and biotic environments of this region, and second to facilitate the establishment of permanent observation and data exchange networks in this region.

I would like to especially draw your attention to the development of future scientific program of PICES. Science Board recommended a new Study Group to develop themes for one or more new integrative scientific program(s) to be undertaken by scientists in PICES member countries. Governing Council approved this recommendation in April 2005, and the entire PICES community is expected to be engaged in

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the development of the next major program of PICES in the next decade. The announcement of the new theme is planned for PICES XV in 2006.

In coming years, PICES will be busy with several important meetings. In April 2006, PICES will convene a symposium on “*Climate variability and ecosystem impacts on the North Pacific: A basin-scale synthesis*” in Honolulu, U.S.A., co-sponsored by GLOBEC. The objective of this symposium is a True Synthesis of all scientific activities of the CCCC Program since its beginning in 1994. In July 2006, a symposium to celebrate the 50<sup>th</sup> anniversary of sampling along Line P and Station PAPA will be

held in Victoria, Canada, co-sponsored by Fisheries and Oceans, Canada. In 2007, the 4<sup>th</sup> International Zooplankton Production Symposium will be held in Hiroshima, Japan, co-sponsored by PICES, GLOBEC and ICES.

PICES XV will be held from October 13-21, 2006, in Yokohama, Japan with the theme “*Boundary Current Ecosystems*”. In 2007, we will meet in Victoria, Canada, for PICES XVI.

All materials in my presentation and up-to-date information of PICES are available real-time on the PICES’ website, and I urge you to be part of PICES through this website. Thank you.

## OP Endnote 10

### *“Far-eastern sea shelf ecosystems of yesterday, today, and tomorrow”*

#### **Abstract of the keynote lecture by Dr. Vladimir I. Radchenko (SakNIRO, Russian Federation)**

Systematical research of the far-eastern shelf began in 1950 with the cruises of the famous R/V *Vityaz*. These studies provided the outline for shelf and continental slope areas, composition and distribution of bottom sediments, general characteristics of physical conditions, fish and invertebrates abundance and distribution. The total area of the far-eastern sea shelves exceeds 1 million km<sup>2</sup>. The shelf is extremely rich in living resources, including about 362 million tons of macrozoobenthos, 25 million tons of macrophytobenthos, 165 million tons of macrozooplankton and about 100 million tons of planktonic algae in the warm season. Some of these estimations need a more accurate definition due to the progress of sampling methods and techniques. Benthos quantity estimations can be increased due to the underestimation of bivalve mollusk abundance. Meanwhile, benthic surveys in large parts of the far-eastern shelf conducted at about 20-year intervals have confirmed the relative stability of benthos quantitative characteristics. Fish biomass in the shelf zone could reach 12.5 million tons with a pre-dominance of common pelagic species. Many commercial fish species use the shelf zone as spawning and nursery areas which emphasizes the shelf’s significance in the fish productivity. Resources of micro- and

meiobenthos, bacterio- and microzooplankton, and large gelatinous macrozooplankton still remain an enigmatic value.

Some important processes and phenomena were recently revealed which can affect shelf biotopes, communities, and ecosystems functioning on long-term time scales. Silt accumulation seems to be a fluctuating process, changing with water circulation intensity under climate change. Sedimentation rates can vary and are sometimes higher than estimated by sediment core studies. Regular acoustic surveys of bottom type and characteristics are promising in the study of these processes. Changes in biological diversity and composition of the shelf communities often reflect the current processes of sea floor landscape deformation. Kelp bushes and sea grass bed replacement by coralline algae, so-called “isoyakes”, occur even in areas where human impact is not heavy. The question remains whether these processes are reversible in the long-term.

The shelf zone is first, and to the greatest degree, involved with the anthropogenic activity at sea. Artificial reef installations are widely applied around the world. This activity creates the necessity to accelerate studies of man-made

material biodegradation and biofouling. The territory of the shelf around Russia exceeds 6.2 million km<sup>2</sup>, of which 4 million km<sup>2</sup> are promising for oil and gas development. The initial extracted resources of hydrocarbon raw materials from the shelf are evaluated at 136 billion tons of standard fuel (25% of world-wide resources of hydrocarbons). The Ministry of

Natural Resources of Russia plans to increase the federal budget expenditure for regional works in shelf exploration from 700 million rubles in 2005 to 2.8 billion rubles by 2020. Dissolved oxygen deficiency, pollution due to toxic organic chemicals and heavy metals can be expected, if shelf resources are to be explored in a reckless way.

