

Workshop on the Central Bering Sea

Pollock Resources

May 19-21, 2003

Busan Korea

Purpose and Background

At the 2002 S&TC and Conference meeting a motion was carried that an intercessional workshop be held to discuss updated scientific information relevant to the Convention Area pollock. The purpose of the workshop is to evaluate scientific findings for key accomplishments that would affect our understanding of the pollock resources and to discuss several items that are required for the implementation of the Convention.

Rapporteur's Report

1. Welcoming remarks

Mr. Moo Hyun Kang, President of National Fisheries Research and Development Institute (NFRDI) gave the opening address to the workshop. Each delegation then made opening remarks and introduced themselves. The opening statements from each delegation are presented in Attachment 1. The parties to the convention were all represented except for China.

2. Election of Chair and rapporteur

Dr. Marasco served as Chair and Drs. Ianelli and Williamson were appointed as rapporteurs. Each delegation also appointed a member to assist in the reporting tasks.

3. Adoption of agenda

The agenda was adopted with an added item to allow presentation of the recent winter 2003 survey results from the Bogoslof Island region (as part of Agenda item 4.1).

4. Comprehensive survey plans

Dr. Neal Williamson presented the results from the winter 2003 Bogoslof survey and showed that the biomass has remained stable since 2000 at around 230 thousand tons.

4.1 Research vessel plans

Dr. Williamson opened up the discussion with an overview of AFSC (US) plans for 2003 surveys.

Dr. Nishimura presented results from Kaiyo Maru salmon survey in 2002 (page 17 from their working document). Catches of age-zero pollock were observed in the Convention Area during this survey. The Chinese research vessel Beidou operated in the Basin region in 1993 and saw similar concentrations of age-0 pollock. The Polish delegation noted the concentrations of young-of-year (90 day-old) pollock during trial fishing in the Central Bering Sea (CBS) in July 1993. The workshop noted that a Bering-sea wide study of salmon called "BASIS" is being conducted and may provide useful information for young-of-year pollock. The Russian delegation will be doing two salmon surveys from June-Sept 2003 in the western Bering Sea and adjacent southern Chukchi Sea. The surveys do trawls through the surface to 50m.

The Korean delegation noted that they have no plans for surveys by research vessels in 2003.

Dr. Williamson presented a proposal to do Bogoslof surveys on a biennial basis. This would mean the next survey would occur in 2005, then 2007 etc. Member countries are encouraged to participate in the survey, either by scientist participation in the Miller Freeman surveys or by supplying research vessels to conduct supplemental surveys in this region. The question of communicating changes in pollock abundance was asked. Japan noted that it could be carried out informally via email and web documents. If the patterns of abundance changes drastically, the US delegation noted that they should have the flexibility to modify the survey schedule. This has been done in the past for the EBS shelf region. There were no objections to the proposed schedule.

4.2 Trial fishing survey plans

Two Korean vessels conducted trial fishing this year. Results will be reported at the Annual Conference in Portland.

The Russian delegation stated that their country also intends to conduct trial fishing in the Convention Area in 2003 but plans are still uncertain. If it does take place, all parties will be informed.

The Polish delegation noted that they have no plans to conduct trial fishing in 2003. The US delegation also stated that they have no plans for trial fishing in the CBS.

4.3 Integration of plans

Dr. Williamson presented an approach that allows for the integration of trial fishing and scientific surveys in the CBS (WP1, Tab 3). In this document, historical surveys are summarized by month during the period 1988-2003. Most trial fishing has occurred during the summer and autumn months while the surveys occurred in about equal distribution between winter and summer. The operational requirements and survey design were described in this document, as was the use of trial fishing data.

Dr. Yang commented that coordinating between trial fishing and survey may be useful to extend into the Bogoslof area. Korea expressed that trial fishing vessels would like to operate within a countries' EEZ. However, Dr. Low stated that a separate bilateral application process would be required for entry into the US EEZ.

The workshop expressed an appreciation for the reports presented and generally supported the idea of integrating trial fishing with scientific surveys. This would not necessarily replace the current methods of implementing trial fishing progress but is considered as a supplemental activity.

Korea expressed their appreciation of the work done on drafting a framework for Comprehensive Survey Plans as presented by the US. For future guidelines, Korea has emphasized the need for further development of Comprehensive Survey plans. For clarification in the role of a trial fishing in this survey plan, Korea proposed inserting a new section on the current US draft that better defines the scope and practice of trial fishing.

The Japanese delegation stated that it had never been their policy to interfere with the freedom of the Parties to conduct trial fishing suited to their interests, providing trial fishing rules as defined by the Convention and related guidelines were not modified. In their opinion, trial fishing is intended as a feasibility study prior to reopening commercial fishing in the Convention Area.

This agenda item concluded with a request that members also consider plans for a large-scale synoptic survey for future discussions at the S & T committee.

5. Review of new scientific accomplishments

5.1 Pollock stock identification and genetics

Mr. Yanagimoto opened up the next agenda item with a presentation of his study on the genetic analyses of pollock population structure in the Bering Sea and North Pacific (WP3). The method used involved

mitochondrial DNA using polymerase chain reaction (PCR). The sampling occurred over 10 locations throughout the regions from Japan, the Bering Sea, and the Gulf of Alaska. MtDNA give similar results to allozyme work in that genetic differentiation between different regions is lacking. Polymorphic loci may be able to resolve weak genetic differentiation characterizing large marine fish populations such as walleye pollock.

Korea asked the US whether the existing management stocks in the Bering Sea is based on the scientific evidence from genetic studies. It was pointed out that failure to find genetic differences does not necessarily imply that the management units (stocks) are inappropriate.

Russia presented the latest work of genetic studies in WP4. The intraspecific structure of aggregations of the pollock from the north-western part of the Bering Sea was studied. This study investigated markers using microsatellite DNA sequence data and found deviations among the aggregations and differentiation between the schools. Western Koryak group from the Shirshov underwater ridge was found to be equidistant from Navarin and Olyutorsky group with the genetic distance between the latter two being significantly less. Sequences which were found likely to be under disruptive selection compared to other are neutral or under the influence of balanced selection.

The US presented results from Dr. Canino with the AFSC (WP1, Tab 5). His study confirmed earlier findings of genetic structuring of pollock stocks separated by distant geographical regions. Also, differentiation between the EBS and Gulf of Alaska population was apparent. A significant north-south differentiation of pollock in the EBS is not apparent.

5.2 Pollock migration between the Convention Area and adjacent waters

Dr. A. Nishimura presented WP5 and showed that the Convention Area CPUE was high due to the 1978 year class and that catch rates prior to this time were higher on the shelf region prior to 1983. After about 1988, the CPUE in the Convention Area began to decline to their current low levels. Another part of the study included analysis of growth with otolith samples averaging about 500 per year for 10 years over the period 1978-2002. He also examined patterns in sea-ice extent and other environmental conditions. He proposed that the environmental changes have affected recruitment and migratory patterns.

The workshop discussed a number of issues, including the unique aspects of migratory patterns inferred by CPUE changes seen with these data.

Dr. Stepanenko presented WP6 on the structure of spawning aggregations.

Dr. Glubokov opened the discussion with a presentation of a migration hypothesis (WP7). He proposed seasonal patterns around the Convention Area and pointed out that in the late 1980s, the principal migration routes of pollock were near the southeastern boundary of that area. As the 1998-2001 trial fishing surveys indicated, all captures of pollock occurred along the eastern boundary of the area.

Dr. Williamson presented a report on the summer distribution of small (<40cm) and large (≥40cm) pollock. He showed that, in general, the smaller pollock are found in highest concentrations in the NW region of the EBS near the shelf break while those that occur in the SE region, tend to be up on the shelf along the 100 m contour.

5.3 Assessment on abundance of stocks

Dr. Ianelli presented a brief summary of the status of the EBS pollock conducted for quota recommendations in 2002 (WP1, Tab 7). One new figure presented showed the distribution of pollock in bottom trawls relative to bottom temperature estimates.

Dr. Glubokov presented an update on the status of surveys conducted in the Russian zone over the past year. Results from these surveys indicated that pollock stocks in the north-western Bering Sea are

slightly increasing. The previous Russian survey data on the 2000 and 2001 year-class strength were confirmed and the 1999 year-class appears to be about average abundance within the Russian EEZ.

5.4 Factors affecting the recovery/decline of the pollock stock in the CBS

Presentations made at this workshop indicated that environmental factors appear to have the greatest impact on the pollock population. The workshop concurred with this finding but noted that conditions favoring recovery of pollock in the CBS will be difficult to predict. It was noted that this topic was covered extensively in previous workshops and reports from those meetings are available for further details.

5.5 Other scientific accomplishments

Other contributions relevant to the CBS were presented under the above agenda items.

6. Compare scientific information in the Convention with scientific highlights

It was noted that earlier agenda items presented new data and results, but definitive information that would modify current scientific perception of the CBS pollock situation is not apparent.

Dr. Stepanenko noted that all parties work together in a concerted effort to try new methods for stock identification including tagging. Dr. Ianelli reported that some preliminary analysis on the magnitude of the tagging effort required had been conducted. This study suggested that the number of releases required to estimate movement may be prohibitively high. Furthermore, the actual marking methods for pollock have not been proven in the areas where they are needed. Also, the equipment required for detecting tagged fish is expensive and may have logistic problems.

Dr. Yang requested some evaluation of the environment and marine mammals - pollock interactions. It may be possible to get information for exchange.

7. Formation and determination of ABC/AHL.

The Japanese delegation presented their proposal (first shown at the last S & T meeting) in WP2 (page 20). This method is tied to the approach used by the US North Pacific Fishery Management Council for their recommendations on Alaska groundfish quotas. Dr. Low continued this discussion and provided background used in the NPFMC setting. He noted that the method is evolving and that a minimum stock-size threshold may effectively change ABC recommendations substantially at low stock sizes.

According to the discussion at the last S&T and annual meeting, Korea noted the necessity of discussing ABC before determining AHL, and it has pointed out that since there's no alternative option on determining ABC procedure at the moment, the Japanese proposal is acceptable. However, it noted that the draft procedure needs modification when better approaches become available.

The S & T advises on scientific issues and should thus provide information to the plenary regarding the productivity of pollock in the Convention Area and the potential catch levels relating to ABC's and AHL. The suggestion is that the S & T also provide ABC recommendations in addition to AHL values. The workshop noted that ABC had already been established as an approach worth pursuing and that the workshop should provide advice on the best methods to derive an ABC value.

The Convention is very specific on how AHL is determined. The Japanese delegation suggests using a scientific rationale in the process of setting AHL. If scientific information allows AHL to be calculated, it should be calculated. Korea expressed its support to the Japanese position on setting AHL.

8. Other Business

Dr. Low opened with a presentation on the proposed website (WP1, Tab 9). A number of recommendations were made including: a standalone web address, a unique look and feel, and the ability

to post documents for distribution to Parties to the convention. While the resources for this work may be difficult to provide, the US delegation indicated that they would proceed with these requests. However, feedback from Parties is required including confirmation that the website development be encouraged.

The second item of Other Business was consideration of the Annual Conference agenda in September (to be held in Portland Oregon, USA). The workshop agreed that the current draft agenda was appropriate.

Agenda

1. Welcoming remarks. Speech by President of the NFRDI and introductory comments from each delegation.
2. Election of Chair and Rapportuer
3. Adoption of Agenda
4. Comprehensive Survey Plans
 - 4.1. Research vessel plans
 - 4.2. Trial Fishing survey plans
 - 4.3. Integration of plans
5. Review of New Scientific Accomplishments
 - 5.1. Pollock stock identification and genetics
 - 5.2. Pollock migration between Convention area and adjacent areas
 - 5.3. Assessment on abundance of the stocks
 - 5.4. Factors affecting the recovery/decline of the pollock stock in the EBS
 - 5.5. Other scientific accomplishments
6. Compare scientific information in the Convention with scientific highlights
 - 6.1. Stock Identification
 - 6.2. Pollock Migration
 - 6.3. Abundance of the Stocks
 - 6.4. Other scientific information
7. Formation and determination of ABC/AHL
8. Other Business
 - 8.1 Website
 - 8.2 Next annual conference and agenda for the S & T meeting.
9. Compilation of a Workshop Report for S&T at the Annual Conference
10. Closing Comments

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List of Documents (Draft)

Working Papers: (CBS/WS/0503/WP__)

1. Information submitted to the Central Bering Sea Pollock workshop. Prepared by the US delegation
2. Information prepared by Hokkaido National Fisheries Research Institute, Fisheries Research Agency, Japan.
3. Genetic variation in the walleye pollock, *Theragra chalcogramma* by mitochondrial DNA analysis. T. Yanagimoto et al.
4. Genetic structure analysis of aggregations of walleye pollock *Theragra chalcogramma* in the North-western part of the Bering Sea. E.A. Shubina et al.
5. Walleye pollock distribution in the Aleutian Basin shown by historical fisheries data analysis. A. Nishimura et al.
6. Structure of Eastern Bering Sea pollock (*Theragra chalcogramma*) spawning aggregations and its functional consistence. M. A. Stepanenko.
7. Pollock migration between Convention area and adjacent Areas. A.I. Glubokov.
8. Abundance of the stocks (in the Russian Federation Zone). A.I. Glubokov.

Information papers

Papers from “Pollock stock structure and identification workshop” Yokohama Japan, 7-9 1999. Technical reports of the Hokkaido National Fisheries Research Institute No. 5.

Results from the Echo Integration-trawl survey for walleye pollock on the Bering Sea shelf and slope in June and July, 2002. AFSC Processed Report 2002-04.

Walleye pollock distribution in the Aleutian Basin shown by historical fisheries data analysis (powerpoint presentation by Dr. Nishimura, WP5).

Polish trial catches of walleye pollock *Theragra chalcogramma*, in the international waters of the Bering Sea in the summer of 1993. J. Janusz, Sea Fisheries Institute, Gdynia, Poland.

The practice of using vertebrae for determining the age of walleye pollock. A.V. Buslov

Russian pollock management measures in 2003. Submitted by the Russian delegation

Opening Statements

Japan

Mr. Chairman, Distinguished Delegates, Ladies and Gentlemen. My name is Mitsunori Oi. I would like to greet you on behalf of Japan Delegation.

I am glad to meet again all of you participating in this work shop. Let me express my sincere gratitude to the associates of Korean Government who in spite of their busy schedules sacrificed their time to prepare our meeting.

More than 10 years has passed since moratorium, the most stringent measure of conservation and management, was put to work. There is no question that moratorium proved effective as a mean to prevent immediately a decline of resources due to fishing in convention waters, but it is also evident that it has not contributed significantly to pollock resources restoration.

One cannot help thinking that among reasons for our failure to rebuild the stock there should be named limited scientific understanding of the peculiarities of Bering Sea pollock, as well as inadequacy of conservation and management methods applied. In place of simple and immediate restrictions we need to accumulate new scientific expertise and consider resources management measures extending to the whole area of Aleutian Basin.

This convention has been aimed at conservation, management and optimum utilization of pollock resources in the Bering Sea. From this point, the fact that all the parties to the Convention agreed to establish ABC at last year Annual Conference, has been an important step.

In opinion of my country, based on scientific rationale AHL should be set, no matter how small the volume. We do expect that this issue will be thoroughly discussed during this work shop.

I would like to conclude wishing all of us to have a meaningful work shop, one that will contribute to future discussions.

Republic of Korea

Good morning. Mr. Chairman, distinguished delegates and gentlemen,

I am Yeong Chull Park, Director General of Fisheries Resources Department of National Fisheries Research & Development Institute in Busan. On behalf of Korean delegations, I would like to welcome you to my institute sitting at beautiful coast of east side of Busan.

We get together here discuss scientific matters that were mostly decided at the S&T Committee meeting held in Moscow last year. We are well aware that many scientific effort have been made for the conservation and management of Pollock resources in the Central Bering Sea over a decades. However, there are still lots of pending issues we need to tackle. Those might mainly be the first, migration pattern between the Convention area and adjacent areas, the second, stock identification and, the third, factors affecting the Pollock stock in the Central Bering Sea. At this Workshop, I do hope fruitful progress would be made to improving the scientific knowledge of the Pollock stocks.

Poland

Mr. Chairman, distinguished delegates and gentlemen.

I would like to express my pleasure to be here in Busan to participate in the Workshop on Pollock resources.

North Pacific area was one of the most important fishing ground Polish fleet since 1980, and the central Bering Sea water was the principal fishing ground of Pollock during 1985-1991. After 1992 this area has been closed for fishery until now.

The suspension of Pollock fishery in the whole Aleutian Basin for more than 10 has not resulted in the stock recovery.

I believe that Workshop will be successful in exchanging new information and to improve our understanding of Pollock resources in the Bering Sea.

Thank you.

Russian Federation

Mr. Chairman, distinguished delegates and gentlemen, I would like to express my gratitude to the Government of Republic of Korea and National Fisheries Research and development Agency for organizing and hosting Central Bering sea Pollock workshop.

It was in September, 2002 that we met in Moscow where stabilization and some growth in Pollock stocks on the Bering Sea shelf was shown. However, the results of research in the Central Bering Sea indicate again that Pollock concentration are lacking there. One of the principal tasks of this workshop is to plan investigations of Pollock in such a way that their results could explain the contradiction between the onset of stock recovery on the shelf and the absence of such a start in the deepwater parts of the sea. The new data on the population/genetic structure of Pollock, and on the interaction among different stocks are to help us to draw up an international Bering Sea Pollock research plan.

We should look optimistically into the future when our profound knowledge allows us achieve optimum measures for the management of stocks of hydrobionts.

Mr. Chairman, we are here to continue our important work to further the objectives of the convention.

I would like to introduce the Russian delegaion.

Thank you.

United States

Distinguished delegates and colleagues, good morning. The U.S. Party would like to thank Mr. Moo-Hyun Kang, president of the National Fisheries Research and Development Institute, NFRDI, for taking his valuable time to welcome us to this Workshop. We also thank the NFRDI for hosting this important event and all the staff who worked in the background to make this event happen.

All the members of the U.S. delegation here have been to Busan before and are pleased to be here again at this fine fisheries research facility of the Korean Government. We have come to contribute to discussions of this Workshop and to work towards the rational utilization and conservation of the resource to the Convention for the Conservation and Management of Pollock Resources in the Central Bering Sea.