REPORT OF THE FIFTH ANNUAL CONFERENCE OF THE PARTIES TO THE CONVENTION ON THE CONSERVATION AND MANAGEMENT OF POLLOCK RESOURCES IN THE CENTRAL BERING SEA

REPORT OF THE FIFTH ANNUAL CONFERENCE OF THE PARTIES TO THE CONVENTION ON THE CONSERVATION AND MANAGEMENT OF POLLOCK RESOURCES IN THE CENTRAL BERING SEA

November 6 - 10, 2000
Shanghai, The People's Republic of China

Final: 10 November 2000, 1140

1. Opening of the Conference.

On behalf of the Government of the People's Republic of China (China) and the Chinese Delegation, the Chairperson, Prof. Zhou Ying Qi, President, Shanghai Fisheries University, welcomed the delegations from the Parties to the Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea (the Convention) to the Fifth Annual Conference. Prof. Zhou convened the Annual Conference at 1030, Monday, November 6, 2000. One intergovernmental organization observer participated in the Annual Conference and the Scientific and Technical Committee meeting, Mr. Vladimir Fedorenko, the Executive Director of the North Pacific Anadromous Fisheries Commission.

2. Opening Statements and Introductions.

2.1. Opening statements provided by the Parties are included in Appendix 1.

2.2. A complete list of the delegates is provided in Appendix 2.

3. Elections.

3.A. Chairperson.

Mr. Zhou was elected as Chairperson of the Fifth Annual Conference.

3. B. Vice-Chairperson.

Mrs. Lidia Kacalska Bienkowska, Director, Fisheries Department, Ministry of Agriculture and Rural Development Poland, was elected Vice-Chairperson.

3.C. Rapporteur.

LCDR Dwight Mathers (United States) was appointed as rapporteur to prepare the reports for the Fifth Annual Conference.

4. Adoption of the Agenda.

The Parties adopted the Provisional Agenda (Appendix 3), as modified.

5. Report of the Science and Technical Committee.

5.1. Dr. Richard Marasco (United States), Chair of the Scientific and Technical (S&T) Committee, reported on the results of the S&T Committee Meeting of November 6-8, 2000. These are detailed in the "Report of the Meeting of the Scientific and Technical Committee," which was distributed separately to the Parties. The S&T concluded that, despite the extensive research efforts of the Parties in 2000, there were insufficient data to directly estimate the Aleutian Basin pollock (ABP) biomass. As prescribed by the Convention, the S&T agreed to use the indirect method to estimate the ABP biomass. According to Annex Part 1 C of the Convention, the Bogoslof Island biomass represents 60% of the ABP biomass. Therefore, the Bogoslof Island biomass of 270,000 mt and 257,000 mt determined by the *R/V MILLER FREEMAN* and the *R/V TAMGU NO. 1*, respectively, are the most recent estimates that should be used to indirectly estimate of the ABP biomass. **Using these two figures, the S&T Committee agreed that the ABP biomass would be indirectly estimated as 428,333 mt, as determined by the results of the *R/V TAMGU NO. 1* survey, to 450,000 mt as determined by the results of the *R/V MILLER FREEMAN* survey.**

5.2. Dr. Marasco concluded by referring the Conference to the "Report of the Meeting of the Scientific and Technical Committee" for additional specifics of the S&T Meeting. **The Conference agreed to adopt the "Report of the Meeting of the Scientific and Technical Committee."**

6. Action Items.

6.A. The Review of Scientific Data and Conservation Measures of the Coastal States Related to Pollock Fishing in the Central Bering Sea.

6.A.1. Japan requested from the United States and Russia any maps they may have indicating fishing management measures in their exclusive economic zones (EEZ). Japan explained that such maps would help it to better understand the complex measures these countries take to conserve and manage pollock resources within their EEZs. The U.S. delegation responded that much of this information is available on U.S. Internet websites. It agreed to provide the Parties with the pertinent web addresses and to also distribute additional information. Russia responded that it would provide the data requested by Japan for 2000 and the measures for 2001, which are expected to be more stringent, once they are finalized.

6.A.2. The Conference agreed that this item had been thoroughly discussed during the S&T Meeting and agreed that no further discussion was necessary.

6.B. The Establishment of a Plan of Work for the Scientific and Technical Committee.

6.B.1. The United States stated that the comprehensive research plan considered in the S&T Committee meeting is a very important activity for future research efforts to best assess the status of the Pollock stocks in and around the Convention Area. Progress was made by the Parties for tentative plans to conduct research cruises at about the same time and in the same area of the Bering Sea in 2002. The United States reminded the Parties that the S&T Committee agreed to form a working group led by Dr. Neal Williamson (United States) to coordinate work on the comprehensive research plan for 2002. The United States asked each of the other Parties to provide the name of its point of contact. The Parties responded with the following names:

Japan: Dr. Akira Nishimura, Hokkaido National Fisheries Research Institute
Poland: Mr. Jerzy Janusz, Sea Fisheries Institute
China: Mr. Liu Xiaobing, Bureau of Fisheries, Division of International Cooperation
Korea: Dr. Seok-Gwan Choi, National Fisheries Research and Development Institute
United States: Dr. Neal Williamson, NMFS Alaska Fisheries Science Center.
Russia: Dr. Vladimir Radchenko, TINRO Center.

6.B.2. The Chair of the S&T Committee summarized the Plan of Work for the Committee for 2001 as (1) a survey by the *R/V MILLER FREEMAN* (United States) in the Bogoslof Island area, (2) creation of an historical catch database, (3) planning for a cooperative research vessel survey in 2002, and (4) trial fishing, if authorized, for 2001.

6.C. The Establishment of the Terms and Conditions for Trial Fishing in 2001.

6.C.1. The Chair for the S&T Committee stated that the Committee discussed this issue and recommended extending the same terms and conditions adopted for trial fishing in 2000 for 2001, with one change--a two week vice one month notification.

6.C.2. Korea stated that, although there are different views on the definition of the precautionary approach, the common goal of all Parties is to better estimate of the biomass of the pollock stocks in the Convention Area. Korea said it believes the best way to gather data on these stocks is to conduct trial fishing operations. Currently, only two vessels from each Party are allowed to trial fish in the Convention Area at any given time. Korea stated that the number of trial fishing vessels should be increased to better estimate the pollock stocks. Korea suggested that Parties which do not intend to conduct trial fishing should be allowed to transfer their trial fishing rights to Parties that do intend to conduct trial fishing.

6.C.3. Russia stated that when considering the Korean proposal, the Parties must carefully consider the status of the pollock stocks. The S&T Committee estimated the Aleutian Basin pollock biomass at approximately 428,000-450,000 mt. This estimate could be too high. The results of the Bogoslof Island surveys indicate that the Parties may already have overfished the stock in the Convention Area by the time the Convention was signed. Russia said it does not see the utility of increasing the trial fishing effort. China did extensive trial fishing this year and found very few fish. The Korean proposal would allow twelve trial fishing vessels in the Convention Area, but if there are no fish, what will they do? Allowing additional trial fishing could send the wrong message to the fishermen, i.e., that there are fish in the Convention Area when there are actually no fish there. This could cause even greater economic loss for those fishermen. Russia is in favor of waiting until the stocks begin to recover before increasing trial fishing. Until that time, Russia said it opposes the Korean proposal.

6.C.4. The United States supported Russia's comments and cautioned the Parties about thinking that an increase in trial fishing vessels will necessarily result in better biomass estimates of the pollock stocks in the Convention Area. Such research requires well-designed, credible research plans. It also requires much more coordination than currently takes place with trial fishing operations. Trial fishing provides useful data, but not the kind that allows the estimation of biomass. The United States said it does not support deviating from the current policy on trial fishing.

6.C.5. China stated that one of the main purposes of trial fishing is to prove whether or not the scientific data is true. China proposed that the Parties conduct coordinated or joint trial fishing. For example, if each Party sent 2 vessels at the same time, there could be 12 trial fishing vessels in the Convention Area at the same time and that may improve the information obtained from trial fishing.

6.C.6. The United States stated that the China's proposal is worthy of serious consideration by the Parties. In the past, when trial fishing plans have been provided, the information contained in the plans has generally been poor--last minute and incomplete. To make the Chinese proposal work, the Parties would need to coordinate the trial fishing plans of all the Parties to improve the scientific data they would collect.

6.C.7. Japan agreed that scientific information gathered by trial fishing vessels is not as detailed as the information provided by research vessels, but nevertheless, the information that is gathered can be used to show the existence of fish in the CBS. For this reason, trial fishing is valuable for determining if commercial fishing in the Convention Area is feasible. Japan expressed interest in China's proposal for joint or coordinated fishing, but explained that Japanese fishermen are not currently able to participate in trial fishing due to economic reasons. Because of this, Japan said it would be willing to transfer its trial fishing opportunity to another Party that might be interested in conducting additional trial fishing in 2001, per Korea's proposal.

6.C.8. The United States expressed the opinion that if trial fishing is to be for the purpose of providing additional scientific information, a multinational approach is best. This allows the fishermen of all Parties to be involved in the trial fishing efforts and observe first hand the status of the stock within the Convention Area. The United States reminded the other Parties that the S&T Committee agreed to work towards a comprehensive research plan and three of the Parties are planning research cruises in 2002. A working group has been established to coordinate these efforts.

6.C.9. Japan stated that for the purposes of gathering scientific data, it agreed with the concept of a coordinated research plan. However, Japan believes that the first priority of trial fishing should be to predict the feasibility of commercial fishing, not to gather scientific data.

6.C.10. The Russian delegation informed the Parties that, due to the current economic situation in Russia, Russian commercial fishing vessels conduct most scientific research with special scientific instruments installed. This practice provides good scientific data. Expenses to cover these research activities are negligible in comparison to the other expenses for the vessel. Russia suggested that other Parties outfit their trial fishing vessels with similar scientific equipment so that trial fishing can provide much better scientific data and improve our knowledge of the stocks in the Convention Area.

6.C.11. Japan said it could not support this proposal, since trial fishing should be for the purpose of determining the feasibility of commercial fishing and scientific data gathering is a secondary purpose, according to the Convention. Japan had a problem with the Russian proposal that trial fishing be used for scientific purposes because the potential expense of such trial fishing would be imposed on Japanese fishermen and they could not expect any income from trial fishing.

6.C.12. China reiterated that trial fishing has two purposes--to augment and improve results from scientific research and to determine the feasibility of commercial fishing. China stated that a joint effort to coordinate trial fishing plans would need to involve at least eight vessels to get meaningful data. The Parties' goal should be to improve trial fishing efforts.

6.C.13. Mr. Woo-Kun Lim, Chairman of the North-Pacific Trawl Fisheries Committee (Korea), made a statement on behalf of Korean fishermen (Appendix 4).

6.C.14. The United States stated that if trial fishing is to be used for gathering scientific data, then it must be carefully controlled and coordinated. The Chinese proposal for joint or coordinated fishing represents a responsible and reasonable suggestion. Such a multinational effort would require some cooperation, but that is the whole reason for the Convention--to cooperate to gather information on how to best manage this fishery. The United States believes the Conference has acted very responsibly to manage this fishery. The Parties must continue to look at the long-term health of the pollock resource and not be shortsighted. The ultimate goal is to have a pollock stock that is capable of supporting a sustainable fishery.

6.C.15. Japan pointed out problems regarding trial fishing for the purpose of gathering scientific data. First, the area where data would be gathered is limited, since trial fishing is only conducted in the Convention Area and not in the adjacent EEZs. Japan said it does not agree with the Russian suggestion that scientific data should be gathered by trial fishing vessels, since trial fishing vessels are not research vessels and there is no guarantee that the trial fishing vessels would always be able to collect the scientific data in a competent manner.

6.C.16. Korea stated that trial fishing is important for providing additional data on the CBS pollock biomass that would otherwise be unavailable because of the moratorium.

6.C.17. Poland stated that during the Seattle meeting, the purposes of trial fishing were extensively discussed and the Parties agreed that the gathering of fishing data and limited scientific data is the purpose of trial fishing vessels. Based on this, Poland would support using the same terms and conditions for trial fishing in 2001 as were used in 2000.

6.C.18. The United States supported this proposal and Russia agreed. Korea emphasized that it supports its request that would enable Parties to transfer trial fishing opportunities to other Parties, since the number of trial fishing vessels currently allowed is not sufficient.

6.C.19. Since trial fishing efforts to date have resulted in very few fish being caught in the Convention Area, the United States asked Parties how many trial fishing vessels are necessary to count zero pollock? As stated earlier, the United States said it would need much more detailed trial fishing plans before it could accept the transfer of trial fishing opportunities.

6.C.20. Russia stated it viewed the earlier United States proposal (that the working group for developing the comprehensive research plan for 2002 also examine trial fishing and how efforts could be coordinated to provide better information) as a good compromise. The proposal to increase the number of trial fishing vessels would give the fishermen the wrong impression. The United States proposal would solve the three problems presented by Korea, China and Japan.

6.C.21. The United States recommended that (1) Parties adopt the recommendation of the S&T Committee that the trial fishing terms and conditions for 2001 be the same as 2000; (2) the working group that would be looking at a comprehensive research plan for 2002 would also look at ways to improve coordinated trial fishing efforts in the future and how trial fishing can be improved and factored into the comprehensive research plan; and (3) suggested that the individuals in that working group initiate contact by December 2000 to begin their coordination and determine if an intersessional meeting of the group would be necessary.

6.C.22. Poland supported these recommendations and Japan also supported them under the condition that trial fishing would only be conducted voluntarily.

6.C.23. Korea stated that, in terms of trial fishing, Korea agrees with China's proposal for joint trial fishing efforts to get as much scientific information as possible about the pollock stocks in the Convention Area. Japan commented that the decision to conduct trial fishing by Japanese fishermen is not controlled by the Japanese Government, but the fishing industry. Therefore, although Japan cannot commit its fishermen to a joint trial fishing plan, it does not want to prevent the other Parties from conducting joint trial fishing.

6.C.24. China stated that trial fishing is very important and is a "bridge" that connects the fishermen to the scientists, especially when considering joint trial fishing efforts and a comprehensive research plan. Russia supported the Chinese proposal and stated that when it raised the matter of the usefulness of combining fisheries surveys and trial fishing, it was with the same goal as what China has proposed--to link the fishermen with the scientists and allow fishermen to see what the scientists are doing first hand. This will ensure the fishermen understand the true status of the stocks, since fishermen think that as long as there is water, then there will be fish.

6.C.25. The United States stated it could support joint trial fishing, as long as it was in the context of the terms and conditions previously adopted by the Annual Conference. Joint trial fishing would also need to be voluntary, since it is unlikely the United States would participate in the actual joint trial fishing effort. However, the United States would want to participate in the planning and evaluation of any data that is collected.

6.C.26. **The Parties agreed to the following:**

-- that the Trial Fishing Terms and Conditions for 2001 (Appendix 5) would be the same as those used in 2000 with one change, a two week instead of a one month notification;

-- that Parties should be encouraged to conduct voluntary joint trial fishing and Korea agreed to coordinate the joint trial fishing efforts of the Parties for 2001;

-- that the working group looking at a comprehensive research plan for 2002 would also examine at ways to improve coordinated trial fishing efforts in the future and how trial fishing can be improved and factored into the comprehensive research plan; and

-- that the individuals in that working group initiate contact by December 2000 to begin their coordination and determine if an intersessional meeting of the group would be necessary.

6.D. The Establishment of the Allowable Harvest Level (AHL) for 2001.

6.D.1. The United States recommended a zero AHL for the following reasons. During the S&T Committee's discussion of this issue, a bar chart showing biomass estimates from 1988 to 2000 (Appendix 6) was distributed. It showed a biomass in a state of decline for that period. If the Parties wish to employ the precautionary approach, then AHL should be zero. In light of what is known about recruitment, there can be no other alternative. The United States said it does not understand how setting an AHL of anything other than zero can be consistent with the precautionary approach.

6.D.2. Japan stated that the Aleutian Basin stock is in critical condition as was discussed in the S&T Committee meeting. Japan still understands, in principle, that a scientifically reasonable AHL could be established, calculated on the basis of allowable biological catch (ABC). The Parties need to carefully consider the conservation and management of the stock in light of the discussions in the S&T Committee. There has been the most rigorous moratorium in place on the high seas for many years now and Parties cannot do any additional fishing management measures on the high seas. Taking into account the current status of the stocks in the Aleutian Basin, Japan understand that it is necessary to examine the conservation and management measures in the eastern Bering Sea (EBS) where the Aleutian Basin pollock are migrating. This is in keeping with the precautionary approach suggested earlier by the United States. In order to protect this stock which is at a critical stage and to implement the precautionary approach, Japan willingly accepts a zero AHL for 2001. However, if sufficient conservation and management measures are not imposed in the EBS, Japan would support setting an AHL based on Japan's ABC proposal. Then, if AHL was established, Japan would not fish on that AHL, taking into consideration the ABP stock situation.

6.D.3. Russia stated that the historical data on the Aleutian Basin stock indicates there are two stocks, one originating in the western Bering Sea (WBS) and one in the EBS. Catch statistics for the area west of 174°E show that from 1983 to 1993, the catch varied from 200,000 mt to 410,000 mt. The stock biomass in that area was estimated at 1.5 mmt to 2.5 mmt at that time. Each year Russian fishermen have observed that spawning pollock increasingly moved to deeper depths after spawning. The stocks would then return to that area in the autumn. Russia reported that pelagic stock of WBS pollock were overfished in the Aleutian Basin, which lead to its decline. The shelf part of that stock did remain in the WBS and is still there. There were two components to the WBS stock, shelf pollock and pelagic pollock. The shelf component is all that remains. Over the past few years, Russia has attempted to convince its fishermen not to continue fishing that stock to allow it to recover under the precautionary approach. This is the first year Russia has succeeded in this endeavor and fishing will not be allowed west of 174°E starting in 2001. Fishing habits on the outer edge of the shelf and on the slope and spawning behavior are similar to the Bogoslof Island area. A similar picture is observed with the Bogoslof stock. Most of the pelagic stock there has been liquidated and it is mostly the shelf stock that remains. The S&T Committee estimated that the stock biomass there is 270,000 mt, leading to an indirect estimate of the Aleutian Basin stock of 450,000 mt. If a harvest is allowed, then this fragile stock with be further damaged. Therefore, Russia supported a zero AHL for 2001. Russia agreed that Japanese fishermen are not interested in conducting trial fishing since those fishermen recognize there are no fish, but that concept is not logically consistent with setting an ABC as Japan has proposed.

6.D.4. Poland stated that it should be possible to set an AHL based on the amount of stock available for both biological and political reasons. The biological reasons were discussed during S&T Committee. The political reasons are because the fishermen have been hurt financially by no fishing in the CBS and the Polish Government is under increasing pressure to allow them to resume fishing. Poland said that although the Convention was not established against the fishermen, many fishermen believe it is against them, especially with eight years of moratorium. Opening a fishery with a small AHL would send a positive signal the fishermen that fishery managers are sensitive to their needs.

6.D.5. Korea stated that Korean fishermen are desperate to resume fishing in the Convention Area. Korea proposed setting an AHL following the precautionary approach. Korea commented that the Convention's requirement of a minimum 1.67 mmt biomass to establish a commercial fishery was not based on science. Setting even a small AHL would provide more scientific data. Korea said that such a "cautionary" AHL might be too small for the fishermen to actually resume fishing, but it would give the fishermen hope for the future, when a larger AHL could be established. Korean

fishermen are also willing to use 110mm mesh net in the codend.

6.D.6. China stated that the Chinese Government is also under pressure from Chinese fishing companies to resume fishing. The 1.67 mmt was set eight years ago when data was insufficient, but today there are more data. China does not believe that the 1.67 mmt figure is still valid after eight years and thinks the Parties should change the methods to set AHL in order to provide relief to the fishermen.

6.D.7. The United States said that statements that the 1.67 mmt biomass required by the Convention fishery was not based on science is irresponsible to the Parties that were involved with drafting the Convention. To date, no information has been provided to support the contention that 1.67 mmt is inappropriate.

6.D.8. Japan referenced Article VII of the Convention regarding the setting of AHL. If every effort to achieve consensus has failed, then AHL is set by Part I of the Annex, which requires an Aleutian Basin biomass of 1.67 mmt. Before the Conference can proceed to 1.67 mmt figure, there must be no consensus on AHL. It is not appropriate to discuss 1.67 mmt at this time until it is determined whether there is consensus on AHL.

6.D.9. China referred to the United States statement that there is no information available to say that a 1.67 mmt biomass requirement is inappropriate. That amount was set eight years ago and there have been many environmental changes since then. China commented that it might be necessary to specify another area, in addition to the Specific Area (Area 518), as a more reliable estimator of the ABP biomass. There has been no sign of recovery for eight years. Conservation is important to not only protect the stocks, but also to rationally utilize the stocks.

6.D.10. The United States stated that this highlights the United States' strong support for a comprehensive research plan for all the Parties to study all of this information. Additionally, some scientists have suggested that having the Bogoslof Island biomass represent 60% of the ABP biomass, as required by the Convention, may actually be too high. However, it is possible that the number may be too low.

6.D.11. The United States recalled Japan's reference to Article VII of the Convention, that if there can be no consensus on setting an AHL, then the AHL shall be zero. It was the United States' view that the Parties are far from consensus on setting AHL, so the AHL should be set at zero for 2001.

6.D.12. The Chair noted the Conference failed to reach consensus for 2001 as required by Article VII-1, therefore, in accordance with Article VII-2, **the AHL for 2001 will be set at zero.**

6.E. The Establishment of the Individual National Quotas (INQ) for 2001.

In accordance with Article VII-2, since the AHL for 2001 was set at zero, no individual national quotas (INQ) were established.

6.F. The Adoption of Appropriate Conservation and Management Measures Based Upon the Advice of the Scientific and Technical Committee.

6.F.1. The Chair for the S&T stated that no recommendations were forwarded from the S&T Committee.

6.F.2. Korea suggested that a single observer should be sufficient to perform the observer duties. Korean vessels only have room for one observer. Korea believes that only the flag State should place observers on its vessels.

6.F.3. Poland supported this proposal.

6.G. Trial Fishing Plans in 2000.

6.G.1. Poland stated it planned to conduct trial fishing in 2001. Poland prepared a plan (Appendix 7) in accordance with what was discussed at the Pollock Workshop in Seattle in July 2000.

6.G.2. Japan distributed its trial fishing plan for 2001 (Appendix 8), but cautioned that the final provisions of this plan are still uncertain at this time.

6.G.3. Korea said it intends to conduct trial fishing in 2001 and will notify the Parties in accordance with the trial fishing terms and conditions.

6.G.4. The United States stated that the trial fishing provisions require a proposal for trial fishing at the Annual Conference and merely stating an intent to conduct trial fishing is not sufficient. At the July Pollock Workshop, the Parties agreed to seek the adoption of the Poland's format for trial fishing plans at this Annual Conference. The United States recommended the Parties adopt the recommendation of the Pollock Workshop with regards to the trial fishing plan format proposal.

6.G.5. China distributed a trial fishing plan for November 20 to December 10, 2000 (Appendix 9)

6.H. The Reception of Reports Relating to Measures Taken to Investigate and Penalize Violations of the Convention.

The United States, Russia, and Japan reported that they observed no violations of Convention Area for the preceding year.

6.I. The Consideration of Matters related to the Conservation and Management of Living Marine Resources other than Pollock in the Convention Area.

No comments.

6.J. Meeting Observers.

6.J.1. The United States stated that at last year's Annual Conference some draft proposals for observers was distributed and the Parties asked for additional time to review and comment on those proposals. The United States did not receive any comments on those proposals for the last year and recommended the Conference continue, for another year, the same observer rules for 2001 that were used in 2000. This would allow intergovernmental organization (IGO) observers, like the NPAFC representative that is here now, to observe our meetings.

6.J.2. Korea agreed that it was important to have observers to increase transparency and stated that observers should be limited to IGOs.

6.J.3. Japan agreed with the United States proposal.

6.J.4. China supported the Korean proposal and stated that the participation of non-governmental organizations (NGO) should be carefully considered due to the sensitive nature of discussions at the Annual Conference and the additional expense it would require of the host country. After fishing resumes, China would be in favor of allowing NGOs to participate as observers.

6.J.5. Russia agreed with the United States proposal

6.J.6. **In the interim, the Parties agreed to the same observer rules for 2001 that were used in 1998, 1999, and 2000 (See Report of Second Annual Conference 1997 Part 6.J.10).**

7. Sixth Annual Conference.

7.A. Time and Location.

Poland offered to host the Sixth Annual Conference from September 17-25, 2001, in Gdynia, Poland. Poland will notify the other Parties of any changes to the time and place via diplomatic channels and asked the Parties to provide a contact person for the passing of information.

7.B. Election of Chairperson and Vice-Chairperson.

7.B.1. Under the Rules of the Procedure for the Annual Conference, the Parties shall elect as Chairperson a nominee of the Party hosting the next Annual Conference. Poland, as the host country for the Sixth Annual Conference, named Dr. Tomasz Linkowski, Director of Sea Fisheries Institute, as Chairperson. Contacts for each Party are included in Appendix 10.

7.B.2. Russia offered to host the Seventh Annual Conference in 2002. In keeping with past practices, Russia will identify a Vice-Chairman for the Seventh Annual Conference at a later date.

8. Other Business.

The Annual Conference **agreed** on a joint press release (Appendix 11) and **adopted** the Report of the Fifth Annual Conference.

9. Closing Statements.

Closing statements provided by the Parties are included in Appendix 12.

10. Adjournment.

The Chairperson, Dr. Zhou, adjourned the Fifth Annual Conference at 1140 on Friday, 10 November 2000.

Appendices:

1. Opening Statements
2. Delegation Lists
3. Plenary Agenda
4. Statement by Korean Fishing Industry Representative
5. Trial Fishing Terms and Conditions for 2001
6. Biomass Estimates for 1988-2000
7. Polish 2001 Trial Fishing Proposal
8. Japan 2001 Trial Fishing Proposal
9. China Nov-Dec 2000 Trial Fishing Proposal
10. Party Points of Contact for Seventh Annual Meeting
11. Joint Press Release
12. Closing Statements

Appendix 1

FIFTH ANNUAL CONFERENCE OF THE PARTIES TO THE CONVENTION ON THE CONSERVATION AND MANAGEMENT OF POLLOCK RESOURCES IN THE CENTRAL BERING SEA

NOVEMBER 6 – 10, 2000
SHANGHAI, THE PEOPLE'S REPUBLIC OF CHINA

Russian Federation
Opening Statement

Dear Mr. Chairman, Delegates, ladies and gentlemen, it's a great honor for the Russian Delegation to participate at the Central Bering Sea Pollock Convention Fifth Annual Conference. We'd like to express our gratitude to the Government of China for hosting the Conference, providing excellent accommodations, and for the warm hospitality, shown to us in Shanghai.

This year Russia undertook much effort in studying and conserving pollock in its EEZ, including matters related to its commitments to fulfill decisions of the Fourth Annual CBSPC Conference regarding genetic identification of pollock stocks.

We highly value the results of the Workshop, which took place last July in Seattle. Due to this, we understand that our knowledge of reasons related to the absence of recovery of the Aleutian Basin pollock stock, notwithstanding the moratorium, was insufficient. At that meeting, all of us got confirmation of the justifiability of the main provisions of the Convention and of the necessity to join efforts of all our countries for the comprehensive study of pollock stocks.

My delegation hopes that our joint study will enable us to receive answers to why there is no recovery of the stock and when the recovery will take place.

The Russian Delegation will exercise all efforts to fulfill the tasks of our Conference in the Conservation and Management of the Aleutian Basin pollock stock.

Appendix 1

FIFTH ANNUAL CONFERENCE OF THE PARTIES TO THE CONVENTION ON THE CONSERVATION AND MANAGEMENT OF POLLOCK RESOURCES IN THE CENTRAL BERING SEA

NOVEMBER 6 – 10, 2000
SHANGHAI, THE PEOPLE'S REPUBLIC OF CHINA

Poland
Opening Statement

Mr. Chairman and distinguished Delegates,

It is a great honor for me to participate in the Fifth Annual Conference of the Parties to the Convention of the Conservation and Management of Pollock Resources in the Central Bering Sea.

On behalf of the Polish Delegation, I would like to express our gratitude to the government of China for organizing and hosting this meeting. Let me say that the economic condition of Polish fishing companies that have fished in the North Pacific area is getting worse year by year. The international waters of the Bering Sea were the main fishing grounds for Polish fishermen. Since 1996, the management of the pollock resources depends on the decisions of this Conference and there has been no commercial fishery in this area. Polish fishermen accuse the Polish government for this condition. The discussions and decisions of this meeting have been observed in Poland as an important and progressive event. For our fishermen, the progress means that their expectations will be satisfied by establishing AHL after eight years of suspended fishery. To make it reality, a constructive deliberation on AHL determination is needed. We hope that the plan of our work will be fulfilled with the satisfaction to all the participants.

Opening Statement of the United States

Mr. Chairman, distinguished delegates, Observer from the North Pacific Anadromous Fish Commission, ladies and gentlemen, we are honored to be here in Shanghai for the Fifth Annual Meeting. It is appropriate to hold this meeting, the last of the millennium, in Shanghai, a city which is focused on the future. For many of the U.S. delegation, this is the first visit to the great nation of China. We extend our appreciation to the government of the People's Republic of China and the Shanghai Deep Sea Fishing Company for providing this excellent facility to hold our conference.

We have gathered here to discuss pollock in the central Bering Sea. Despite over seven years of no fishing in the central Bering Sea, pollock are in low abundance. We understand that the lack of pollock causes economic and social disadvantages, but more important, there is much we don't understand about the current situation. The improving collaboration of our respective scientists will play a key role in determining the mechanisms which may responsible for it.

This past summer, all Contracting Parties participated in a workshop to better understand Aleutian Basin pollock abundance. We believe that the workshop was very successful in exchanging information and perspectives about the relationship of pollock in the central Bering Sea with adjacent stocks and the impacts of the moratorium on us all. We believe that it is vitally necessary to continue these discussions to improve our understanding of pollock ecology and develop effective regimes to manage fishing when the Aleutian Basin pollock recovers. Despite current events, the United States remains optimistic that a fishery will once again occur in the central Bering Sea, managed by this body. But, we must remain patient, resolute and optimistic.

Mr. Chairman, we are here to continue our important work to further the objectives of the convention. I would like to introduce the U.S. delegation.

Thank you.

OPENING ADDRESS BY THE REPRESENTATIVE OF JAPANESE DELEGATION AT THE 5-TH ANNUAL CONFERENCE OF CENTRAL BERING SEA CONVENTION

Thank you Mr.Chairman.

Distinguished representatives, ladies and gentlemen, on behalf of Japanese delegation, I would like to express our pleasure to be here in Shanghai, to participate in the 5-th Annual Conference of Central Bering Sea Convention.

First of all, I would also like to express our deep appreciation to the Chinese Government for hosting this meeting, and Chinese staffs for contributed them to make the arrangement of this meeting.

We have experienced the framework under the Convention about 5 years, where we have tried to make the necessary rules for fishing and tried to rebuilt the abundant stock in Aleutian basin by means of taking fishing moratriam for 8 years.

We all the Parties have continued eager efforts for scientific studies and taken necessary measures to rebuilt the stock, however, unfortunately, we have never obtained any fruits from the Donut hole.

Japan much worries about those mysterious situation in Aleutian basin pollock stock, and recognize that we all of the Parties are obliged to do our best to rebuilt the stock.

Japan is expecting that we all the Parties will focus our discussion on all the measures of what we can do for rebuilt the stock.

Mr.Chairman and all paticipants here, this meeting is the mirenium meeting and also the last meeting in the 20 th century, and Japan strongly hope for this meeting that we can develop the effective measures, which will be enough valid to the coming new century.

Mr.Chairman and all paticipants here, we finally express our strong desire that we can develop our relationships more closely through this meeting.

Now I would like to introduce our delegation;

Thank you!

FIFTH ANNUAL CONFERENCE

OF THE PARTIES TO THE CONVENTION ON THE

CONSERVATION AND MANAGEMENT

OF POLLOCK RESOURCES

IN THE CENTRAL BERING SEA

NOVEMBER 6 — 10

SHANGHAI, CHINA

DELEGATION

REPUBLIC OF KOREA

Yoo Sang-Jung Mr. (Head)	Director International Cooperation Division Ministry of maritime & fisheries
Kim Jin-Yeong Dr.	Distant-Water Fisheries Resources Division Director National Fisheries Research and Development Institute
Seok Gwan-Choi Mr.	Distant-Water Fisheries Resources Division Vice-Director National Fisheries Research and Development Institute
Lim Woo-Kun Mr.	Chairman North-Pacific Trawl Fishery Committee of Korea Deep Sea Fisheries Association
Chung Sung-Ho Mr.	President HaeGil Co., Ltd
Lee Chang-Soon Mr.	Director KeukDong Moolsan Co., Ltd
Kim Tae-Won Mr.	General Manager

FIFTH ANNUAL CONFERENCE OF THE PARTIES TO THE CONVENTION ON THE CONSERVATION AND MANAGEMENT OF POLLOCK RESOURCES IN THE CENTRAL BERING SEA

NOVEMBER 6 — 10

SHANGHAI, CHINA

DELEGATION

THE PEOPLE'S REPUBLIC OF CHINA

Mr. Deli Xin (Head)	Director for the Distant Water Fisheries Bureau of Fisheries Ministry of Agriculture
Mr. Qianfei Liu	Official Ministry of Agriculture
Mr. Yingqi Zhou	President Shanghai Seafood University
Mr. Jinfa Zhang	Permanent Vice General Manager Shanghai Deep Sea Fisheries Company
Mr. Zulian Zhang	Vice General Manager Shanghai Deep Sea Fisheries Company
Mr. Xianbiao Zhou	Vice General Manager CNFC Oversea Fisheries co., Ltd
Mr. Changhong Shi	Manager of the Sales Department CNFC Oversea Fisheries Co., Ltd
Mr. Xianshi Jin	Specialist Yellow Sea Fisheries Research

FIFTH ANNUAL CONFERENCE
OF THE PARTIES TO THE CONVENTION ON THE
CONSERVATION AND MANAGEMENT
OF POLLOCK RESOURCES
IN THE CENTRAL BERING SEA

NOVEMBER 6 — 10

SHANGHAI, CHINA

DELEGATION

JAPAN

Ichiro Kanto Mr.(Head)	Fisheries Agency of Japan
Nobuya Kaneko Mr.	Fisheries Agency of Japan
Noriaki Takagi Mr.	Japan Deep Sea Trawlers Association
Takashi Yanagimoto Mr.	Hokkaido National Fisheries Research Institute
Akira Nishimura Mr.	Hokkaido National Fisheries Research Institute
Akiko Tomita Ms.	Interpreter
Midori Ota Ms.	Interpreter

FIFTH ANNUAL CONFERENCE

OF THE PARTIES TO THE CONVENTION ON THE

CONSERVATION AND MANAGEMENT

OF POLLOCK RESOURCES

IN THE CENTRAL BERING SEA

NOVEMBER 6 — 10

SHANGHAI, CHINA

DELEGATION

REPUBLIC OF POLAND

Lidia Kacalska Bienkowska Mrs. (Head)	Director Fisheries Department, the Ministry of Agriculture and Rural Development
Jerzy Janusz Mr.	Sea Fisheries Institute

FIFTH ANNUAL CONFERENCE

OF THE PARTIES TO THE CONVENTION ON THE

CONSERVATION AND MANAGEMENT

OF POLLOCK RESOURCES

IN THE CENTRAL BERING SEA

NOVEMBER 6 — 10

SHANGHAI, CHINA

DELEGATION

THE RUSSIAN FEDERATION

Boris N. Kotenev Mr.	Director VNIRO
Vadim L. Minin Mr.	Division Chief Fisheries Committee
Vadim M. Nikolaev Mr.	Representative of the Fisheries Committee in The Republic of Korea
Mikhail A. Stepanenko Mr.	Sector Chief, TINRO-center
Elena V. Stakhanova Mrs.	Division Chief Fisheries Committee

FIFTH ANNUAL CONFERENCE
OF THE PARTIES TO THE CONVENTION
ON THE CONSERVATION AND MANAGEMENT OF
POLLOCK RESOURCES IN THE CENTRAL BERING SEA

November 6-10, 2000
Shanghai, China

DELEGATION

THE UNITED STATES

Dr. Richard Marasco (Head of Delegation)
Director, Resource Ecology and Fishery Management Division
Alaska Fisheries Science Center, National Marine Fisheries Service (NMFS)

Dr. Loh-Lee Low
Resource Ecology and Fishery Management Division
Alaska Fisheries Science Center, NMFS

Dr. Neal Williamson
Resource Assessment and Conservation Engineering Division
Alaska Fisheries Science Center, NMFS

William P. Hines
International Negotiations, Alaska Region, NMFS

Gary Gailbreath
Office for Law Enforcement, Alaska Region, NMFS

Paul E. Niemeier
International Fisheries Division, Office of Sustainable Fisheries
Silver Spring, Maryland

Stetson Tinkham
Office of Marine Conservation, U.S. Department of State

Captain Vincent O'Shea
Chief, Planning and Policy
U.S. Coast Guard, 17th District, Juneau, Alaska

CDR Michael Cerne
Chief, Living Marine Resources Division, Office of Law Enforcement
U.S. Coast Guard, Washington, D.C.

LCDR Dwight Mathers
U.S. Coast Guard Liaison Officer
U.S. Department of State, Washington, D.C.

ADVISORS

Dennis Austin - Washington State Department of Fisheries and Wildlife

David Benson - Trident Seafoods

Gordon Blue - Alaska Crab Coalition

Alvin Burch - Alaska Draggers Association

Kevin Duffy - Deputy Commissioner, Alaska Department of Fish and Game

Paul MacGregor - At-Sea Processor Association

Brent Paine - United Catcher Boats

Thorton Smith - North Pacific Longline Association

FIFTH ANNUAL CONFERENCE OF THE PARTIES TO THE CONVENTION ON THE CONSERVATION AND MANAGEMENT OF POLLOCK RESOURCES IN THE CENTRAL BERING SEA

NOVEMBER 6 – 10, 2000
SHANGHAI, THE PEOPLE'S REPUBLIC OF CHINA

Agenda
Annual Conference

1. Opening of the Conference
2. Opening Statements and Introductions
3. Elections
   A. Chairperson
   B. Vice-Chairperson
   C. Rapporteur
4. Adoption of the Agenda
5. Report of the Scientific and Technical Committee
6. Action Items
   A. The Review of Scientific Data and Conservation Measures of the Coastal States Related to Pollock Fishing in the Bering Sea
   B. The Establishment of a Plan of Work for the Scientific and Technical Committee
   C. The Establishment of the Terms and Conditions for Trial Fishing in 2001
   D. The Establishment of the Allowable Harvest Level
   E. The Establishment of the Individual National Quotas
   F. The Adoption of Appropriate Conservation and Management Measures Based upon the Advice of the Scientific and Technical Committee
   G. Trial Fishing Plans
   H. The Reception of Reports Relating to Measures Taken to Investigate and Penalize Violations of the Convention
   I. The Consideration of Matters Related to the Conservation and Management of Living Marine Resources other than Pollock in the Convention Area
   J. Meeting Observers
7. Sixth Annual Conference
   A. Time and Location
   B. Election of Chairperson and Vice-Chairperson
8. Other Business
9. Closing Statements
10. Adjournment

Appendix 4

Thank you, Mr. Chairman.

In 1993, many scientists recommended a temporary moratorium in the Central Bering Sea for 2 years and estimated that pollock stocks would recover gradually. Our fishing communities accepted this moratorium for the conservation and management of living marine resources. Unfortunately, It has been extended for another 6 years since then because the scientists' forecast and estimate proved to be wrong. But now, 8 years later, we face the unsatisfactory fact that we still have no sign for pollock stocks in this area to recover gradually, in spite of the long term and most strict management in this area.

As moratorium goes on, our fishing industries that used to operate in the Central Bering Sea, were exiled from those waters and confronted with bankruptcy and ruin, what is more, deepening their financial crisis and management difficulties day by day. So I, as one of the delegation representing Korean Fishing Industry, have come here in this meeting to remind all the delegates of the current urgency in our fishing industries and fishermen's lives. There is no time to let hundreds of thousands of our fishermen, who love ocean so much and live their precious life on it, be depressed and discouraged with their life, ending up losing their livelyhood. What is more, there is no time to let our fishing industry be abandoned by the power logics of the Great Nations.

Difficult though the last 8 **years of moratorium on fishing** was to accept, I earnestly believe that Korean government as well as Korean fishermen have made every effort to observe the Convention with patience. The main reason why we made that choice is to shape our fishing environment and industries into better and more stable one to which our next generations fall heir. The present Convention, to our great disappointment, is not designed to deal with these kinds of our contributions.

We, therefore, refuse to accept no more extension of moratorium, inspired by the scientists, irresponsible for their remarks because it will continue to shake the very foundation of our fishing industries. It would be fatal for this meeting to overlook the voice of our fishermen and underestimate their rights to survive.

I ask a question of you, who can assume responsibilities for our fishermen's vanishing dreams and hope and who can predict how many more years our fishing industry should endure this kind of suffering not to be quaranteed ? No one can make a responsible answer such a question. I would like to suggest all the parties for regaining our fishing rights and the right for survival as follows :

To begin with, I would like to request the coastal states to allocate Quota to the fishing nations such as Poland, China and Korea. The coastal states allowed just their own

vessels to fish in their EEZ, to the contrary, prohibiting foreign vessels from operating in their EEZ at the same period. Now is the time, I belive, to open the doors of fishing opportunity to us fishing countries. We can never be satisfied as long as our fishing industries cannot regain Quota from this convention in reward for Moratorium.

Secondly, I would like to suggest that Parties reassess the use of Area 518 in the current management approach and consider expanding the area surveyed and increasing the number of vessels upto 10 at a minimum because the present surveys by trial fishing in this area is too low to research broader and to get sufficient data. If these earnest proposals of our fishing communities fail to reach consensus at this session again, we have no reasons to participate in this meeting any more and have no choice but to consider revising the Convention or withdrawing from it through governmental channel.

In our country, today, at least tens of thousands of fishermen are ending up losing their job, and their family is suffering from severe financial crisis and despair. Beyond that, Pollock resources in Korea have always been recognized as one of the major sources of animal protein. In consideration of those above, we strongly believe that it is altogether timely and proper that we should review Pollock Resources on the basis of not only protection of marine resource but also food security of human beings.

THANK YOU

WOO-KUN LIM
CHAIRMAN
NORTH-PACIFIC TRAWI FISHERIES COMMITTEE

KOREA DEEP SEA FISHERIES ASSOCIATION

SEOCHO P.O.BOX 162. SEOUL, KOREA
6FL.SAMHO CENTER BLDG. "A"
275-1. YANGJAE-DONG. SEOCHO-KU.
SEOUL. KOREA

TEL :(02) 589-1602
FAX :(02) 589-1630

Appendix 5

MEASURES ADOPTED PURSUANT TO THE CONVENTION ON THE CONSERVATION AND MANAGEMENT OF POLLOCK RESOURCES IN THE CENTRAL BERING SEA

TRIAL FISHING FOR POLLOCK IN 2001

9 November 2000

1. Taking into account the report of the Scientific and Technical Committee on the status of pollock resources in the Aleutian Basin, the Third Annual Conference decided, as follows:

1.1. To establish the 2001 Allowable Harvest Level (AHL) at zero; and

1.2. To authorize trial fishing in the Convention Area.

2. The Annual Conference establishes for 2001 the following terms and conditions for such operations:

No more than two vessels from each Party to the Convention at any time may conduct trial fishing for pollock in the Convention Area. Information on the vessels that will engage in the trial fishing will be provided to all Parties at least two weeks prior to commencement of trial fishing. Such information will include vessel name, vessel type, vessel's international radio call sign (IRCS), vessel's satellite transmitter number, and the area and time of the trial fishing. Parties conducting trial fishing will notify the other Parties regarding the schedule of such trial fishing with sufficient notice to facilitate the embarkation and disembarkation of observers. Vessels engaged in trial fishing will have Scientific Observers of the flag-State on board and will accept at least one Scientific Observer of other Parties to the Convention, with the cost being paid by the requesting Party in accordance with arrangements to be made between the flag-State of the vessel and the other Parties. All provisions of the Convention and all measures adopted by the Annual Conference regarding boardings and inspections, vessel monitoring systems, entry and transshipment notifications, safe boarding ladder standards, and shipboard logs and records will govern such trial fishing. Prior to the Sixth Annual Conference, Parties conducting trial fishing in 2001 will submit to the other Parties a report of the trial fishing which provides the type of catch and distribution data as specified in the Central Bering Sea Observer Program Manual.

Appendix 6

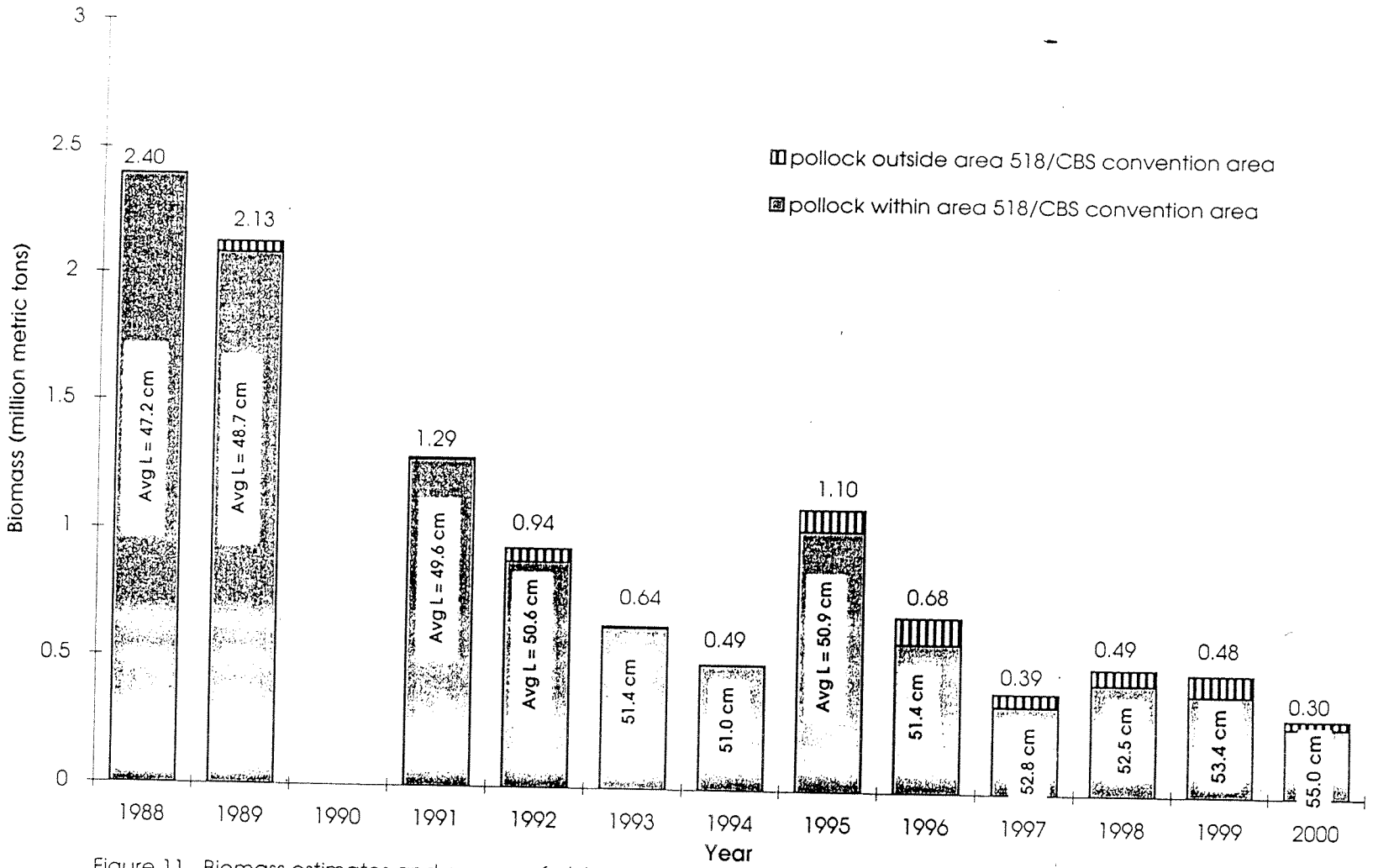

Figure 11. Biomass estimates and average fork lengths obtained during winter echo integration-trawl surveys for spawning walleye pollock near Bogoslof Island, 1988-2000. U.S. surveyed '88-'98, and '00. Japan surveyed in '99. There was no survey in 1990. Total pollock biomass for each survey year is indicated.

POLAND

Appendix 7

Cruise Plan for Trial Fishing in International Waters of the Central Bering Sea in 2001

1. **Institution**

   Polish Deep Sea Fishing Companies – to be determined later

2. **Number and Identification of Vessels**

   2 ~~Number of vessels~~ - to be determined at the Annual Conference

   Name of Vessel - to be determined later

   Type, Length, Tonnage, Radio call sign, Immarsat number - to be provided later

3. **Notification**

   a. All details on identity of vessels and fishing plans will be provided to the Parties at least one month prior to commencement of trial fishing.

   b. Any change to the plans of the trial fishing vessels will be provided to the Parties at least two weeks prior to commencement of fishing.

4. **Trial Fishing Area**

   International waters of the central Bering Sea. The detailed trial fishing and research tracklines will depend on availability of vessels and will be determined before the cruise.

5. **Time of Trial Fishing**

   To be determined later

6. **Purpose** - The main purposes of trial fishing operations are to:

   a. determine geographic distribution of pollock in the international waters of the central Bering Sea

   b. estimate fish density (collect CPUE data)

   c. determine feasibility of commercial fishing operations

   d. determine species composition of catches

   e. collect biological data on pollock (length, sex, body weight, maturity, etc.)

7. Data Collection

Data will be collected in the format according to the
"Observer Manual for Sampling of Central Bering Sea Pollock Fisheries"
as agreed to by the Parties in March 1997. The forms are:

- Haul Summary Form
- Species Composition Form
- Length Frequency Form
- Biological Samples Form

8. Scientific Observers

Observers will be trained and certified in accordance with guideline procedures for training observers as conducted for the Parties in March 1997 in Seattle.

The training institution for the observers will be Sea Fisheries Institute, Gdynia, Poland

9. Report of Results

The reports and data collected will be made available to the Science and Technical Committee at the Annual Conference.

JapaneseCruise Plan for Trial Fishing in International Waters of Central Bering Sea

1. Institution
Names of Fishing Companies - to be provided later

2. Number and Identification of Vessels
Number of Vessels - to be determined at the Annual Meeting
Name of Vessels - to be determined later
Type, Length, Tonnage, Radio call sign, Immarsat number - to be provided later.

3. Notification
a. All details on identity of vessels and fishing plans will be provided to the Parties at least one month prior to commencement of TF.
b. Any change to the plans of trial fishing vessels will be provided to the Parties at least two weeks prior to commencement of fishing.

4. Trial Fishing Area
International waters of the Central Bering Sea. The detailed trial fishing tracklines will depend on availability of vessels and will be determined before the cruise.

5. Time of Trial Fishing
To be determined later.

6. Purpose
The main purposes of trial fishing operations are to:
a. determine feasibility of commercial fishing operation.
b. collect data on geographic distribution and fish density of pollock in CBS.
c. collect biological data on pollock (length, sex, body, weight, maturity,etc.) and catch data(species composition, etc.).

7. Data Collection
Data will be collected in the format according to the "Observer Manual for Sampling of Central Bering Sea Pollock Fisheries" as agreed to by the Parties in March 1997.

8. Scientific Observers
Japanese Scientific Observers will be on board to the trial fishing vessels and those vessels will accept at least one Scientific Observer of other Parties to the Convention, with the cost being paid by the requesting Party in accordance with arrangements to be made between Japan and the other Parties.

9. Report of Trial Fishing Results
A report of the trial fishing which provedes the type of catch and distribution data as specified in the CBS Observer Program Manual will be submitted to the other Parties prior to the Sixth Annual Meeting.

Appendix 9

Trial Fishing Plan in Nov. ~ Dec., 2000

Shanghai Deep Sea Fisheries Company, Shanghai, China

1. **General description of the trial fishing vessel**

Vessel Name	Kai Chuang
Register No.	D69800101
Place of Registration	Shanghai, China
Call Sign	BIEL
Ship Owner	Shanghai Deep Sea Fisheries Co.
Address	10 Jiang Pu Road, Shanghai, China
G.T. /T	3180
N.T./T	1361.39
L.O.A/M.	92
Breadth/M	15
Depth/M	9.55
Main Engine H.P. (KW)	1764.5 X 2
Shipyard	Built in Likeman, Bremen, Germany
Date of Building	In August, 1973
Sat Auto Tracing System	No. 15462, Type MAR-90

2. **Period of the trial fishing**
   Nov. 20th ~ Dec. 10th, 2000

3. **Survey area and method**
   Eastward from the west of Bering high sea and gradually enlarge the survey area;
   Fish detecting, harvesting and processing;
   Multi-water level, stern trawling mid-water trawl net

4. **Object of trial fishing**
   Pollock

5. **Relevant remark**
   The trial fishing is subject to the relative fishery regulations on the management of the Bering high sea

Date

Company Name
Address
Contact numbers

To Whom It May Concern,

1. This letter hereby authorizes government officials from People's Republic of China, Japan, the Republic of Korea, the Republic of Poland, the Russian Federation, and the United States of America to obtain real time satellite position information by polling the Inmarsat C terminal(s) listed below. This authorization is only for the period of time our vessels are involved in Trial Fishing for Pollock in the Central Bering Sea as designated below or by the government agency responsible for managing fishing in the Central Bering Sea:

Vessel Name	Call Sign/ Official Number	Terminal Number (9 digit IMN)	Terminal Manufacturer	Primary Reporting Ocean Area	Start Date	Stop Date
KAI CHUANG	BIEL	441288610	FURUNO	Bering Sea	2000.11.20	2000.12.10

Terminal Owner _____ Date 2000.11.07.
(signature)

Vessel Owner _____ Date 2000.11.07.
(signature)

Appendix 10

FIFTH ANNUAL CONFERENCE OF THE PARTIES TO THE CONVENTION ON THE CONSERVATION AND MANAGEMENT OF POLLOCK RESOURCES IN THE CENTRAL BERING SEA

NOVEMBER 6 – 10, 2000
SHANGHAI, THE PEOPLE'S REPUBLIC OF CHINA

Contacts For Invitations To Sixth Annual Meeting

CHINA:	Liu Qianfei Division of International Cooperation Bureau of Fisheries Ministry of Agriculture No. 11 Nongzhanguan Nanli Beijing China 100026	tel: fax: 8610-6419 2974 e-mail: inter_coop@agri.gov.cn
RUSSIA:	Vadim L. Minin Head of Division Department of International Cooperation The Committee of Fisheries The Russian Federation 103031 Moscow Rozhdestvensky Blvd., 12	tel: 007/095/928-63-83 fax: 007/095/921-34-63
POLAND:	Lidia Kacalska-Bienkowska Head of Division Fisheries Department Ministry of Agriculture and Rural Development 30, Wspolna Str. 00-930 Warsaw Poland	tel: +48(22) 623 25 66 fax: +48(22) 623 22 04 e-mail: L.Kacalska@minrol.gov.pl
JAPAN:	Ichiro Kanto Deputy Director International Affairs Division Fisheries Agency of Japan 1-2-1 Kasumigaseki, Chiyoda-ku Tokyo, Japan	tel: (+81-3) 3501-3861 fax: (+81-3) 3502-0571 e-mail: Ichiro_Kanto@nm.maff.go.jp
KOREA:	To be provided.	
USA:	William Hines International Coordinator Alaska Region National Marine Fisheries Service Juneau, Alaska	tel: 907-586-7224 fax: 907-586-7249 e-mail: William.Hines@noaa.gov

Appendix 11

THE FIFTH ANNUAL CONFERENCE OF THE PARTIES TO THE CONVENTION ON THE CONSERVATION AND MANAGEMENT OF THE POLLOCK RESOURCES IN THE CENTRAL BERING SEA

6-10 November 2000, Shanghai, China

JOINT PRESS RELEASE
Final, 10 November 2000

Representatives from the six Parties to the Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea met in Shanghai, People's Republic of China, and continued their cooperative efforts to conserve and manage pollock stocks in the Convention Area.

The Fifth Annual Conference held under terms of the Convention took place 6-10 November 2000. It was chaired by Mr. Zhou Ying Qi of the People's Republic of China. The members of the Convention -- People's Republic of China, Japan, the Republic of Korea, the Republic of Poland, the Russian Federation, and the United States of America -- agreed on conservation and management measures and reviewed scientific information on the status of pollock stocks. The Scientific and Technical Committee agreed on a plan of work for 2001.

Based on the report of the Scientific and Technical Committee, the Parties agreed that data was insufficient to directly determine the biomass of the pollock stocks in the entire Aleutian Basin. Several of the Parties, including Korea, the People's Republic of China, and the Republic of Poland, proposed the establishment of an Allowable Harvest Level (AHL) for 2001, in consideration of the difficulties faced by their fishermen. Following a thorough discussion, the Parties, noted that after eight years the moratorium has not achieved pollock stock recovery in the Central Bering Sea. The Annual Conference could not reach consensus to set an Allowable Harvest Level for a commercial fishery for pollock in the Central Bering Sea during 2001. In such a situation, under the procedure set out in Article VII-2 and Annex Part 1 of this Convention, the Allowable Harvest Level for 2001 was set at zero.

Trial fishing by vessels of the Parties to the Convention will be permitted in 2001, under the terms and conditions established by the Annual Conference. The Parties agreed to plan a future joint trial fishing effort in the Convention Area.

In 2002, member States plan to conduct an extensive, coordinated research effort in the Central Bering Sea and the Aleutian Basin. This provides a unique opportunity to study pollock distribution and migration patterns in the Bering Sea. Comprehensive scientific information such as this will allow the Parties to make better informed decisions on the conservation and management of the pollock resource.

The Parties agreed on the value of participation by observers to the Annual Conference and to continue for one more year the interim measures for the admission of observers.

The Republic of Poland invited the Parties to convene the Sixth Annual Conference in September 2001 in Gdynia.

Appendix 12

FIFTH ANNUAL CONFERENCE OF THE PARTIES TO THE CONVENTION ON THE CONSERVATION AND MANAGEMENT OF POLLOCK RESOURCES IN THE CENTRAL BERING SEA

NOVEMBER 6 – 10, 2000
SHANGHAI, THE PEOPLE'S REPUBLIC OF CHINA

Republic of Korea
Closing Statement

Mr. Chairman and distinguished participants:

First of all, on behalf of the Korean delegation, I would like to express my gratitude to you, Mr. Chairman for your able guidance of this meeting. I would also like to thank the delegations for their cooperation and active participation in the Conference.

The Fifth Annual Conference of the Parties to the Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea discussed various pending issues including the assessment of pollock resources and an action plan. However, we were not able to make any progress on the issue of optimum utilization. It is with regret that the Parties have yet to reach consensus on setting AHL, which stands as the central agenda item of this Conference. So we must remind all the Parties here that the distant water fishing countries' fishing industries and fishermen's lives are significantly influenced by insufficient scientific results.

It is my earnest hope that through the positive support and participation by the Parties, we may achieve fruitful progress at the next Annual Conference. Finally, we thank the Chinese delegation for its sincere hospitality and for the provision of such excellent facilities in hosting this meeting. Thank you.

CLOSING STATEMENT BY JAPAN

Mr.Chairman, distinguished Representatives, fellow delegations, ladies and gentlemen, I want to express, on behalf of the Japanese delegation, our satisfaction with the success of the 5 th Annual Conference.

First of all, we want to thank from the bottom of our heart the Government of China, who have hosted this meeting in this interesting city of Shunghai.

We want to express our sincere gratitude to Mr.Zhou, as Chairperson of the Annual Conference, and Dr.Marasco as Chairperson of the Scientific and Technical Committee for their effective chairmanship in conducting our business at these meetings.

Also, thank and express our respect to Mr.Mathers as our Rapporteurs for their difficult task of putting together the records of the meetings in such a short time.

We have been trying to establish the framework for the cooperation and exploitation of the Pollock resources under this Convention in the Central Bering Sea.

We understand that the achivement of rational exploitation of Pollock resources in the Central Bering Sea is not always easy.

However, we heartly believe that the effort for mutual understanding among us will be the most important factor in this work.

Japan acknowledges that progress has been made on some issues and all parties should still attempt to resolve differences on another issues.

With refer to still existing issues, Japan believes that the determination of the AHL based on the best available scientific information, even though it is small amount, will be achieved in near future.

In principle, the S&T Committee was established to examine all scientific data and make recommendations to the Annual Conference. We understand that we have discussed many problems in accordance with this principle also in this meeting.

We understand that decisions of the S&T should be based on pure scientific principles and not be political ones and we should maintain our close communications after that, in order to bridge our existing gaps through the best scientific evidence.

Mr.Cairman, we again thanks the Chinese delegation for its sincere hospitality and for the provision of excellent facilities in hosting this meeting. We extend our appreciation to you for your good chairmanship during this week.

We also look forward to the Chairmanship by Mr.Tomasz Linkowski at the Sixth Annual Meeting next year in Porland.

We thank RUSSIA for agreeing to host the Seventh Annual Meeting. Finally, we are much looking forward to see you also in the next year meeting again.

Thank you.

FIFTH ANNUAL CONFERENCE OF THE PARTIES TO THE CONVENTION ON THE CONSERVATION AND MANAGEMENT OF POLLOCK RESOURCES IN THE CENTRAL BERING SEA

NOVEMBER 6 – 10, 2000
SHANGHAI, THE PEOPLE'S REPUBLIC OF CHINA

Russian Federation
Closing Statement

The Russian Delegation would like to express its sincere gratitude to the Chinese government for its warm hospitality in arranging and hosting the Fifth Annual Conference. We are also grateful to the Secretariat who provided first-class service for our work.

Words of special gratitude go to the Chairman of the Conference, Dr. Zhou Ying Qi, to the Chairman of the S&T Committee, Dr. Richard Marasco, and the rapporteur, Lieutenant Commander Dwight Mathers, whose responsible approach to work, high professionalism and deep knowledge of problems under consideration enabled all of us to fulfill the Fifth Conference tasks.

The success of the Conference was facilitated by lengthy discussions last July in Seattle of the problem, which was of concern to all of us, that is, why there was no recovery of the Aleutian Basin stock, notwithstanding the moratorium on fishing during the past eight years.

This is of particular concern to Russia. A major portion of the western pollock stock was comprised of a pelagic group, which, after spawning in Olyntorsky Bay and off the Korjah coast, was feeding in the Central Bering Sea. Since 1994 it disappeared. Since 1994 the Russian catch in this area declined by 200,000 to 300,000 metric tons so the summary loss by Russia during seven years equals 1.4 to 2.1 million metric tons. Starting in 2001, there will be a prohibition on directed fishing for this stock and its yield will be limited to an incidental by-catch of 5,000 to 10,000 metric tons.

Russia is sympathetic to the economic and social losses incurred by other Parties in the Central Bering Sea because of the absence in the area of the pelagic groups of pollock from the eastern and western parts of the Sea. However, we are not losing hope for the recovery of these groups and we are optimistic that the prohibitions we are introducing on fishing for shelf pollock will facilitate the recovery of pelagic pollock.

In Seattle, Russia initiated the idea of a comprehensive program of the Bering Sea and pollock studies by all the Parties in order to understand when this will take place. In our opinion, this task should be solved by the joint efforts of both scientists and fishermen of our countries, in order, on the basis of mutual understanding and interest of scientists, that fishermen and managers, obtain an understanding of the great responsibility of each of these parties for the recovery of the Aleutian Basin pelagic pollock and for its rational long-term utilization on the scientific basis, taking into account the precautionary and ecosystem approaches to fisheries management.

Our gratitude to the Chairman and to all the participants in the Conference for the joint work. We believe that our hope will grow at our meeting in Poland.

FIFTH ANNUAL CONFERENCE
OF THE PARTIES TO THE CONVENTION
ON THE CONSERVATION AND MANAGEMENT OF POLLOCK RESOURCES IN THE CENTRAL BERING SEA

NOVEMBER 6 – 10, 2000
SHANGHAI, THE PEOPLE'S REPUBLIC OF CHINA

United States
Closing Statement

Mr. Chairman, fellow delegates, ladies and gentlemen, on behalf of the United States, I wish to extend our deep appreciation to the People's Republic of China for their warm hospitality hosting this Fifth Annual Conference. I also wish to thank the Contracting Parties for their spirit of cooperation to make this conference a success.

We are fully aware of the hardships imposed on all Parties because of the lack of pollock in the central Bering Sea. None of us is immune from this situation. The reason for the lack of pollock in the central Bering Sea remains a mystery, however, it is only through our cooperative efforts that we will be better able to understand what is responsible for the lack of recovery of central Bering Sea pollock. If anything, the moratorium has shown us that the Aleutian Basin pollock stock has not recovered and that we all need to focus our research on why.

Let us not lose sight of the "big picture", which is to rebuild and ensure the sustainability of the Aleutian Basin pollock stock for the benefit of us all. During this week's discussions, all Parties agreed that more research is necessary to determine stock structures of pollock, distribution and migration, and the influence of the marine environment on pollock stocks in the Bering Sea. We are pleased to note that cooperative research cruises are being planned for the near future to help us understand pollock dynamics.

We must not deviate from the path we are presently following as this may further jeopardize recovery and require even more time to rebuild pollock stocks. Throughout the discussions, much emphasis was placed on the importance of our fishermen's desire to resume fishing as soon as possible. We agree with this goal, but think viable fisheries will only be feasible when stocks have rebuilt from their present depressed state. Hopefully, that will be soon.

I would like to recognize the hard work of our rapporteur, LCDR Dwight Mathers. After three years of faithful service, we are sorry to announce that he will be leaving for another assignment. We wish him well and thank LCDR Mathers for his contributions to this collective body.

Mr. Chairman, we thank you for your leadership of this conference. Fellow delegates, have a safe journey home and we look forward to seeing you next year in Poland.

Thank you.

FIFTH ANNUAL CONFERENCE OF THE PARTIES TO THE CONVENTION ON THE CONSERVATION AND MANAGEMENT OF POLLOCK RESOURCES IN THE CENTRAL BERING SEA

Report of the Meeting of the Scientific and Technical Committee

November 6 - November 8, 2000
Shanghai, People's Republic of China

Final: 8 November 2000, 1500

Delegations from the People's Republic of China (China), Japan, the Republic of Korea (Korea), the Republic of Poland (Poland), the Russian Federation (Russia), and the United States participated in a meeting of the Scientific and Technical (S&T) Committee in Shanghai, People's Republic of China.

1. Opening Remarks.

Dr. Richard Marasco (United States), Chair of the Scientific and Technical (S&T) Committee, opened the meeting at 1400, Monday, 6 November 2000. The meeting agenda and a list of the participants are provided in Attachments 1 and 2.

2. Appointment of Rapporteur.

LCDR Dwight Mathers (United States) was appointed as rapporteur.

3. Adoption of Agenda.

The Parties adopted the Provisional Agenda (Attachment 1), as modified.

4. Discussion of Science Issues.

4.1. Update Catch and Effort Statistics.

4.1.1. For the record, the pollock catch history in the Central Bering Sea (CBS) – Donut Hole area is as follows:

Year	Catch (mt)	Year	Catch (mt)
1984	181,200	1993	1,957
1985	363,400	1994	N.A.
1986	1,039,800	1995	Trace
1987	1,326,300	1996	Trace
1988	1,395,900	1997	Trace

1989	1,447,600	1998	Trace
1990	917,400	1999	Trace
1991	293,400	2000	Trace
1992	10,000		

4.1.2. The United States reported that since 1994 there have only been trace amounts of pollock harvested from the Bogoslof Island area (BIA). In 2000 only 28 mt of pollock was taken as incidental catch and 29 mt was taken as incidental catch in 1999. The U.S. did not conduct any fishing in the Donut Hole in 2000, but provided the catch in the U.S. EEZ for the last three years as follows:

	Gulf of Alaska (GOA)	Bering Sea/Aleutian Island Area	Bogoslof Area
1998	125,100 mt	1.1251 mmt	8 mt
1999	95,600 mt	.9909 mmt	29 mt
2000	69,800 mt	1.1125 mmt	28 mt

4.1.3. Russia reported its pollock catch data for the Russia EEZ for the past four years:

	East of 176°E	West of 176°E
1997	680,000 mt	72,000 mt
1998	644,000 mt	86,000 mt
1999	632,000 mt	85,000 mt
2000	317,000 mt*	51,700 mt*

* - Preliminary data as of November 1, 2000.

Additional biomass estimates for pollock in the WBS for 1996-2000 are provided in Attachment 3.

4.1.4. Japan stated it had no catch in the area.

4.2. Year 2000 Results of Trial Fishing.

4.2.1. Korea provided the results of its 2000 trial fishing efforts (Attachment 4). Trial fishing operations were conducted by two commercial fishing vessels, the *F/V ORIENTAL DISCOVERER*, which operated in the Convention Area from 12 January- 3 February 2000, and the *F/V ORIENTAL ANGEL*, which operated in the area from 11-20 May 2000. The main purpose of the trial fishing was to determine the geographical distribution of pollock in the Convention Area and to collect biological data. Neither vessel caught any pollock in the Convention Area.

4.2.2. Poland reported that it conducted trial fishing with a total of two vessels in the Convention Area in 1999, one vessel in spring 1999 and one in August 1999. Poland reported on the spring trial fishing operations at the Fourth Annual Conference in Pusan. The Polish delegation provided the Parties with a report on the results of the August 1999 effort (Attachment 5). Poland employed a 95-meter stern trawler from 17-30 August 1999 for trial fishing survey. Only two pollock were caught in the Convention Area. Poland did not conduct any trial fishing in 2000.

4.2.3. The Russian delegation stated that in the 1980's, when pollock stocks were in better condition, it recorded echosoundings on the pollock prey. Russia suggested that when these trawls are conducted that plankton samples also be gathered for comparison purposes. Poland responded that it might be difficult to fulfill such a request since the commercial fishing vessels that are

conducting the trial fishing have no equipment to collect such data.

4.2.4. China reported on the results of its trial fishing efforts for May 20 to June 28, 2000 (Attachment 6) with the *F/V KAI CHUANG*. China caught a total of 4 pollock in 4 trawl hauls. China said that the poor results could be attributed to the timing of the operations (too early in the fishing season) and the relative inexperience of the vessel's captain. China believes that after eight years of moratorium that there should be much pollock in the CBS. In the future, China will conduct trial fishing in August or September. The United States noted that the charts in the report indicate the *F/V KAI CHUANG* covered a considerable portion of the Convention Area.

4.2.5. **The S&T Committee agreed that Parties conducting trial fishing should attempt to gather all possible data. However, the collection of scientific data will not be a condition for trial fishing.**

4.3. Review Results of the 1999/2000 Research Cruises.

4.3.1. The United States reported on two echo integration trawl-survey cruises (Attachment 7) with the *R/V MILLER FREEMAN* in the winter of 2000. The first was a 4-day (February 27-March 2) survey in the Eastern Bering Sea (EBS) shelf and the second was an 11-day (March 2-12) survey of the BIA. For the EBS, there was an estimate of 816,000 mt of pollock with a mean length of 44 cm. In the BIA, there was 301,000 mt of pollock with a mean length of 55 cm. Spawning is thought to occur later in the EBS than in the BIA, which is consistent with past survey results. Since 1988, the BIA biomass has decreased from 2.4 mmt to 0.301 mmt in 2000. The United States reported on the preliminary results of the EBS survey by the *R/V MILLER FREEMAN* in June-July and a bottom-trawl survey by two chartered commercial fishing vessels in May and July 2000. Fish were found in the Unimak area all the way up to the U.S.-Russia maritime boundary. East of 170°W, 0.89 mmt of pollock was found, and west of 170°W, 2.16 mmt of pollock was found. The mid-water hydroacoustic trawl estimate was 3.05 mmt, down from 3.29 mmt in 1999. The bottom-trawl survey estimate increased from 3.57 mmt in 1999 to 5.14 mmt in 2000. Therefore, the total biomass estimate increased from 6.86 mmt in 1999 to 8.19 mmt in 2000.

4.3.2. Korea asked what the peak spawning time is. The United States responded that its surveys were designed to begin before spawning, when the pollock were the most concentrated. Because of this, the peak spawning time is not precisely known, but the United States believes that there has been no significant change in the time of spawning over the last several years.

4.3.3. Russia reported that its 2000 surveys in the western Bering Sea (WBS) have not yet been completed, but distributed a detailed preliminary report to the S&T (Attachment 8). Three vessels were employed the *R/V TINRO*, the Russian trawler *NOVOKIEVKA* and the Japanese *F/V KAIYO MARU 28*. Russia told the Parties that the biomass of the pollock stocks in the Russian EEZ are at the lowest level since surveys began. The echo-integration trawl survey preliminary pollock biomass estimation for the Navarin Area is 118,000 mt. The final stock biomass will be determined once the survey vessels have returned.

4.3.4. Japan reported on a survey in progress during the Annual Conference. It conducted a survey in the CBS from 28 October-6 November 2000 (Attachment 9) with the *R/V DAITOKU MARU NO. 11*. The objectives of the cruise were to conduct a hydroacoustic survey to determine

the pollock distribution in the CBS, as well as a mid-water trawl survey to collect pollock samples in the CBS. Preliminary results show no significant echosounding findings deeper than 200 m. Some echo-signs were found at 100-150 m, however no pollock were collected during the midwater trawl survey.

4.3.5. Korea reported on its echo integration and midwater trawl survey by the *R/V TAMGU NO. 1* from February to April 2000 (Attachment 10). The survey was conducted from the BIA to the CBS. Seven mid-water trawls were made. The estimated biomass for the BIA is 455,000 mt; for the Specific Area (Area 518), 257,000 mt, and the middle continental shelf area, 32,000 mt. These results are similar to the results of the U.S. survey.

4.3.6. The United States pointed out that the *R/V TAMGU NO. 1* conducted its survey a few days after the *R/V MILLER FREEMAN*. A comparison of the maturity stages of pollock observed during each survey showed that pollock spawning started just after the *R/V MILLER FREEMAN* went through the area and before the *R/V TAMGU NO. 1* finished its survey. Also, the *R/V MILLER FREEMAN*'s biomass estimate of 270,000 mt for the Specific Area (Area 518) compares very favorably to the *R/V TAMGU NO. 1*'s estimate of 257,000 mt.

4.4. Review the Status of Aleutian Basin Pollock Stocks

4.4.1. The S&T concluded that, despite the extensive research efforts of the Parties in 2000, there were insufficient data to directly estimate the Aleutian Basin pollock (ABP) biomass. The S&T Parties agreed to use the indirect method to estimate the ABP biomass as prescribed by the Convention. According to the Convention Annex Part 1 C, the Bogoslof Island biomass represents 60% of the ABP biomass. Therefore, the Bogoslof Island biomass of 270,000 mt and 257,000 mt determined by the *R/V MILLER FREEMAN* and the *R/V TAMGU NO. 1*, respectively, are the most recent estimates that should be used to indirectly estimate the ABP biomass.

4.4.2. **Using these two figures, the S&T Committee agreed that the ABP biomass would be indirectly estimated as 428,333 mt as determined by the results of the *R/V TAMGU NO. 1* survey to 450,000 mt as determined by the results of the *R/V MILLER FREEMAN* survey.**

4.4.3. Russia observed that the Parties may be overstating the abundance of the ABP biomass by using the indirect method. Russia believes that less pollock may actually migrate from the BIA into the deeper waters of the Aleutian Basin.

4.5. Factors Affecting the Recovery of the Stock

4.5.1. The United States referred the S&T Committee to pages 4-5 of the Report of the CBS Pollock Workshop held in Seattle, Washington, in July 2000. At the Workshop, participants discussed a number of factors that may be affecting the recovery of the ABP stock, including overfishing in the CBS and neighboring areas, natural population declines, environmental changes, ecological changes, and predation. Workshop participants concluded that a combination of all of these factors may have affected the recovery of the ABP stock.

4.5.2. Russia pointed out that the ABP stock is considerably different from the continental shelf stocks in the observed rate of growth and weight increases. This led Workshop participants to conclude that the pelagic ABP stock had been greatly affected by overfishing.

4.5.3. Korea stated that despite eight years of the moratorium, the CBS pollock stock biomass has been fluctuating at around 600,000 mt due to all the factors discussed at the July Workshop. Korea suggested that the S&T should focus on recovery methods and stressed that no progress has been made in showing migration routes. Korea added that additional conservation and enforcement measures consistent with what has been done in the CBS may be necessary within the areas adjacent to the CBS to allow for recovery of the CBS pollock stocks. Korea pointed out that the United States increased the total allowable catch (TAC) in the U.S. EEZ by 147,000 mt in 2000. Korea believes that as long as the fishing capacity is increased in the areas adjacent to the CBS, there will be no recovery of the pollock stocks in the CBS.

4.5.4. The United States disagreed with Korea that fishing in the U.S. EEZ has contributed to the decline of the CBS pollock stocks. The United States stressed that it had not fished in the CBS since the moratorium was established and, since 1994, it has refrained from fishing on the Bogoslof Island stocks, the stocks that are most directly linked to the CBS stocks. There was a 28 mt pollock bycatch in the BIA in 2000, but this represents only a tiny fraction of the estimated 270,000 mt biomass. The United States has also implemented a very conservative approach to setting the TAC for pollock the U.S. EEZ via the regional North Pacific Fisheries Management Council (NPFMC) and exploits less than 16% of the estimated 7 mmt pollock biomass. Setting the TAC in the U.S. EEZ is under the exclusive jurisdiction of the United States, yet the United States has ceased fishing in many areas of its EEZ, often to the economic detriment of its fishing industry, in an attempt to rebuild the CBS pollock stocks. The United States has not allowed a direct quota for 2 years in the Aleutian Island area. The United States has not observed any correlation between fishing in the U.S. EEZ and the slow recovery of the CBS stocks. The United States has studied the pollock biomass for many years and it is well known that the EBS stock has always been large. The U.S. delegation stated that if all fishing in the U.S. EEZ ceased, there is no data to indicate that the pollock would migrate to the high seas.

4.5.5. Japan stated that it understood the management measures the United States had taken within its EEZ, that the United States has the sovereign right to control its fisheries there and that the management measures on ABPS should in principle be decided by consensus of all the Parties, although it might be difficult for U.S. fishermen to catch only EBS pollock in a mixed stock. The situation of mixed stock in EBS pollock is similar to the situation of salmon stocks NPAFC convention area and all the Parties of the NPAFC have been taking moratorium for salmon fishing in that area in order to conserve mixed salmon stocks. Japan believes that the S&T Committee should consider other management measures to improve Aleutian Basin stocks. Japan stated that one reason for the lack of recovery in the stocks could be other activities outside the Donut Hole, as mentioned by Korea. Japan agreed with the United States' comment that the relationship between ABP and EBS stocks is uncertain. Japan observed that the moratorium on fishing in the CBS has been in place for 8 years and there are no more stricter management methods that can be taken there to conserve the stocks. The only alternative appears to be improvement of the conservation and management measures in the adjacent areas.

4.5.6. Based on the differences in the CBS and EBS stocks and what Russia is currently observing in the WBS, Russia stated that it did not agree with the conclusions of Korea and Japan that the fishing activity on the continental shelf is affecting the recovery of the ABP stock. Russia referred the other Parties to page 4 of the Russian report. Page 4 shows that the low stock abundance since 1994 is the result of weak year classes, although stronger year classes of herring

have begun to emerge since 1992. Russia believes that oceanic conditions have been the main cause of the weak year classes of pollock and strong year classes of herring. Russia is confident that even a cessation of fishing will not affect the recovery of the stocks in the WBS.

4.5.7. China stated that human activity was one of the main factors affecting recovery, especially in the adjacent areas, so this factor should be seriously considered in the future. The recovery of the CBS stock should be the responsibility of all the countries, not just the distant water fishing nations. Even though the moratorium has been in place for 8 years, it is unclear to China how it has affected the CBS stocks.

4.5.8. Poland stated there are many factors that influence the ABP stock and it is difficult to point to one factor that affects the stocks. This was discussed extensively at the July Workshop with no conclusions.

4.6. The Effects of the Moratorium and its Continuation

4.6.1. Japan stated that this topic was discussed extensively at the July Workshop. The moratorium has had not only an economic impact, but also a spiritual impact on the fishermen of Japan. The moratorium has been a management measure for ABP stock, but Japan has seen no positive effect of the moratorium on the recovery of that stock. Japan believes that the S&T Committee should consider some other management measures.

4.6.2. Korea agreed with Japan and stated that there needs to be an AHL or a token AHL to give the fishermen hope.

4.6.3. Russia agreed with Japan that an extensive discussion of the effects of the moratorium was held at the July Workshop. One of the conclusions of the Workshop was that it is necessary to find out clearly what happened to the CBS pollock stocks. The Workshop was the first step in that process. Russia is hopeful that the joint efforts of all the Parties will solve this complex problem. One of the positive effects of the moratorium is that it resulted in the Seattle meeting. On the basis of what was discussed in Seattle and the exchange of opinions at the Fifth Annual Conference, Russia concluded that, at least for the next 5-7 years, there is no hope for the reestablishment of a fishery. When the fishery is resumed, it should be managed very carefully. There is no indication that when the fishery resumes it will be at the levels that were seen in the late 1980s. Russia agreed with the Korean research data that there is no pollock or pollock prey in the CBS.

4.6.4. The Parties agreed to reference the report of the CBS Pollock Workshop (Attachment 11), rather than repeat the discussion at the S&T Committee meeting, unless the Parties had additional comments.

4.6.5. Poland and Korea stated that there is no reason to continue the fishing moratorium in 2001, since it has been ineffective in rebuilding CBS pollock stocks. China suggested that, as a precautionary measure, a partial year moratorium should be considered by the Parties.

4.6.6. The United States agreed that the moratorium has had a negative impact on all the Parties' fishermen. However, the United States did not agree that lifting the moratorium would have a positive effect on the pollock stock recovery.

4.6.7. Korea agreed with China that the precautionary approach should be applied to fishing in the CBS area.

4.6.8. In relation to the proposal to end the moratorium, Russia asked if the United States would resume the Bogoslof Island fishery? Otherwise, it would be difficult to explain to U.S. fishermen why they could not fish in the Bogoslof area if there was fishing in the CBS. Russia reiterated the need for the moratorium to remain in place as long as there is no pollock.

4.6.9. The United States answered that resumption of the Bogoslof fishery would be at the discretion of the North Pacific Fisheries Management Council (NPFMC), which would consider a number of factors in whether to resume the Bogoslof fishery. The United States is currently undergoing a review of the impacts of U.S. fisheries on Steller sea lions

4.6.10. Japan stated that it was not necessarily speaking to lift the moratorium, but that the moratorium is not the only management measure available. Japan wants to consider all possible management measures when considering recovery of the Aleutian Basin Stocks.

4.7. Methodologies to Determine Allowable Harvest Level

4.7.1. Japan circulated a proposal for setting an ABC for the Convention Area for 2001 (Attachment 12). The methodology used is the same as in previous proposals by Japan. The estimated values of ABC in the Specific Area were from 3,768 mt to 33,150 mt using the data from the *R/V MILLER FREEMAN* and a mortality rate of 0.2.

4.7.2. Russia stated that while the Japanese ABC proposal is interesting, when this Convention was signed, the UN Fish Stocks Agreement (UNFSA) had not yet been signed. Today we must take into account not only our Convention, but also the UNFSA using the precautionary approach when setting AHL. In 1988, the Bogoslof biomass was about 2.4 mmt and the catch taken from the CBS was 1.4 mmt. In the last fishing year (1993), the Bogoslof biomass was 0.68 mmt and the catch from the CBS was 0.002 mmt. These figures illustrate that judging from the provisions of the Convention and the UNFSA, and the Bogoslof estimates this year, the catch from the CBS would only be a few kgs. This was confirmed by recent trial fishing efforts by the Parties that yielded very little pollock.

4.7.3. The United States recognized that Japan used the same methodology as the U.S. NPFMC to determine ABC. The United States stated that the Japanese proposal fails to consider a further step taken by the NPFMC—the setting of a minimum biomass level below which the United States will not fish. Such a minimum level is specified by the Convention. The Convention is very clear on what AHL could be based on varying levels of biomass. The Japanese proposal did not consider all the factors that should be considered when setting an AHL.

4.7.4. Japan responded that its proposal was only a forecast based on available data. It is for ABC and not AHL.

4.7.5. Russia pointed out that at the July Workshop there was a similar agenda item and considerable time was spent discussing this subject. Russia referred the S&T Committee to page

14 of the report on the CBS Pollock Workshop. Japan pointed out that China did not participate in this discussion at the meeting in July and also asked that its ABC proposal also be included in the S&T Committee report.

4.7.6. The Parties agreed to include the summary from that report here:

> *"Parties agreed that there are still differences in opinions relative to the procedures and approaches that should be used to establish pollock AHLs. There is support among some Parties to the Convention to establish pollock quotas at pollock biomass levels below the 1.67 million t threshold. Other Parties are of the opinion that the methods outlined in the Convention are appropriate, given the current condition of the pollock stocks. In light of the fact that these differences exist, the Parties believe that the best approach to narrowing these differences is to institute a research plan that begins to address some of the important questions that they have about pollock stocks in the Aleutian Basin. Parties recognize that this is a large undertaking that would require many years and a lot of money, staff, and research resources. Therefore, instead of coming up with a comprehensive list of questions to focus attention on, Parties decided to narrow the scope down to two questions to initiate such a research program:*
>
> *(1) What are the pollock spawning locations in the Aleutian Basin?*
>
> *(2) What are the migration patterns and geographical distribution of pollock stocks?"*

4.7.7. Korea stressed the need to apply the precautionary approach in setting AHL and distributed a paper to that effect (Attachment 13). China stated that it viewed the application of the precautionary approach to AHL as a new concept. The United States disagreed with the premise of Korea's paper and suggested that the Parties might be using different definitions of the precautionary approach since it did not see how setting an AHL in the case of the CBS would be more in line with the precautionary approach than setting an AHL of zero.

4.7.8. Russia submitted a document on the precautionary approach that is included in Attachment 14.

4.7.9. Poland suggested that an AHL could be established taking into account the precautionary approach. The reduction of the Aleutian Basin stock biomass from 1998-1999 was 9% and from 1999 to 2000, it was 31%. This fish was lost to the fishermen. Setting a low level AHL should not affect the CBS stocks. At the July Workshop, Russia presented a scenario in which up to 12 vessels could conduct trial fishing for 100 days catching 100 tons a day. This would be more dangerous to the recovery of the stocks than setting a low level AHL.

4.7.10. Russia stated that over the past 10 years, there has been a herring "epoch" in the Bering Sea and that this herring epoch could last another 10 years. At the same time, the WBS pollock stock has declined to a minimum level. Most stocks, including juvenile fish, are concentrated over the continental shelf and move only during migration periods. The climatic conditions have changed considerably from when the stocks were estimated at 2.5 mmt. There is nothing to

indicate that environmental conditions will change significantly in the near future to cause the CBS pollock stocks to increase significantly. Therefore, trial fishing by 12 vessels would have no harmful effect now.

4.7.11. The United States responded that if the Parties are concerned with trial fishing vessels catching too much fish, then limits can be placed on trial fishing regardless of whether there is an AHL or not. Many of the Parties have emphasized that 8 years of the moratorium have not resulted in the stocks rebounding. The stocks take time to recover. If Parties look at the 13 years for which there is catch and biomass data for the CBS under the terms of the Convention, there would only have been a fishery in 4 of those 13 years. The United States said it could not see how setting an AHL greater than zero will speed up stock recovery.

4.8. Comprehensive Research Plan for 2001

4.8.1. The United States presented its research plans for 2001, which are included in Attachment 7. The *R/V MILLER FREEMAN* will be in the Bering Sea to do an echo integration-trawl survey in the winter of 2001 and the U.S. intends to make a modification to the survey plan it has used in recent years. The *R/V MILLER FREEMAN* will survey the EBS in February 2001 and the Bogoslof Island survey in March 2001. The United States invited scientists from the other Parties to participate in the Bogoslof Island portion of the survey. The United States' survey design is still undecided.

4.8.2. Japan indicated it had no plans to conduct a research cruise in 2001, but presented its preliminary plans for a March 2002 survey (Attachment 15. Japan will use the *R/V KAIYO MARU*, which last surveyed this area in 1999. The 2002 plan is very similar to the 1999 plan with an acoustic survey, midwater trawl surveys, biological sampling, and oceanographic observation.

4.8.3. Korea stated it has no plans to conduct research in the Bering Sea in 2001, but also intends to conduct research in 2002. Korea will present its plan for 2002 at the next Annual Conference. Korea expressed interest in sending a scientist to participate in the *R/V MILLER FREEMAN* 2001 Bogoslof Island survey.

4.8.4. The United States noted that since the research vessels of the United States, Japan, and Korea intend to conduct research operations in 2002, those countries should coordinate their plans prior to the next Annual Conference so that those plans can be presented at that Conference.

4.8.5. The United States presented a paper (Attachment 16 entitled "Comprehensive Survey Planning for Central Bering Sea Pollock Resource Assessments" developed by a subgroup of the July CBS Pollock Workshop participants. One concern of the group is that it may not be practical, given the current low pollock biomass, to conduct a comprehensive research survey now. However, the potential of having three research vessels available at the same time in 2002 provides and excellent opportunity to increase our knowledge base for Aleutian Basin Pollock. There are three areas of concern, the U.S. EEZ, the Russian EEZ, and Donut Hole. If Parties intend to use trial fishing vessels to do research, they will need to secure special permission to fish in the EEZ areas. As noted above, three Parties have indicated they intend to do research cruises in 2002 with the potential for two other Parties to do research, which would result in considerable data sampling for 2002. Intercalibration between the research vessels would be necessary.

4.8.6. Japan commented on the plan for future comprehensive surveys. The continuous research on the status of pollock spawning areas in the Aleutian Basin and migration patterns is indispensable, because of the dynamic fluctuations in stock abundance and oceanic environmental conditions. Japan stated that it is not acceptable if the Parties can only conduct this kind of cooperative research in 2002 and not in later years, since one year's worth of data is not sufficient for reasonable estimation.

4.8.7. Russia reported that it conducted an open spawning pollock survey in the Western Bering Sea in 2000, which typically begins in May. The icy conditions prevented it from gathering sufficient data to estimate the spawning biomass. However the survey registered active pollock spawning at some stations in the Navarin area. Russia intends to conduct a similar survey in 2002.

4.8.8. Korea suggested that a way to increase the amount of scientific data gathered is for the Parties to increase the number of trial fishing vessels in the Convention Area.

4.8.9. **The S&T Committee agreed to form a working group led by Dr. Neal Williamson (United States) to coordinate work on a comprehensive research plan for 2002.**

5. Discussion of Enforcement and Management Issues.

5.1. Terms and Conditions for Trial Fishing for 2001

5.1.1. The Chair of the Enforcement/Management Group, Captain J.V. O'Shea (U.S.) stated that he had reported at the July Workshop that the INMARSAT service provider now requires that the fishing vessel owner provide permission for third Parties to receive transponder data. Therefore, if Parties submit notification to enter the Convention Area, they should fax a copy of the INMARSAT permission letter to each of the Parties. Then, if the Parties want to receive transponder data, they can submit the fishing state permission letter to INMARSAT and receive the data. The report of the July meeting includes a sample permission letter (Attachment 17.

5.1.2. Captain O'Shea further noted that the issue of trial fishing will be decided at the Annual Meeting, but only if the Parties decide to set the AHL at zero. Japan stated that they have discussed the INMARSAT permission letter within the Japanese government and reached the conclusion that Japan will submit transponder data in accordance with the provision of Article XI, 4 (a) of the Convention.

5.1.3. The S&T reviewed the Trial Fishing Terms and Conditions for Pollock Fishing for 2000.

5.1.4. Korea recommended:

--that the number of trial fishing vessels be increased to improve safety and increase scientific data gathering; allow Parties to transfer their trial fishing privileges to other Parties, but only allow 12 trial fishing vessels in the Convention Area at any given time;

--that a TAC of 10,000 or 20,000 mt could be imposed on these vessels and

--that the notification period for trial fishing be reduced from one month to two weeks.

5.1.5. The United States responded that it could accept a two-week notification period prior to the vessel entering the Convention Area. Regarding increasing the number of trial fishing vessels, the United States noted that the Convention already provides for two trial fishing vessels per Party,

which theoretically allows for a maximum of twelve vessels in the Convention Area at any given time. Regarding the TAC for trial fishing vessels, the United States suggested that, given the small amount of pollock caught during recent trial fishing efforts and the requirement that only two vessels per Party may engage in trial fishing at any one time, then a TAC is not necessary at this time. The United States proposed that the S&T approve the same trial fishing terms and conditions for 2001 as had been in place in 2000, with a two-week notification period.

5.1.6. The United States noted, however, that changing this period to two weeks would not change the Convention requirement to submit a trial fishing plan no later than the Annual Meeting. The purpose of the trial fishing plan is to notify all other Parties of the submitting Party's intent to conduct trial fishing. This notification allows Parties to plan for placement of scientific observers on that trial fishing vessel. At the same time, applying terms and conditions on trial fishing operations helps familiarize fishermen with the types of management measures that will be applied when a commercial fishery resumes.

5.1.7. The S&T agreed to recommend to the Annual Conference that the revised Trial Fishing Terms and Conditions for Pollock Fishing for 2000 be applied to the 2001 trial fishing operations, if trial fishing is established.

5.2. Number and Priority Placement of Observers Required by Article XI

5.2.1. The Chair of the Enforcement/Management Group, Captain J.V. O'Shea (U.S.) summarized the observer issue regarding the placement of Article XI observers once fishing is resumed in the Convention Area. This has been a difficult topic. It was discussed at the S&T of last year's Annual Conference and during the July 2000 Workshop with no progress.

5.2.2. There was no consensus on this issue and the Parties agreed to table the discussion for this meeting.

5.3. Methods to Determine Catch Weight

At the Third Annual Conference, the Parties reached consensus that until the best method to determine catch weight is decided, scales or volumetrics (calibrated bins and codends) would be used.

5.4. Components of a Management System

5.4.1. The United States reported that during the Fourth Annual Conference two issues were left unresolved: the length of the fishing season and the reallocation of unused quota. The United States reported that in it's view, in light of the discussions at this meeting, it would seem premature to set a fishing season at this time. The United States recommended that a decision on this subject be delayed until such a time when the science cruises could provide sufficient data to make a decision regarding the fishing season.

5.4.2. Japan agreed that a decision on deciding the length of the fishing season was not appropriate at this time, although Japan is in favor of a year round fishery.

5.4.3. Reallocation of unused quota. This part of the discussion followed from an earlier proposal by Japan that after a three year time period, unused quota could be redistributed to the other Parties. There are some concerns that this proposal may not comport with Article VIII-1 of the Convention, which states that, "INQ shall not be transferred to any other Party or non-Party to this Convention." The United States recommended that further discussion of this issue be postponed until such a time that fishing would be resumed in the Convention Area.

5.4.4. **The S&T agreed to postpone further discussion of these issues of a fishing season and the reallocation of unused quota until such a time that fishing would be resumed in the Convention Area.**

6. Other Matters and Recommendations.

6.1. The United States suggested that it would be helpful to compile details of historical catch data for the Donut Hole fisheries and asked cooperation from the other Parties to provide these details. These details could be extracted from fishing vessel logs, observer records from fishing vessels, and research cruises. The period 1984 to 1991 when the fisheries developed and declined would be an important period to focus on. The United States will contact the Parties to determine how these details could be compiled.

6.2. Russia reported that Japanese driftnet fishing boats reported pollock catches as early as the 1950s from oral reports and that it would be useful to determine if such data were still available.

6.3. Japan agreed to relay this request to the proper officials upon return to Japan.

7. Report of the S&T to the Annual Conference.

The Parties **adopted** the report and **recommended** the Annual Conference accept its recommendations

8. Closing Remarks.

The Chair closed the meeting at 1430 on Wednesday, 8 November 2000.

List of Attachments

1. S&T Agenda
2. List of S&T participants
3. Russian Biomass Estimates of Pollock in the WBS 1996-2000
4. Report on Republic of Korea Trial Fishing in 2000
5. Poland August 1999 Trial Fishing Report
6. Report on China Trial Fishing in 2000
7. U.S. Bogoslof Pollock Abundance Report for March 2000
8. Russia Pollock Stock Assessment for 2000
9. Japan Cruise Plan for Mid-Water Trawl Survey for Pollock Oct-Nov 2000
10. Republic of Korea Report of 2000 Research Cruise
11. July 2000 Pollock Workshop Report on Effects of Moratorium
12. Japan Proposal for ABC of 2001 in the Convention Area
13. Korean Precautionary Approach as New AHL Proposal
14. Russia Precautionary Approach Proposal
15. Japan 2002 Research Vessel Cruise Plan
16. Comprehensive Research Plan Proposal
17. Letters Regarding VMS Transponders on Trial Fishing Vessels

S&T Attachment 1

FIFTH ANNUAL CONFERENCE OF THE PARTIES TO THE CONVENTION ON THE CONSERVATION AND MANAGEMENT OF POLLOCK RESOURCES IN THE CENTRAL BERING SEA

NOVEMBER 6 – 10, 2000
SHANGHAI, THE PEOPLE'S REPUBLIC OF CHINA

Agenda
Scientific and Technical Committee

1. Opening Remarks
2. Appointment of Rapporteur
3. Adoption of Agenda
4. Discussion of Science Issues
   - 4.1 Update catch and effort statistics
   - 4.2 Year 2000 Results of Trial Fishing
   - 4.3 Review Results of 1999/2000 Research Cruises
   - 4.4 Review the Status of Aleutian Basin Pollock Stocks
   - 4.5 Factors Affecting Recover of the Stock
   - 4.6 The Effects of the Moratorium and its Continuation
   - 4.7 Methodologies to Determine Allowable Harvest Level (AHL)
   - 4.8 Comprehensive Research Plan
5. Discussion of Enforcement and Management Issues
   - 5.1 Trial Fishing Terms and Conditions for 2001
   - 5.2 Number and Priority Placement of Observers Required by Article XI
   - 5.3 Methods to Determine Catch Weight
   - 5.4 Components of a Management System
6. Other Matters and Recommendations
7. Report to the Annual Conference
8. Closing Remarks

FIFTH ANNUAL CONFERENCE

OF THE PARTIES TO THE CONVENTION ON THE

CONSERVATION AND MANAGEMENT

OF POLLOCK RESOURCES

IN THE CENTRAL BERING SEA

NOVEMBER 6 — 10

SHANGHAI, CHINA

DELEGATION

THE PEOPLE'S REPUBLIC OF CHINA

Mr. Deli Xin (Head)	Director for the Distant Water Fisheries Bureau of Fisheries Ministry of Agriculture
Mr. Qianfei Liu	Official Ministry of Agriculture
Mr. Yingqi Zhou	President Shanghai Seafood University
Mr. Jinfa Zhang	Permanent Vice General Manager Shanghai Deep Sea Fisheries Company
Mr. Zulian Zhang	Vice General Manager Shanghai Deep Sea Fisheries Company
Mr. Xianbiao Zhou	Vice General Manager CNFC Oversea Fisheries co., Ltd
Mr. Changhong Shi	Manager of the Sales Department CNFC Oversea Fisheries Co., Ltd
Mr. Xianshi Jin	Specialist Yellow Sea Fisheries Research

FIFTH ANNUAL CONFERENCE
OF THE PARTIES TO THE CONVENTION ON THE
CONSERVATION AND MANAGEMENT
OF POLLOCK RESOURCES
IN THE CENTRAL BERING SEA

NOVEMBER 6 — 10

SHANGHAI, CHINA

DELEGATION

JAPAN

Ichiro Kanto Mr.(Head)	Fisheries Agency of Japan
Nobuya Kaneko Mr.	Fisheries Agency of Japan
Noriaki Takagi Mr.	Japan Deep Sea Trawlers Association
Takashi Yanagimoto Mr.	Hokkaido National Fisheries Research Institute
Akira Nishimura Mr.	Hokkaido National Fisheries Research Institute
Akiko Tomita Ms.	Interpreter
Midori Ota Ms.	Interpreter

FIFTH ANNUAL CONFERENCE

OF THE PARTIES TO THE CONVENTION ON THE

CONSERVATION AND MANAGEMENT

OF POLLOCK RESOURCES

IN THE CENTRAL BERING SEA

NOVEMBER 6 — 10

SHANGHAI, CHINA

DELEGATION

REPUBLIC OF KOREA

Yoo Sang-Jung Mr. (Head)	Director International Cooperation Division Ministry of maritime & fisheries
Kim Jin-Yeong Dr.	Distant-Water Fisheries Resources Division Director National Fisheries Research and Development Institute
Seok Gwan-Choi Mr.	Distant-Water Fisheries Resources Division Vice-Director National Fisheries Research and Development Institute
Lim Woo-Kun Mr.	Chairman North-Pacific Trawl Fishery Committee of Korea Deep Sea Fisheries Association
Chung Sung-Ho Mr.	President HaeGil Co., Ltd
Lee Chang-Soon Mr.	Director KeukDong Moolsan Co., Ltd
Kim Tae-Won Mr.	General Manager

FIFTH ANNUAL CONFERENCE

OF THE PARTIES TO THE CONVENTION ON THE

CONSERVATION AND MANAGEMENT

OF POLLOCK RESOURCES

IN THE CENTRAL BERING SEA

NOVEMBER 6 — 10

SHANGHAI, CHINA

DELEGATION

REPUBLIC OF POLAND

Lidia Kacalska Bienkowska Mrs. (Head)	Director Fisheries Department, the Ministry of Agriculture and Rural Development
Jerzy Janusz Mr.	Sea Fisheries Institute

FIFTH ANNUAL CONFERENCE

OF THE PARTIES TO THE CONVENTION ON THE

CONSERVATION AND MANAGEMENT

OF POLLOCK RESOURCES

IN THE CENTRAL BERING SEA

NOVEMBER 6 — 10

SHANGHAI, CHINA

DELEGATION

THE RUSSIAN FEDERATION

Boris N. Kotenev Mr.	Director VNIRO
Vadim L. Minin Mr.	Division Chief Fisheries Committee
Vadim M. Nikolaev Mr.	Representative of the Fisheries Committee in The Republic of Korea
Mikhail A. Stepanenko Mr.	Sector Chief, TINRO-center
Elena V. Stakhanova Mrs.	Division Chief Fisheries Committee

FIFTH ANNUAL CONFERENCE OF THE PARTIES TO THE CONVENTION ON THE CONSERVATION AND MANAGEMENT OF POLLOCK RESOURCES IN THE CENTRAL BERING SEA

November 6-10, 2000
Shanghai, China

DELEGATION

THE UNITED STATES

Dr. Richard Marasco (Head of Delegation)
Director, Resource Ecology and Fishery Management Division
Alaska Fisheries Science Center, National Marine Fisheries Service (NMFS)

Dr. Loh-Lee Low
Resource Ecology and Fishery Management Division
Alaska Fisheries Science Center, NMFS

Dr. Neal Williamson
Resource Assessment and Conservation Engineering Division
Alaska Fisheries Science Center, NMFS

William P. Hines
International Negotiations, Alaska Region, NMFS

Gary Gailbreath
Office for Law Enforcement, Alaska Region, NMFS

Paul E. Niemeier
International Fisheries Division, Office of Sustainable Fisheries
Silver Spring, Maryland

Stetson Tinkham
Office of Marine Conservation, U.S. Department of State

Captain Vincent O'Shea
Chief, Planning and Policy
U.S. Coast Guard, 17th District, Juneau, Alaska

CDR Michael Cerne
Chief, Living Marine Resources Division, Office of Law Enforcement
U.S. Coast Guard, Washington, D.C.

LCDR Dwight Mathers
U.S. Coast Guard Liaison Officer
U.S. Department of State, Washington, D.C.

ADVISORS

Dennis Austin - Washington State Department of Fisheries and Wildlife

David Benson - Trident Seafoods

Gordon Blue - Alaska Crab Coalition

Alvin Burch - Alaska Draggers Association

Kevin Duffy - Deputy Commissioner, Alaska Department of Fish and Game

Paul MacGregor - At-Sea Processor Association

Brent Paine - United Catcher Boats

Thorton Smith - North Pacific Longline Association

Biomass estimates of pollock in the Western Bering Sea in 1996-2000 ths.m.t. (BT and EI survey data).

	To east 176^{0}00 E (Navarin area)			To west 176^{0}00 E (Western area)		
Year	**BT**	**EI**	**Total**	**BT**	**EI**	**Total**
1996	**390.4**	**257.0**	**647.4**	**217.5**	**108.5**	**326.0**
1997	**300.0**	**285.0**	**585.0**	**-**	**79.6**	**-**
1998	**320.3**	**87.8**	**408.1**	**119.2**	**48.0**	**167.2**
1999	**250.3**	**83.0**	**333.6**	**61.7**	**18.0**	**79.7**
2000	**-**	**118.0[1]**		**-**	**N/A**	**-**

)[1] - preliminary data

Catch of pollock and CPUE in the Navarin area (to the east from $176^{0}00$) in 1997-2000

Year	Vessel class	CPUE, t		Catch, ths.t
		t/per/day	t/per tow	
1997	Factory trawler	**79.9**	**26.1**	**680.0**
	catcher/processor	**42.5**	**19.8**	
1998	Factory trawler	**56.3**	**18.8**	**643.6**
	catcher/processor	**24.7**	**13.0**	
1999	Factory trawler	**48.4**	**19.9**	**632.7**
	catcher/processor	**11.2**	**6.8**	
2000*	Factory trawler	**44.7**	**19.4**	**317.2**
	catcher/processor	**11.9**	**7.4**	

)* - Preliminary data, November 1

Catch of pollock and CPUE (factory trawlers) in the Western Bering Sea (to west from 176 °00 E) in 1981-2000

Year	CPUE, t		Month	Catch, ths. t
	t/per day	t/tow		
1981	71,8	16,7	II-XII	151,8
1982	74,8	18,6	I-XII	48,4
1983	75,8	20,0	I, III, XII	36,0
1984	68,2	19,6	II-XII	88,3
1985	83,5	23,1	I-XII	133,2
1986	69,4	18,9	I, V-VIII	138,5
1987	86,2	24,5	II-XII	151,6
1988	82,3	24,4	I-XI	171,3
1989	86,1	26,0	I, II, IV, VI-XII	181,5
1990	76,0	23,9	VII-X	56,5
1991	89,9	28,2	I-X	246,4
1993	65,7	23,0	VI-XII	37,5
1994	73,6	25,4	I, IV-XII	119,4
1995	65,2	24.7	I, IV-VI	11,1
1996	46,5	16,9	VII-IX	35,0
1997	46,6	22,6	I-V	43,2
1999	61,4	22,8	I, II, IV-IX	32,7
2000	67,4	33,5	VI-X	51,7

Attachment 4

KOREA

Report on the Korean trial fishing on walleye pollock in the Convention area of the Bering Sea in 2000.

The trial fishing in the convention area of the Bering Sea (Donut hole) was conducted two times by Korean commercial vessel in 2000. First, it was conducted by Korean stern trawler, her name is ORIENTAL DISCOVERER (Length-97.8m, tonnage-4,443 G/T), in the Convention area during 23 days (Jan. 12- Feb. 3, 2000). Second, ORIENTAL ANGEL (Length-103.59m, tonnage-5,210 G/T) of stern trawler conducted in the Convention area during 8 days (May 11-20, 2000). The main purpose of the trial fishing was to determine the geographical distribution of walleye pollock in the Convention area and to collect biological data of walleye pollock

Fig. 1 and Fig. 2 were presented the hydroacoustic tracklines and haul positions during first time and second time.

First time conducted 7 hauls using the midwater trawl net of Green Netex 1120 (codend mesh size-100㎜) and Stimul Net system (codend mesh size-100 ㎜). In haul no. 2, some fish and squids caught; Salmon-6 fish(2.61kg), Hairtail-1 fish(5.1kg), Jelly fish-7 fish(10.2kg), smooth lumpsucker-15 fish(9.93kg), Sharks-2 fish(22.0kg), and Squids-2 fish(1.7kg). Haul no. 5 were caught 69 fish(35.3kg) of smooth lumpsucker, 8 fish(5.1kg) of Jelly fish, and 13 fish(2.21kg) of Squids. The other hauls caught none. Also, walleye pollock were never caught in the Convention area. The depth of trawl gear was 122m to 370m, the hauling time was 3 hour to 6 hour. The temperature of gear depth was 1.2℃ in depth of 122m, 3.0℃ in 215m, 3.8℃ in 250m, and 3.5℃ in 370m (Table 1).

Second time conducted 2 hauls using the midwater trawl net of TMT-3P-90 (codend mesh size-110㎜). None of fish were caught. The trawl of gear depth were 150m and 450m the hauling time were 8 hour and 3 hour. The water temperature of sea surface was 2~3℃, deep water was 3~4℃ (Table 1).

Table 1. Detail information of hauls conducted by Korean trial fishing in the Convention area in January and May, 2000

Vessel name	Date	Gear type	Set Position	Hauling Position	Hauling Time	Depth of gear (m)
ORIENTAL DISCOVERER	Jan. 15	Green Netex 1120	N57° 18′ W177° 05′	N57° 28′ W177° 03′	4h 30min	165
	Jan. 17	Stimul Net system	N56° 54′ W179° 28′	N56° 43′ W179° 10′	1h 30min	215
	Jan. 19	Green Netex 1120	N58° 51′ W179° 32′	N58° 51′ W179° 10′	3h	122
	Jan. 26	Green Netex 1120	N58° 53′ E177° 32′	N58° 50′ E177° 50′	4h 20min	127
	Jan. 27	Green Netex 1120	N57° 52′ E177° 52′	N57° 35′ E178° 02′	5h 20min	370
	Jan. 28	〃	N56° 40′ E179° 03′	N56° 28′ E179° 20′	4h	270
	Jan. 30	〃	N56° 06′ W177° 10′	N56° 17′ W177° 06′	3h 20min	250
ORIENTAL ANGEL	May 13	TMT-3P -90	N56° 40′ E179° 00′	N56° 37′ E179° 02′	8h 05min	150
	May 18	〃	N56° 35′ E174° 56′	N56° 35′ E175° 16′	3h	450

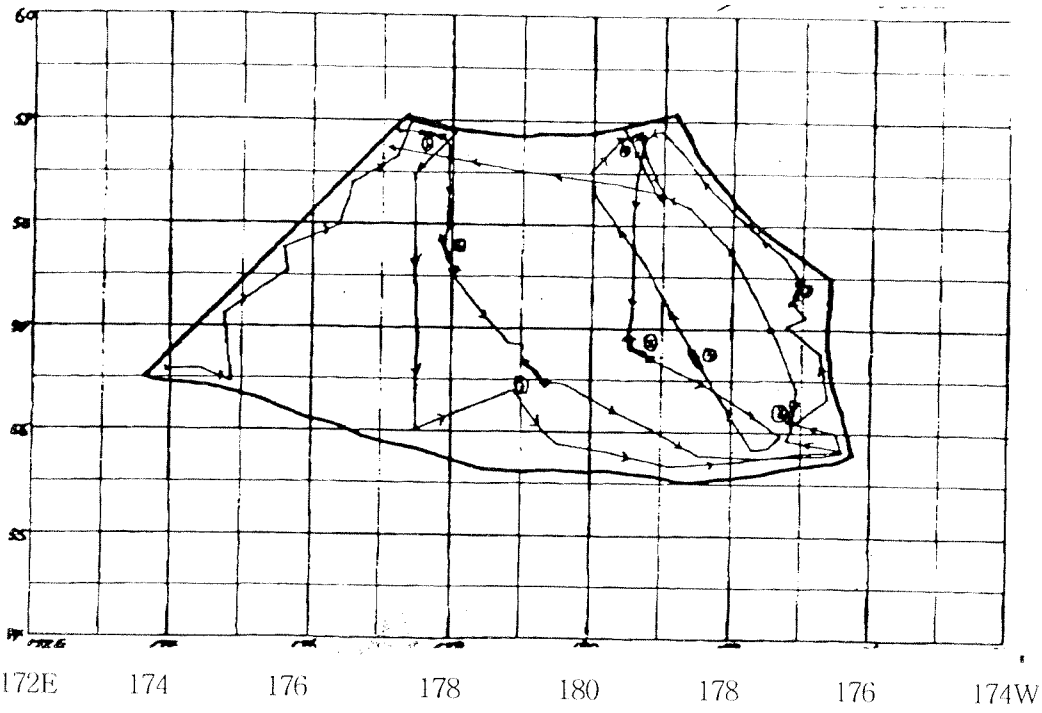

Fig. 1. Hydroacoustic trackline and haul positions (thick line) of M/T ORIENTAL DISCOVERER during trial fishing in Convention area in January.

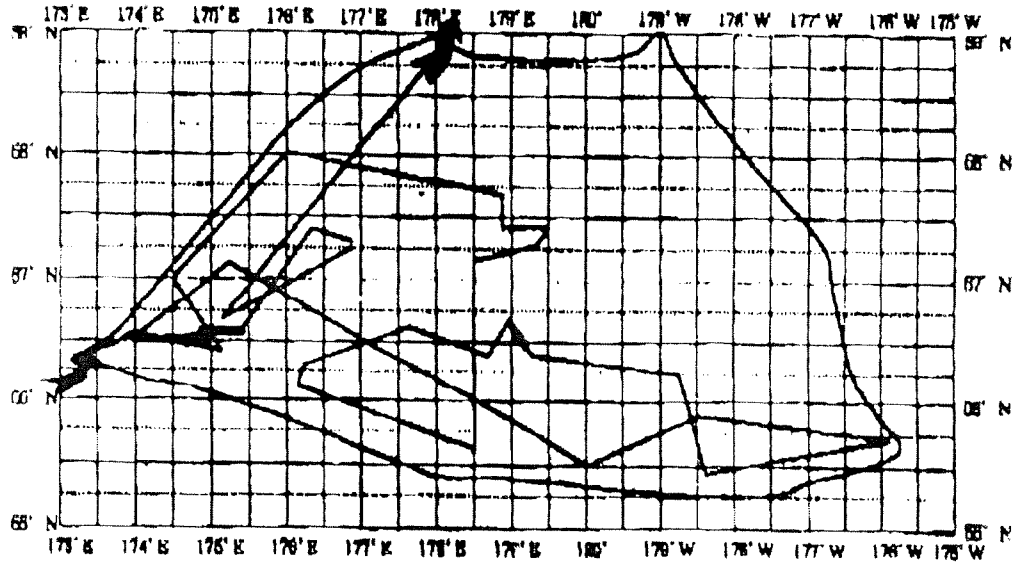

Fig. 2. Hydroacoustic trackline and haul positions (thick line) of M/T ORIENTAL ANGEL during trial fishing in Convention area in May.

Attachment 5

POLAND

REPORT ON THE POLISH TRIAL OPERATION ON POLLOCK IN THE BERING SEA CONVENTION AREA IN AUGUST 1999

In 1999 a second trial fishing cruise in the Bering Sea Convention area (Donut hole) was conducted by a Polish vessel in summer 1999.

Trial fishing was carried out by the stern trawler HOMAR (length – 95 m, tonnage – 3708 GRT) in the period from August 17 through August 30, 1999. The main purpose of the trial was to determine the geographical distribution of pollock in the Convention area and to collect biological data. A scientific observer was placed on board of the vessel.

During the searching time, about 1700 Nm of hydroacoustic trackline were followed (Fig. 1).

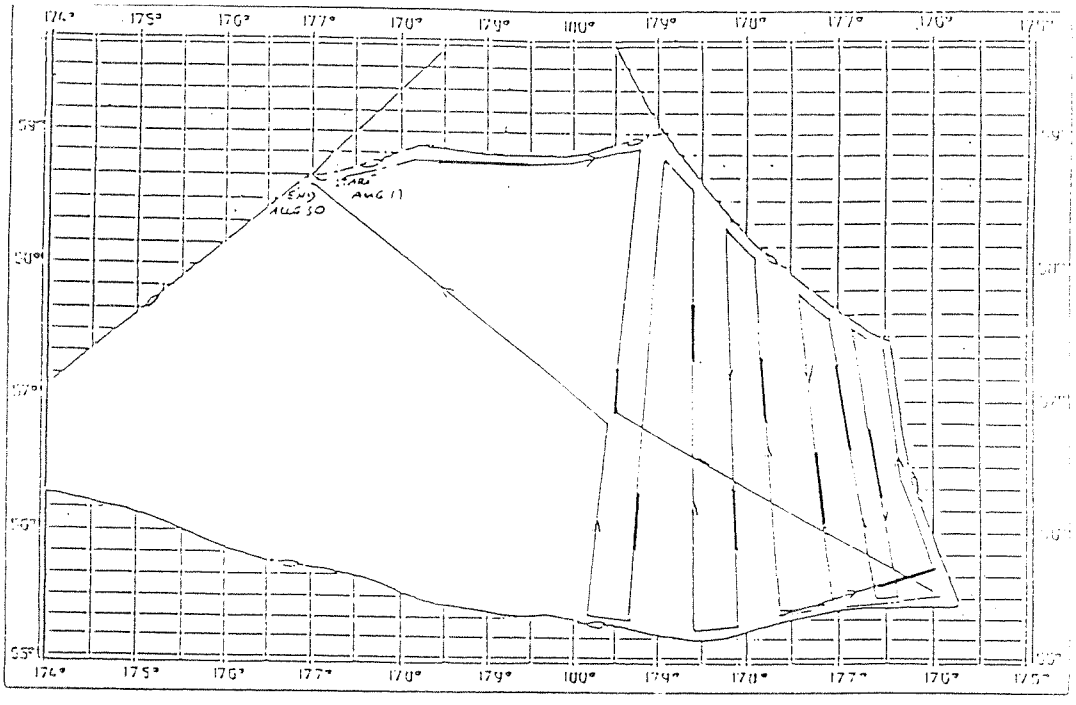

Fig. 1. Hydroacoustic trackline and the site of hauls (solid line) of m/t HOMAR During trial fishing i the Convention Area of Bering Sea (summer 1999)

During the echosounding, there were no indications of pollock. At depths of 80 – 180m, a layer of small indications was observed (Fig. 2). It consisted mainly of lanternfish (Myctophide), which were found in the mesh of the codend.

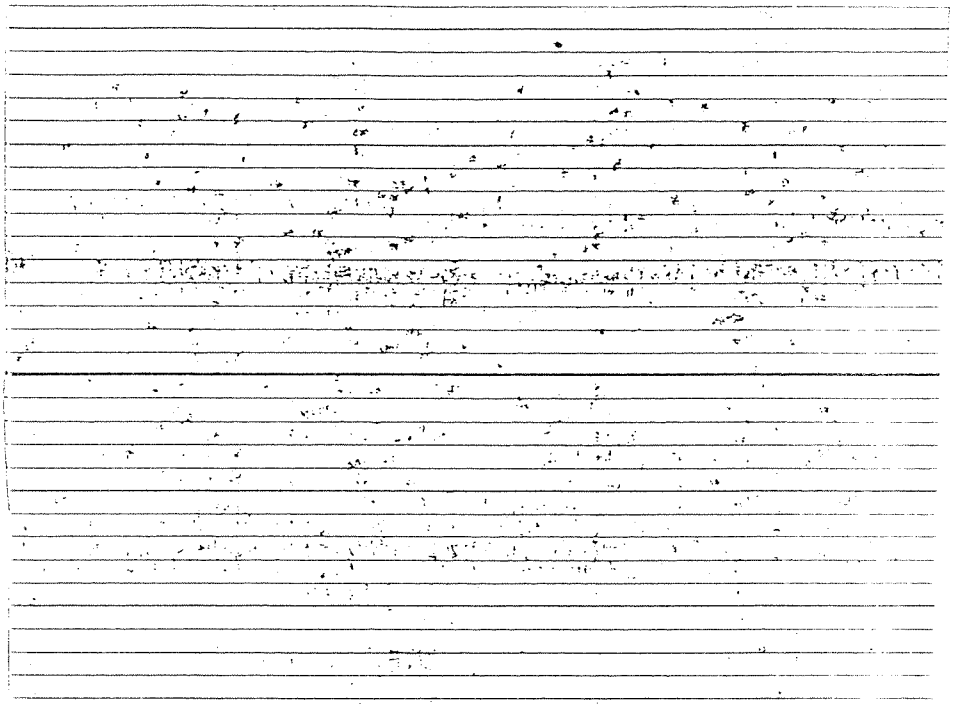

Fig. 2. Fragment of typical print-out from net sounder recorder

Ten hauls were performed at depths between 30 and 180m, and 31.4 kg of fish were caught. Only two specimens of pollock (*Theragra chalcogramma*) were caught in the central-eastern (hauls 6 and7) part of the Donut hole. The pollock specimens measured 55.0 and 47.0 cm in length. Both were male.

In the last two hauls (9 and 10), 23 specimens of sockeye salmon (*Oncorhynchus nerka*) were caught.

The sea surface temperature of the water varied from 8.0°C to 9.0°C.

The data forms were completed by the scientific observer and are attached to the report.

Jerzy Janusz
Sea Fisheries Institute
Kollataja 1, 81-332 Gdynia, Poland

HAUL SUMMARY FORM

OBSERVER NATION
1 2 3 ④ 5

VESSEL NATION
1 2 3 ④ 5

OBSERVER NAME: WOLICKI WIESŁAW

VESSEL NAME: M/T HOMAR

CRUISE #		VESSEL CODE					YEAR	
2	3	4	5	6	7	8	9	10
2	0	S	N	V	X		9	9

DATE							HAUL POSITION			FISHING TIMES IN GMT									
MONTH		DAY		HAUL #	GEAR TYPE	GEAR PERFORMANCE	LATITUDE (NORTH)	1/2	LONGITUDE	NETS AT DEPTH	BEGIN RETRIEVAL	FISHING DURATION IN MINUTES	AVERAGE FISHING DEPTH	AVG. SPEED KNOTS	OBSERVER TOTAL CATCH ESTIMATE (MT)	VESSEL TOTAL CATCH ESTIMATE (MT)	SEA SURFACE TEMP. (C)	FISHING DEPTH TEMP. (C)	SEA STATE
11	12	13	14	15 - 17	18	19	20 - 23	24	25 - 29	30 - 33	34 - 37	38 - 40	41 - 43	44-45	46 - 50	51 - 55	56 - 59	60 - 63	64
0	8	1	7	1	1	1	5847	1	17930	08.10	14.30	380	30	5,0	.	0.	8,3		3
0	8	2	0	2	1	1	5653	2	17945	00.30	03.30	180	150	4.5	.	0.	8,3		6
0	8	2	1	3	1	1	5544	2	17600	20.30	01.50	320	180	4,5	.	0.	8,6		4
0	8	2	2	4	1	1	5617	2	17635	02.30	08.30	360	150	4,5	.	0.	8,4		3
0	8	2	4	5	1	1	5715	2	17705	00.50	08.10	440	80	5,0	.	0.	8,0		2
0	8	2	4	6	1	1	5558	2	17717	21.50	02.30	285	120	4,2	0.001	0.	9,0		2
0	8	2	5	7	1	1	5733	2	17752	20.00	02.10	370	120	4,1	0.001	0.	8,8		2
0	8	2	6	8	1	1	5552	2	17815	19.45	01.30	345	100	4,1	.	0.	8,5		2
0	8	2	7	9	1	1	5743	2	17845	19.40	01.30	350	90-120	4,1	0.024	0.	8,2		3-2
0	8	2	8	10	1	1	5552	2	17910	19,45	01.30	345	80-120	4,1	0.005	0.	8,1		2
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															.	.			

SPECIES COMPOSITION FORM

Observer Name NOLICKI WIESŁAW

Observer Nation 1 2 3 (4) 5

Vessel Name M/T HOMAR

Vessel Nation 1 2 3 (4) 5

Species:						
Wt. of above:						
No. weighed:						
Avg. weight:						

CRUISE #			VESSEL CODE					YEAR		MONTH		DAY	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
-	2	0		S	N	V	X	9	9	0	8	2	4

ST = Sampling Type
(1) = whole haul
2 = partial haul
3 = weighed sample

Haul (15 - 18)	Species name	Species code	ST	Number	Species weight in kg. w/ decimal	Sample weight in kg. w/ decimal
		19 - 21	22	23 - 28	29 - 37	38 - 46
6	(keypunch check)	999	X			X
	T. chalcogramma	30	1	1	1,3	1,3

Haul (15 - 18)	Species name	Species code	ST	Number	Species weight in kg. w/ decimal	Sample weight in kg. w/ decimal
		19 - 21	22	23 - 28	29 - 37	38 - 46
7	(keypunch check)	999	X			X
	T. chalcogramma	30	1	1	1,0	1,1

SPECIES COMPOSITION FORM

Observer Name WOLICKI WIESŁAW

Observer Nation 1 2 3 4 5

Vessel Name M/T HOMAR

Vessel Nation 1 2 3 4 5

Species:						
Wt. of above:						
No. weighed:						
Avg. weight:						

CRUISE #			VESSEL CODE					YEAR		MONTH		DAY	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
	2	0		S	N	V	X	9	9	0	8	2	7

ST = Sampling Type
1 = whole haul
2 = partial haul
3 = weighed sample

Haul (15 - 18)	Species name	Species code	ST	Number	Species weight in kg. w/ decimal	Sample weight in kg. w/ decimal
		19 - 21	22	23 - 28	29 - 37	38 - 46
9	(keypunch check)	999	X			X
	Oncorhynchus nerka	20	1	19	24,40	24,40

Haul (15 - 18)	Species name	Species code	ST	Number	Species weight in kg. w/ decimal	Sample weight in kg. w/ decimal
		19 - 21	22	23 - 28	29 - 37	38 - 46
10	(keypunch check)	999	X			X
	Oncorhynchus nerka	20	1	4	4,65	4,65

LENGTH FREQUENCY FORM

CRUISE #			VESSEL CODE					YEAR		MONTH		DAY	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
-	2	0	S	N	V	X		9	9	0	8	2	4

OBSERVER NATION
1 2 3 4 5

OBSERVER NAME
WOLICKI WIESŁAW

VESSEL NATION
1 2 3 4 5

VESSEL NAME
H/T HOMAR

5 mm SIZE GROUPS:

0-5 mm rounded down to 0 mm
5-10 mm rounded down to 5 mm

SPECIES NAME	SPECIES CODE	HAUL NUMBER	SEX CODE	SUM OF ROW	LENGTH	NUMBER	LENGTH	NUMBER	LENGTH	NUMBER	LENGTH	NUMBER	LENGTH	NUMBER	LENGTH	NUMBER	LENGTH	NUM
	15-16	17 - 19	20	21 - 24	25-28	29-31	32-35	36-38	39-42	43-45	46-49	50-52	53-56	57-59	60-63	64-66	67-70	71-
T. chalcogramma	30	6	1		550	1												
T. chalcogramma	30	7	1		470	1												

BIOLOGICAL SAMPLE FORM

OBSERVER NATION 1 2 3 4 5 OBSERVER NAME WOLICKI WIESŁAW PAGE 1 OF 2

CRUISE #			VESSEL CODE					YEAR		MONTH		DAY	
1	2	3	4	5	6	7	8	9	10	11	12	13	14
-	2	0	S	N	V	X		9	9	0	8	2	3

VESSEL NATION 1 2 3 4 5 VESSEL NAME M/T HOMAR

	SPECIES NAME	SPECIES CODE	HAUL NUMBER	SEX CODE	SPECIMEN NUMBER	SPECIMEN TYPE	SAMPLING SYSTEM	LENGTH	WEIGHT (kg)	MATURITY CODE	REMARKS
		15-16	17 - 19	20	21 - 24	25	26	27 - 30	31 - 34	35	
1	T. chalcogramma	30	6	1	1	1		550	1.30	3	
2	T. chalcogramma	30	7	1	1	1		470	1.01	3	
3									.		
4									.		
5									.		
6									.		
7									.		
8									.		
9									.		
10									.		
11									.		
12									.		
13									.		
14									.		
15									.		
16									.		
17									.		
18									.		
19									.		

Attachment 6

CRUISE REPORT OF THE TRAWLER "KAI CHUANG" FOR PELAGIC POLLOCK SURVEY IN THE INTERNATIONAL WATERS OF THE BERRING SEA, 2000

Shanghai Deep Sea Fisheries Company, China

Deep Sea Fisheries Division & International Cooperation Division of Fisheries Bureau,

According to the spirit of the Forth Annual Conference of the Parties to the Convention on the Conversation and Management of Pollock Resources in the Central Bering Sea, and with the premise of not affecting the normal North Pacific fishing operation, the trawler "Kai Chuang" was dispatched to conduct pollock survey in the international waters of the Bering Sea. Herein we report the result as follows

"Kai Chuang" set out at 14:30 on May 8th, 2000 from Shanghai harbour and arrived in the southwest of Donut hole at 12:00 local time on May 20th. It cruised 3 nautical miles northward from the southwest boundary and eastward to the eastern boundary, but there were no fish shoals reflected by the fish detector.

10:00, May 30th: itinerate from 57°05'N to 177°40'W, no fish shoals were detected

10:30, June 3rd: sailed to 57° 05'N/179° 45'W along 340° clockwise and then surveyed from east to west (refer to draft 1 for details).

08:00-15:30, June 8th: between 58°05'N and 58°03'. The first haul was put down between 179°34'W and 179°54' and last 7.5 hours; trawling depth was 40m-190m; water temperature 2.9~3.2℃; net type 1152. After drawing the net, totally 34 pollocks were fished with the fork length of 45~56cm and average length 48.99cm.

June 11th: sailed to 61°20' for oil replenishment (refer to draft 2 for details, in which the solid line is trawling line and the spotted line is survey route). Returned to the international waters of Bering sea on the same day.

08:00, June 12th: put down the trawl. Hauled westwards from 59° 20'N/179° 22'W and drew the trawl at 59° 20'N/179° 17'E. The whole duration was 10 hours with the haul of 4 pollocks, trawling depth 150-190m and water temperature 2.9℃.

June 13th: put down the trawl at 58° 51'/178° 32', trawling 6 hours to 178° 42' with no fish at all. Trawling depth 40m; water temperature 2.2℃.

05:00, June 25th: put down the trawl at 57° 17'N/177° 39'. Drew at 09:00 at 57° 23'N/177° 40'W with haul of 5 pollocks, trawling depth 40-100m and water temperature 28~31℃(refer to draft 3 for details).

June 28th: finished the survey and transferred to Russian EEZ, west Bering Sea

The result of Kai Chuang's survey is not so satisfactory due to the following factors:

1. The time of survey is too early. According the operation experience in the international waters of Bering Sea, pollock abound from the beginning of approximately August.
2. To carry out the survey by single trawler renders the limit of scale.

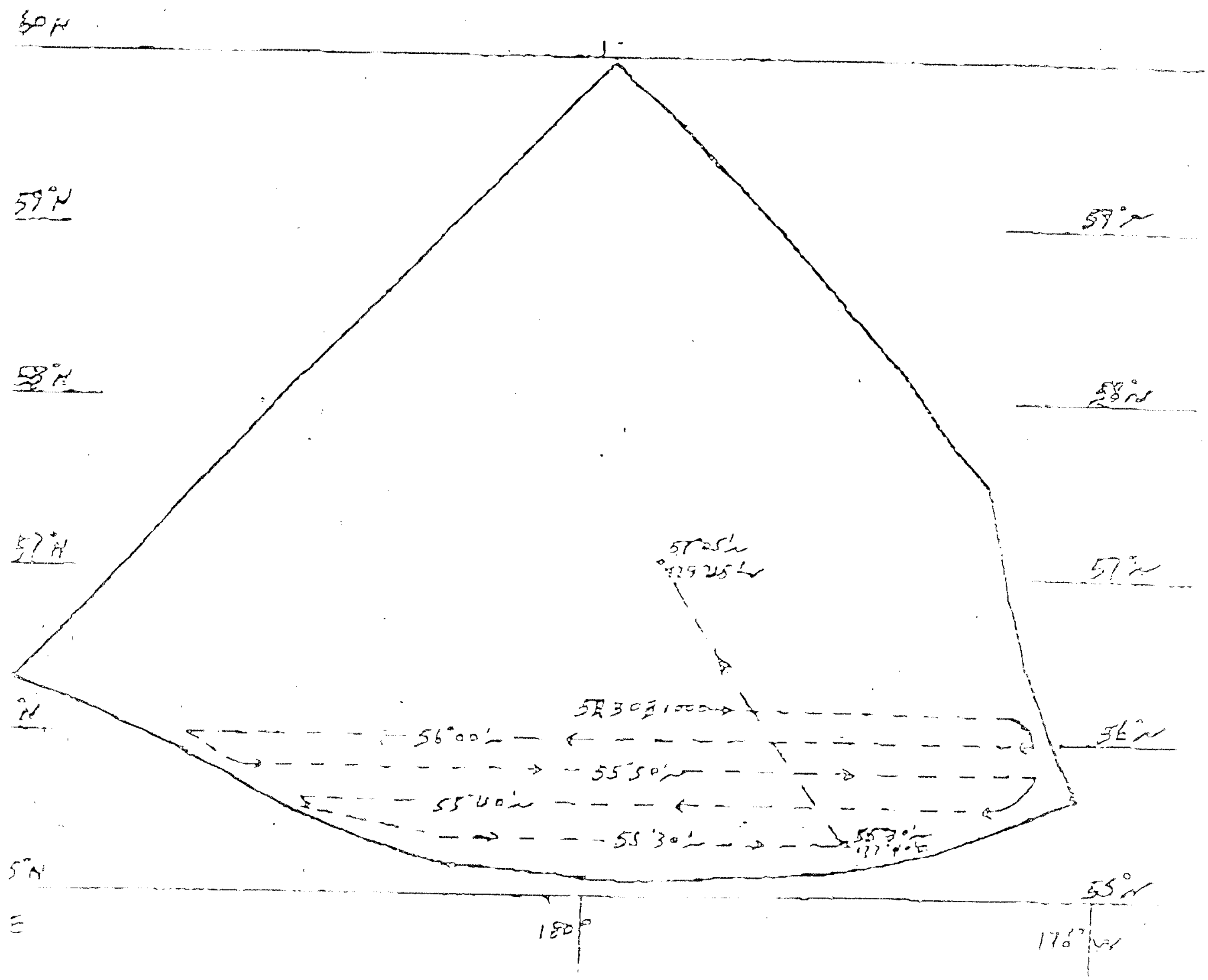
According to the above situation, we think that, survey activity is very important for large processing trawlers to expand the operation range and the survey result of a single trawler is not so objective to duly reflect the resource situation. If it is allowed, we would consider a more comprehensive survey in the Donut Hole by several trawlers in proper time of August or September so that more progress can be made by the survey.

Best regards.

Secretariat of North Pacific Work Team
Shanghai Deep Sea Fisheries Company

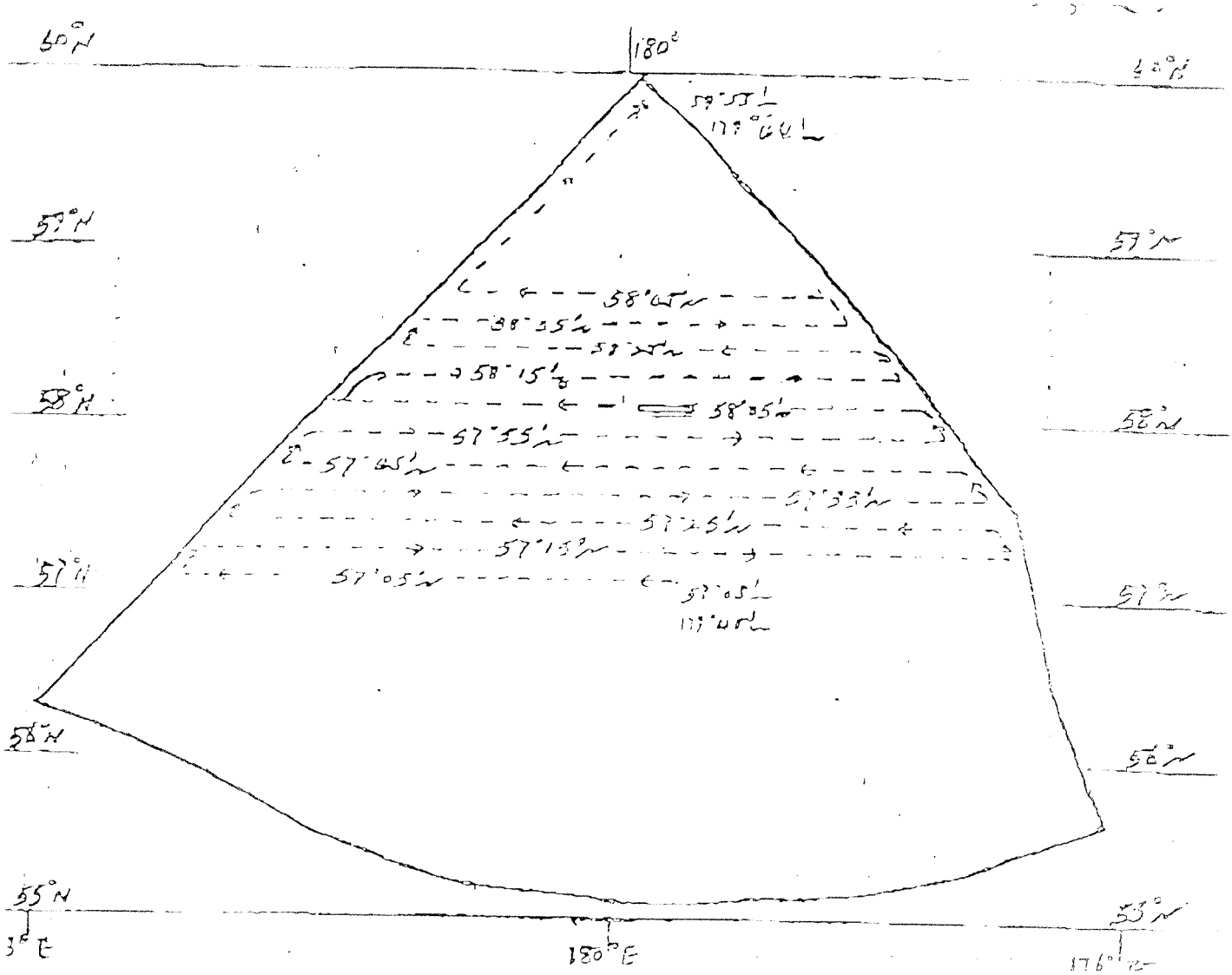
5月30日－6月3日

航测草图 1



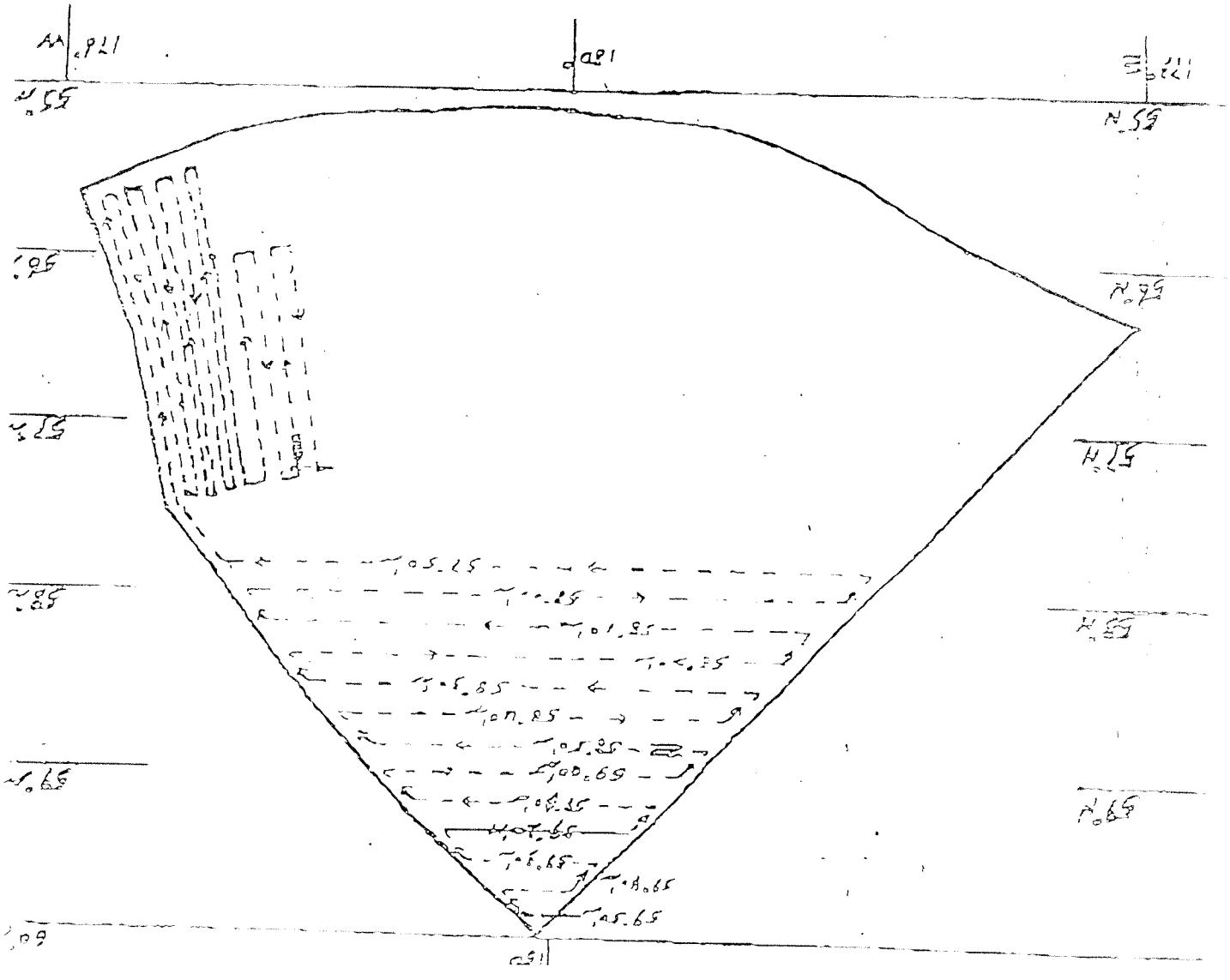
6月3日 — 6月9日

禁漁区



6月12日 — 6月28日

草圖 3



APPENDIX 1

Walleye Pollock (*Theragra chalcogramma*) abundance on the southeastern Bering Sea shelf and in the Aleutian Basin near Bogoslof Island in February and March, 2000

by Taina Honkalehto and Steve de Blois

INTRODUCTION

Scientists from the RACE division of the Alaska Fisheries Science Center conduct annual research surveys of Bering Sea walleye pollock (*Theragra chalcogramma*) to estimate distribution and abundance. In summer, pollock abundance information is derived from annual bottom trawl surveys and biennial echo integration-trawl (EIT) surveys on the eastern Bering Sea shelf. In winter, EIT surveys are used to survey pre-spawning pollock in selected years in ice-free shelf areas, and each year in the southeast Aleutian Basin near Bogoslof Island (Honkalehto and Williamson 1995, 1996). Results presented here are from EIT surveys carried out from February 27-March 2, 2000 on the southeastern Bering Sea shelf, and between March 2 and 12, 2000, between Akutan Island and the Islands of Four Mountains, Alaska. The primary cruise objectives were to determine the distribution and abundance of pollock. Originally scheduled to last for two weeks and cover an area between Cape Rozhnof on the Alaska Peninsula and St. George Island, the Bering Sea shelf survey was scaled down to four days because of heavy January sea ice cover and forecasts of continued severe ice conditions. Data collected during the shelf survey were used to estimate the abundance of pollock inhabiting the eastern portion of the Steller sea lion conservation area (SCA). The U.S. has conducted spawning surveys of Bogoslof area pollock annually (except 1990) since 1988. In 1999 Japan Fisheries Agency conducted the survey while the U.S. research vessel was in dry dock for repairs. The biomass estimate for pollock inside U.S. management area 518 obtained during these surveys provides an index of Aleutian Basin pollock abundance which is discussed at each year's Central Bering Sea Convention meeting.

METHODS

Acoustic data were collected with a Simrad EK 500[1] quantitative echo-sounding system (Bodholt et al. 1989, Bodholt and Solli 1992) on the NOAA ship *Miller Freeman*, a 66-m stern trawler equipped for fisheries and oceanographic research. Two split-beam transducers (38 kHz and 120 kHz) were mounted on the bottom of the vessel's centerboard extending 9 m below the water surface. System electronics were housed inside the vessel in a permanent laboratory space dedicated to acoustics. Data from the echo sounder were processed using Simrad BI500 echo integration and target strength analysis software (Foote et al. 1991, Simrad 1993) on a SUN workstation. Results presented here are based on the 38 kHz data. Midwater echo sign was sampled using an Aleutian Wing 30/26 trawl (AWT), a polyethylene nor'eastern high-opening

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[1] Reference to trade names or commercial firms does not constitute U.S. Government endorsement.

bottom trawl (PNE), and 5 m^2 "Fishbuster" doors (1,250 kg). Near-bottom echosign was sampled with the PNE. Vertical and horizontal net opening and depth were monitored with a WesMar third wire netsounder system attached to the headrope on most hauls. On some occasions a Furuno netsounder system was used.

Physical oceanographic data were collected throughout the cruise. Temperature/depth profile data were obtained with a micro bathythermograph (MBT) attached to the headrope during each trawl. Conductivity-temperature-depth (CTD) data were collected with a Seabird CTD system at calibration sites and other selected locations. Sea surface temperature, salinity, and other environmental data were collected using the *R/V Miller Freeman's* Scientific Collection System (SCS). Ocean current profile data were obtained using the vessel's centerboard-mounted acoustic Doppler current profiler system operating continuously in water-profiling mode.

The southeast Bering Sea shelf survey was limited to four days, and because it was not part of an annual time series, no recent winter survey information was available to provide a basis for the transect pattern. Pollock fishery observer data for January through March of the last several years were examined to estimate past and present locations of major pollock catches. Based on patterns observed from these data, eight east-west parallel transects totaling about 400 nautical miles (nmi) were positioned to cover the eastern shelf area where fishing occurred inside the SCA (Fig. 1). Western transect endpoints were bounded by approximately 166° W (a southward continuation of the SCA boundary north of 55° 30' N). Eastern transect endpoints were at bottom depths of approximately 85-95 m or were limited by Unimak Island; if possible they were extended eastward until fish sign disappeared. Transect spacing was 12.5 nmi.

The Bogoslof EIT survey covered about 1300 nautical miles (nmi) with 33 north-south transects beginning at about 166° W and ending near 170° 15' W (Fig. 1). Transect spacing at the eastern end and offshore in deeper basin waters was 10 nmi. Spacing near shore west of 167° W was 5 nmi, decreasing to 2.5 nmi northeast of Umnak Island and between Umnak Island and the Islands of Four Mountains. Southern transect endpoints were at bottom depths of approximately 100 m on the Aleutian shelf but varied depending on bottom depth and fish echo sign.

Echo integration and trawl data were collected 24 hours per day at an average vessel speed of 11.1 kts on the shelf, and 11.6 kts in the basin. Acoustic system settings used during the collection were based on results from standard sphere calibrations (Table 1) and on experience from prior surveys. Acoustic data collected between 14 m from the surface and 0.5 m off the bottom or to 1000 m, depending on bottom depth, were scrutinized for pollock and stored in an Ingres database. Estimates of pollock backscattering strength in the area represented by each transect were generated. These values were then summed and scaled using a previously derived relationship between target strength and fish length (TS = 20 Log FL - 66; Traynor 1996), with size compositions and a length-weight relationship derived from trawl catch information, to estimate the numbers and weight of pollock for each length category. Bogoslof spawning pollock are highly aggregated and stratified by sex (Honkalehto and Williamson 1995; 1996)

therefore it is often difficult to obtain a representative sex ratio. Although we caught more females than males in Bogoslof, we assumed a 50:50 sex ratio for population size composition. Size compositions used to scale acoustic data in the Bogoslof area were obtained using a weighting procedure described in Honkalehto and Williamson (1996). For both the shelf and Bogoslof, a combined male and female length-weight relationship was obtained by pooling trawl data and minimizing the sum of squares using an iterative non-linear function in Microsoft Excel.

Numbers and biomass of pollock were estimated for the entire geographic area covered by each survey. On the Bering Sea shelf, pollock echosign and haul information were aggregated into a single stratum. Echosign data from eight transects (101-108, Fig. 1) were combined with averaged haul information from hauls 2-9 (Fig 2a) to estimate pollock abundance. In Bogoslof, differences in echo sign and pollock length characteristics led to classification into three strata and two echo sign types (Fig 2b-e). Stratum 1, the "east" Bogoslof area (transects 1.0-5.5, hauls 10-12) consisted of typical, deep-water, Bogoslof pollock echo sign, and on transect 1.0, tightly schooled, shallow, pollock echo sign. All remaining echo sign was classified as the typical, deep-water sign. Stratum 2, "Umnak" (transects 6.0-10.0, hauls 13 and 20), and stratum 3 "Samalga" area pollock (transects 10.5-16.0, hauls 14-19) differed in average size and were separated by about 40 miles of very low pollock density. Hauls 21-23 and 25 targeted atka mackerel and were not used in these analyses. Due to different domestic and international requirements for defining the Bogoslof area, acoustic and biomass data were analyzed in two ways. In addition to estimates for the whole area, estimates were made for pollock inside U.S. management area 518, which is equivalent to the "Specific Area" as it is defined in the Central Bering Sea Convention[2] and will be referred to as "area 518/CBS convention area". This includes transects between 167° W- 170° W (5-14.5 and half of transect 15), and excludes all of 1-4, 15.5, 16, and the northern 6.0 nmi of transect 5.0 (Fig. 1). EIT survey and biomass estimation methods are discussed in more detail in Honkalehto and Williamson (1996).

Error bounds on the acoustic data were derived using two different approaches, a one-dimensional (1D) geostatistical approach described in Petitgas (1993), Williamson and Traynor (1996), and Rivoirard et al. (2000), and a random sample variance approach. The 1D method requires equal spacing between transects, and no fewer than 10 transects (Petitgas, pers. comm.). Despite having a small sample size (8 transects), we chose the 1D approach to compute error (± 2 relative estimation error) for the Bering Sea shelf survey because we felt the approach accounted for the spatial structure observed and thus provided a more realistic estimate of error than the random sample variance approach. For the Bogoslof survey, we computed variances and estimation error on a subset of the total area, focusing on three transect groups of equal spacing that together accounted for 93% of the total acoustic return. We analyzed 2.5 nmi-spaced transects in the Samalga Pass (t 11.3-14.5) and Umnak (t 6.5-7.5) areas, and 10 nmi-spaced,

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[2] The "specific area" is defined in the Annex to the Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea as "the area south of a straight line between a point at 55° 46' N lat. and 170° W long. and a point at 54° 30' N lat., 167° W long. and between the meridian 167° W long. and the meridian 170° W long. and the north of the Aleutian Islands and straight lines between the islands connecting the following coordinates in the order listed: 52° 49.2 N 169° 40.4 W, 52° 49.8 N 169° 06.3 W, 53° 23.8 N 167° 50.1 W, 53° 18.7 N 167° 51.4 W.

eastern transects (t 1-4). We were able to calculate error using the 1D approach on the Samalga Pass area. Umnak and eastern transects 1-4 had too few samples (5 and 4, respectively) to apply the 1D method, so a conservative error bound ($\pm$ 2 sqrt (var/n)/mean) was computed using the random sample variance. Although computed using two different methods, variances from the three areas were added to compute an overall error bound for Bogoslof. Sampling error bounds on the acoustic data can be used to provide error bounds on the point estimate of biomass. These error bounds quantify only acoustic data sampling variability; other sources of error (e.g. target strength, trawl sampling, error associated with ageing error) are not included. The potential impact of these additional sources of error is discussed in an earlier report (Honkalehto and Williamson 1996). These sampling error estimates should be treated as preliminary. Methods employed will be reviewed and revised (if necessary) in future reports.

RESULTS

Oceanographic

Temperature profiles showed a well-mixed water column. Average temperature by 50-m depth bins ranged between 2.5-3.3° C on the Bering Sea shelf between the surface and 150 m (Fig. 3). In the Bogoslof area, average temperature ranged between 3.4-3.7° C between the surface and 550 m. Surface temperatures (Fig. 4) ranged from about 1.5 to 3.8° C. Coldest surface temperatures encountered during the survey were on the shelf north of Unimak Island. Near-shore areas west of 167° 30' W (where most Bogoslof pollock were observed, as will be shown) had warmer surface temperatures than regions farther offshore or east of 167° 30' W.

Southeastern Bering Sea shelf

Pollock were observed from near the start of transect 101 to near the end of transect 108 (Fig. 5). On the first several transects, they formed dense, near-bottom aggregations at depths between 95-100 m. These aggregations often extended for several miles. Dense pollock aggregations were found adjacent to Unimak Island beginning at a bottom depth of about 50 m; some continued westward to bottom depths >150 m. Highest densities were observed on transects 103, 104, and 106.

Walleye pollock caught in hauls 2-9 on the shelf had lengths ranging from 30 to 73 cm. The average fork length of females was 1 cm larger than the average length of males. Size-based population estimates for pollock indicated that their average length was 44 cm (Fig. 6a). Catch sex ratios ranged from 42-70% female, and averaged 51% female. Pollock maturities observed on the shelf showed similar proportions of developing and pre-spawning females (43% vs. 48%), but a much higher proportion of pre-spawning males (19% vs. 74%) (Fig. 7a). Among females, 50% maturity occurred at 43-44 cm fork length (Fig. 8). No spawning fish were observed. The mean gonadosomatic index (GSI) for pre-spawning females on the shelf was 0.08 (Fig. 9a).

Abundance estimates for pollock in the Bering Sea shelf survey area between 14 m below the surface and 0.5 m off-bottom were 1.363 billion fish and 0.816 million metric tons. The biomass error bound was 0.601-1.031 million tons. Age data are not yet available.

Bogoslof Island area

Pollock distribution (Fig. 4) was somewhat similar to that observed by the Japan Fisheries Agency during their 1999 pollock survey of this area aboard the *Kaiyo maru*. Echo sign appearance varied from small, dense schools in shallow water on transect 1, to diffuse near-bottom layers on north ends of eastern transects, to faint layers of single fish throughout most of the survey area, to dense spawning aggregations near the Islands of Four Mountains. On the south end of transect 7 northeast of Umnak Island, a large pollock aggregation was encountered in nearly the same location as in previous years. Farther west, very few pollock were observed until transect 11.5 (about 169° W). As in previous Bogoslof area surveys, most pollock (about 72% of total biomass) were concentrated in Samalga Pass between Umnak Island and the Islands of Four Mountains (about 169°-170° W). They were distributed in spawning aggregations that continued for about 3-14 nmi of transect, and extended 150-300 m vertically between 300-700 m in the water column.

Pollock sampled in hauls 10-20 and 24 in the Bogoslof area ranged between 39 and 68 cm in length (Fig. 6b). Results from population-at-length analyses show that mean length increased from east to west (Fig. 10). In the east area, aggregations categorized by haul 24 had an average length of 47 cm, and aggregations categorized by hauls 10-12 had an average length of 51 cm. Pollock lengths in the Umnak portion of the population averaged 54 cm. In the Samalga Pass area, population average length was 57 cm. Fork lengths of females averaged 3 cm larger than males overall. Sex ratios by haul ranged from 35-79% female and averaged 62% female, but as explained in the methods (above), this was most likely due to difficulty sampling in concentrated spawning aggregations; overall sex ratio was assumed to be 50:50. Ninety-five percent of males and 94% of females were pre-spawning (Fig. 7b). Only 4% of males and 1% of females were actively spawning. The mean gonadosomatic index (GSI) for pre-spawning females was 0.17 (Fig. 9b), more than twice that observed on the shelf, implying an earlier spawning date for Bogoslof pollock.

Pollock biomass estimated for the entire Bogoslof survey area was 301 thousand tons (Table 2). The biomass error bound was 215-387 thousand tons. Numbers of pollock were estimated to be 229 million. Inside the area 518/CBS convention area, pollock biomass was 270 thousand tons, representing 195 million fish. Pollock otoliths collected during this cruise have not yet been aged and thus estimates of age composition are not available.

Since 1988, Bogoslof pollock have gradually declined in abundance (Fig. 11), although no directed domestic fishery has existed on this spawning population since 1991. From 1988 through 1993, increasing average fish length indicated an aging population with little recruitment (Table 3, Figs. 12 and 13). Examination of recruitment patterns from strong pollock year classes suggests that recruitment to the Bogoslof spawning population peaks at about ages 6-8 (Fig. 14).

The 1978 year class was the strongest year class present in Bogoslof since we began tracking the population in 1988. In 1994, a relatively strong 1989 year class began to recruit to the population as five-year olds; their recruitment peaked at age 6 in 1995 (Table 4, Fig. 14). Recruitment of the 1992 year class still appeared to be increasing at age 7 in 1999, the last survey-year for which ages are available. During the last 12 years, geographic distribution of the main spawning aggregations has shifted westward, from deeper basin waters near Bogoslof Island to slope waters in Samalga Pass near the Islands of Four Mountains. This shift appeared to coincide with recruitment of the 1989 year class in 1994. In 2000, as in 1998 and 1999, pollock were highly concentrated in Samalga Pass (73% of biomass in 1998 and 72% in 2000), but they were sparsely distributed elsewhere.

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Table 1. Summary of results of sphere calibrations conducted before, during, and after the winter 2000 pollock echo integration-trawl survey of the southeast Bering Sea shelf and Bogoslof Island areas.

Date (2000)	Location	Freq (kHz)	Water Temp (deg. C) at Transducer*	Water Temp (deg. C) at Sphere	Sphere Range from Transducer (m)	TS Gain (dB)	SV Gain (dB)	Along 3 dB Beam Width (deg.)	Angle Offset Along	Angle Offset Athwart
27 Jan	Port Susan, WA	38	9.4	9.8	31.3	25.8	25.5	6.91	-0.09	0.03
		120	9.4	9.9	25.9	26.0	26.1	--	--	--
27 Feb	Captains Bay, AK	38	2.8	3.0	29.1	25.8	25.6	6.92	-0.08	0.03
		120	2.8	3.0	23.5	25.3	25.4	7.11	-0.12	-0.21
13 Mar	Captains Bay, AK	38	2.9	3.1	30.3	25.9	25.5	--	--	--
		120	2.9	3.1	28.7	25.0	25.3	--	--	--
27 Mar	Uyak Bay, AK	38	4.0	4.0	29.4	25.8	25.5	6.92	-0.08	-0.01
		120	4.0	4.0	23.9	24.9	24.9	7.32	0.04	0.47
Feb-Mar	System settings during surveys	38	--	--	--	25.7	25.5	6.9	-0.08	-0.01#
		120	--	--	--	25.3	25.4	7.1	-0.12	-0.21

* The transducer was located approximately 9 m below the water surface.

Angle offset athwart was 0.03 during MF2000-04 (Mar 15-28).

Note: Gain and beam pattern terms are defined in the "Operator Manual for Simrad EK500 Scientific Echo Sounder (1993)" available from Simrad Subsea A/S , Strandpromenaden 50, P.O. Box 111 N-3191 Horten, Norway Acoustic data were stored at an Sv threshold of -69 dB.

Table 2 Estimates of pollock biomass in the entire Bogoslof Island region and inside the Central Bering Sea Convention area (U.S. fisheries management area 518) from echo integration-trawl surveys between 1988-2000. No survey was conducted in 1990.

	Entire Bogoslof Survey Area					CBS Convention area/ U.S. area 518			
Year	Biomass* (million t)	Acoustic Return (Sm)	95% CI's (+-%)	Biomass estimate bounds (million t) lower	upper	Biomass inside	Biomass outside	Proportion inside	Proportion outside
1988	2.396	--	--	--	--	2.396	0.000	1.00	0.00
1989	2.126	--	--	--	--	2.084	0.042	0.98	0.02
1990	--	--	--	--	--	--	--	--	--
1991	1.289	11063	23.3	0.989	1.589	1.283	0.006	1.00	0.00
1992	0.940	7914	40.8	0.557	1.324	0.888	0.052	0.94	0.06
1993	0.635	5134	18.4	0.518	0.752	0.631	0.005	0.99	0.01
1994	0.490	3020	23.2	0.376	0.604	0.490	0.000	1.00	0.00
1995	1.104	8236	21.4	0.868	1.340	1.020	0.084	0.92	0.08
1996	0.682	5604	39.2	0.415	0.950	0.582	0.100	0.85	0.15
1997	0.392	2985	28.0	0.283	0.502	0.342	0.051	0.87	0.13
1998	0.492	3829	38.0	0.305	0.680	0.432	0.060	0.88	0.12
1999	0.475	--	--			0.393	0.083	0.83	0.17
2000	0.301	2200	28.5	0.215	0.387	0.270	0.032	0.90	0.10

* The 1999 survey was conducted by Japan Fisheries Agency

$Sm = \sum_{1}^{n} Sa * A_n / 1000$, where n is the number of 0.5 nmi intervals along the transect, Sa is meters^2 of pollock backscattering per nmi^2 and $A_n = 0.5 * w$, where w is the width assigned to the interval and varies depending on transect spacing

Table 3. Estimates of population at length (millions of fish) from February-March echo integration-trawl surveys* of spawning pollock in the Bogoslof Island area. No survey was conducted in 1990.

Length	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
10	0	0	--	0	0	0	0	<1	0	0	0	0	0
11	0	0	--	0	0	0	0	<1	0	0	0	0	0
12	0	0	--	0	0	0	0	1	0	0	0	0	0
13	0	0	--	0	0	0	0	<1	0	0	0	0	0
14	0	0	--	0	0	0	0	<1	0	0	0	0	0
15	0	0	--	0	0	0	0	0	0	0	0	0	0
16	0	0	--	0	0	0	0	0	0	0	0	0	0
17	0	0	--	0	0	0	0	0	0	0	0	0	0
18	0	0	--	0	0	0	0	0	0	0	0	0	0
19	0	0	--	0	0	0	0	0	0	0	0	0	0
20	0	0	--	0	0	0	0	0	0	0	0	0	0
21	0	0	--	0	0	0	0	0	0	0	0	0	0
22	0	0	--	<1	0	0	0	0	0	0	0	0	0
23	0	0	--	2	0	0	0	0	0	0	0	0	0
24	0	0	--	1	0	0	0	0	0	0	0	0	0
25	0	0	--	0	0	0	0	0	0	0	0	0	0
26	0	0	--	<1	0	0	0	0	0	0	0	0	0
27	0	0	--	0	0	0	0	0	0	0	0	0	0
28	0	0	--	0	0	0	0	0	0	0	0	0	0
29	0	0	--	0	0	0	0	0	0	0	0	0	0
30	0	0	--	0	0	0	0	0	0	0	0	0	0
31	0	0	--	0	<1	0	0	0	0	0	0	0	0
32	0	0	--	0	<1	0	0	0	0	0	0	0	0
33	0	0	--	0	<1	0	0	0	0	0	0	0	0
34	0	0	--	0	0	0	0	<1	<1	0	<1	0	0
35	0	0	--	0	0	0	0	<1	0	<1	0	0	0
36	0	0	--	0	<1	0	0	<1	<1	<1	<1	0	0
37	9	3	--	<1	0	0	0	<1	<1	<1	<1	0	0
38	6	0	--	2	<1	1	0	1	1	<1	1	0	0
39	16	4	--	5	0	2	<1	4	1	1	3	<1	<1
40	24	3	--	7	1	4	3	12	4	1	7	1	<1
41	27	4	--	19	3	5	6	20	8	2	9	6	1
42	48	23	--	23	7	7	9	40	14	3	11	8	1
43	118	33	--	31	14	6	14	40	17	4	11	13	3
44	179	54	--	36	18	7	21	41	21	5	10	13	3
45	329	159	--	46	28	8	21	50	23	7	9	17	4
46	488	177	--	55	32	13	21	53	31	10	11	19	5
47	547	389	--	79	42	22	18	40	36	14	9	14	6
48	476	434	--	130	68	28	17	55	36	15	12	11	6
49	389	431	--	168	102	46	16	47	37	18	15	10	5
50	248	366	--	205	129	69	39	52	40	21	20	16	6
51	162	279	--	189	144	76	46	58	45	24	23	11	8
52	80	168	--	160	118	73	52	78	52	26	28	20	10

Table 3. continued.

Length	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
53	48	85	--	122	106	73	49	81	52	26	35	17	13
54	19	50	--	63	67	66	43	88	53	31	41	21	16
55	12	13	--	40	41	50	37	81	48	28	38	33	21
56	4	5	--	17	27	29	26	69	40	24	35	38	20
57	3	8	--	8	13	14	17	58	37	22	30	33	24
58	1	1	--	4	6	9	10	47	28	17	27	36	23
59	0	0	--	1	5	3	6	31	19	13	18	23	16
60	0	0	--	1	1	1	3	17	12	12	13	15	13
61	2	0	--	1	<1	1	2	7	6	6	8	18	10
62	0	0	--	<1	<1	<1	1	4	2	3	5	13	7
63	0	0	--	0	0	0	<1	2	1	1	3	4	4
64	0	0	--	0	1	<1	0	1	<1	1	1	3	2
65	0	0	--	<1	0	0	0	<1	<1	<1	1	1	1
66	0	0	--	0	0	0	0	<1	0	<1	1	<1	<1
67	0	0	--	0	0	0	0	0	0	0	0	1	<1
68	0	0	--	0	0	0	0	1	0	0	<1	0	<1
Totals	3236	2687	--	1419	975	613	478	1081	666	337	435	416	229

* Echo integration-trawl surveys were conducted in 1988-2000 by the Alaska Fisheries Science Center, Seattle, USA. The 1999 survey was conducted by Japan Fisheries Agency

Table 4 Estimates of population at age (millions of fish) from February-March echo integration-trawl surveys* of spawning pollock near Bogoslof Island. No survey was conducted in 1990.

Age	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
0	0	0	--	0	0	0	0	0	0	0	0	0
1	0	0	--	0	0	0	0	1	0	0	0	0
2	0	0	--	4	0	0	0	0	0	0	0	0
3	0	0	--	0	1	1	0	2	0	0	0	0
4	0	6	--	2	2	33	21	6	<1	<1	<1	2
5	28	15	--	12	27	17	56	75	6	4	11	5
6	327	58	--	46	54	44	26	278	96	16	61	29
7	247	363	--	213	97	46	38	105	187	55	34	77
8	164	147	--	93	74	48	36	68	85	88	70	34
9	350	194	--	160	71	42	36	80	40	38	77	50
10	1201	91	--	44	55	28	17	53	37	28	32	75
11	288	1105	--	92	57	51	27	54	24	16	25	29
12	287	222	--	60	33	25	23	19	24	16	21	27
13	202	223	--	373	34	27	13	59	12	13	19	25
14	89	82	--	119	142	42	9	32	36	7	18	16
15	27	90	--	41	164	92	45	12	18	13	9	12
16	17	30	--	38	59	47	36	31	4	5	15	10
17	7	60	--	29	8	25	28	103	16	4	5	8
18	3	0	--	32	15	11	16	60	35	12	8	6
19	0	0	--	56	22	11	4	18	26	12	10	3
20	0	0	--	4	42	11	4	5	12	7	15	4
21	0	0	--	2	13	10	8	5	3	2	4	3
22	0	0	--	0	3	1	2	6	2	1	1	2
23	0	0	--	0	1	1	2	6	1	<1	0	<1
24	0	0	--	0	0	0	1	2	0	1	0	0
25	0	0	--	0	0	0	0	0	0	0	0	0
Totals	3236	2687	--	1419	975	613	478	1081	666	336	435	416

* Echo integration-trawl surveys in 1988-1998 were conducted by the Alaska Fisheries Science Center, Seattle, USA. The 1999 survey was conducted by Japan Fisheries Agency

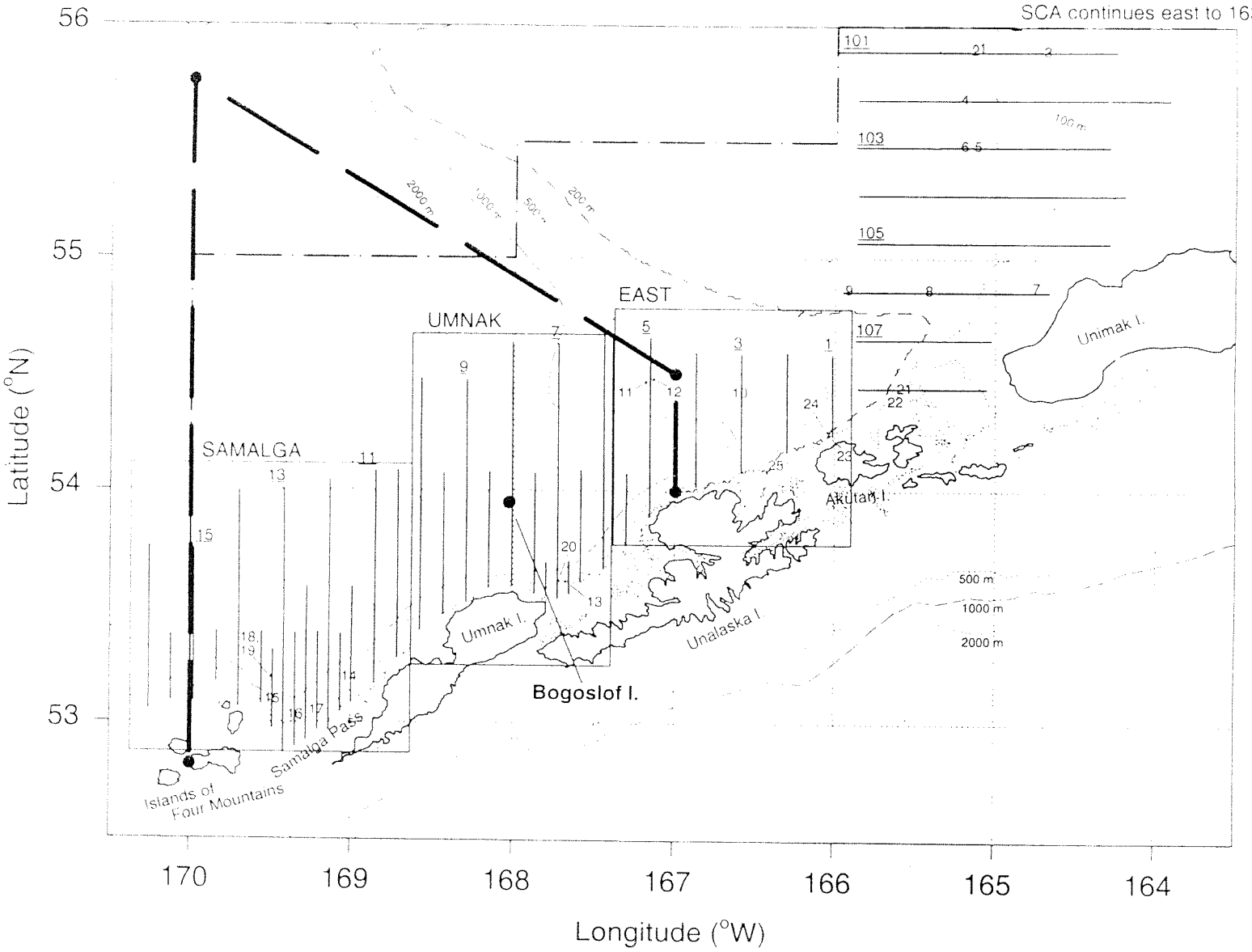
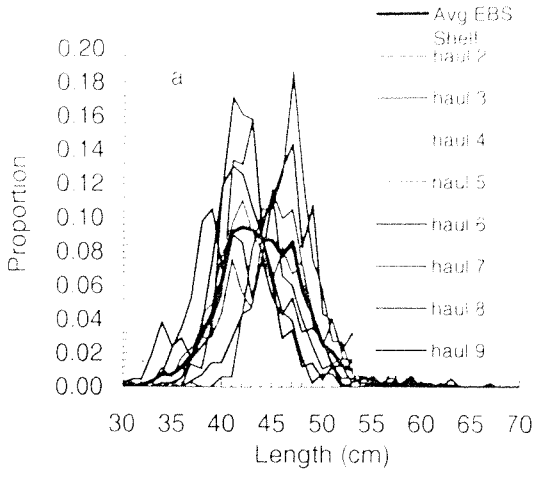
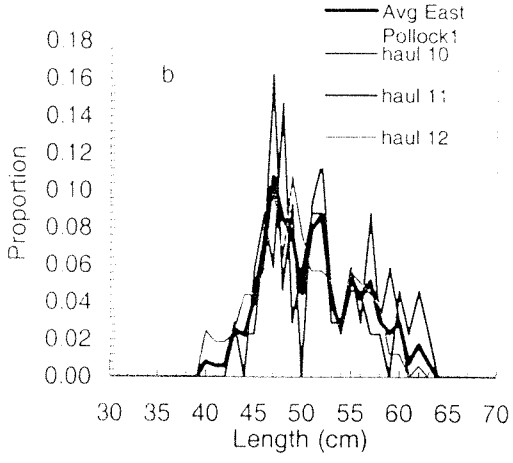
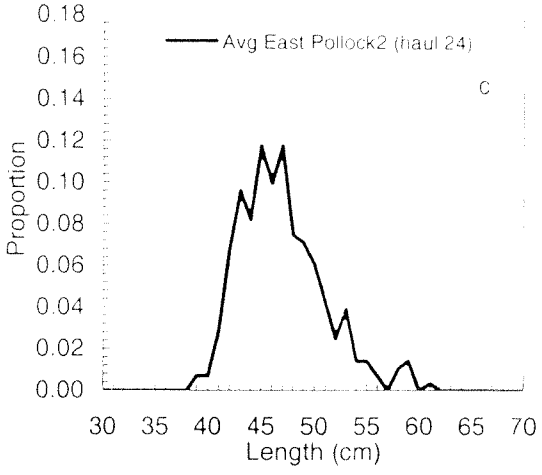


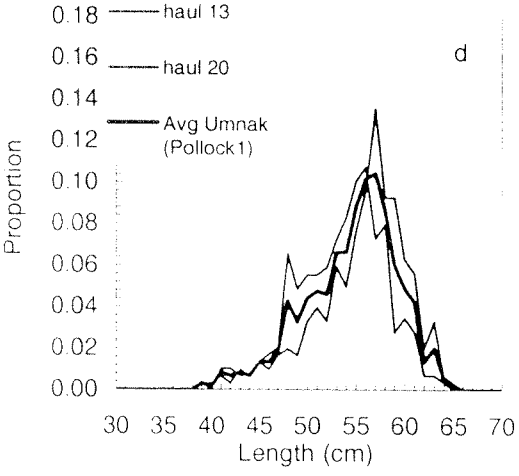
Figure 1. Trackline and haul locations from the winter 2000 echo integration-trawl survey of the southeast Bering Sea shelf and Bogoslof Island areas. Transect numbers are underlined. Dash-dotted line indicates boundary of the sea lion Conservation Area (SCA), and heavy dashed line outlines U.S. management

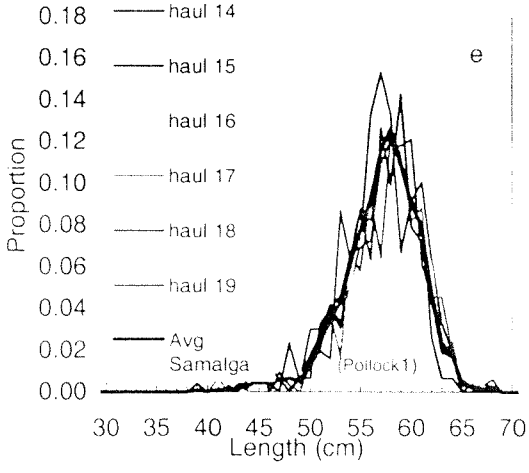
Figure 2 Pollock proportions by length from raw haul data, and haul data averaged by length stratum for the southeastern Bering Sea shelf (a), and Bogoslof Island area (b-e) surveys. In Bogoslof, length strata were weighted to equalize numbers of males and females and average length stratum curves were combined with acoustic data to produce population at length number and biomass estimates.











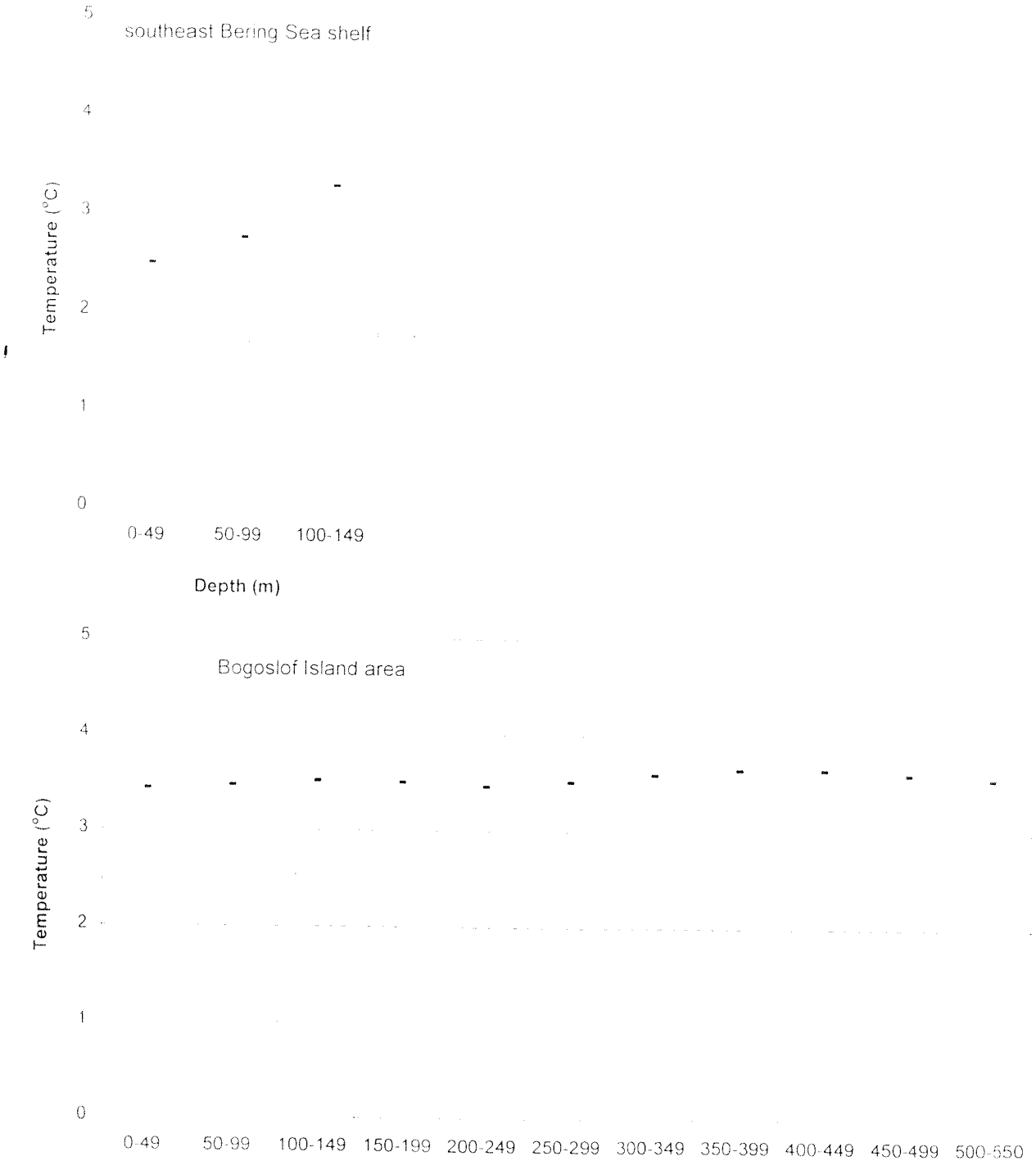


Figure 3. Average temperature (°C) (-) and range (vertical bars) by 50-m depth bins observed during the winter 2000 pollock echo integration-trawl s rvey of the southeast Bering Sea shelf and Bogoslof Island areas. Data compiled from MBT and CTD casts.

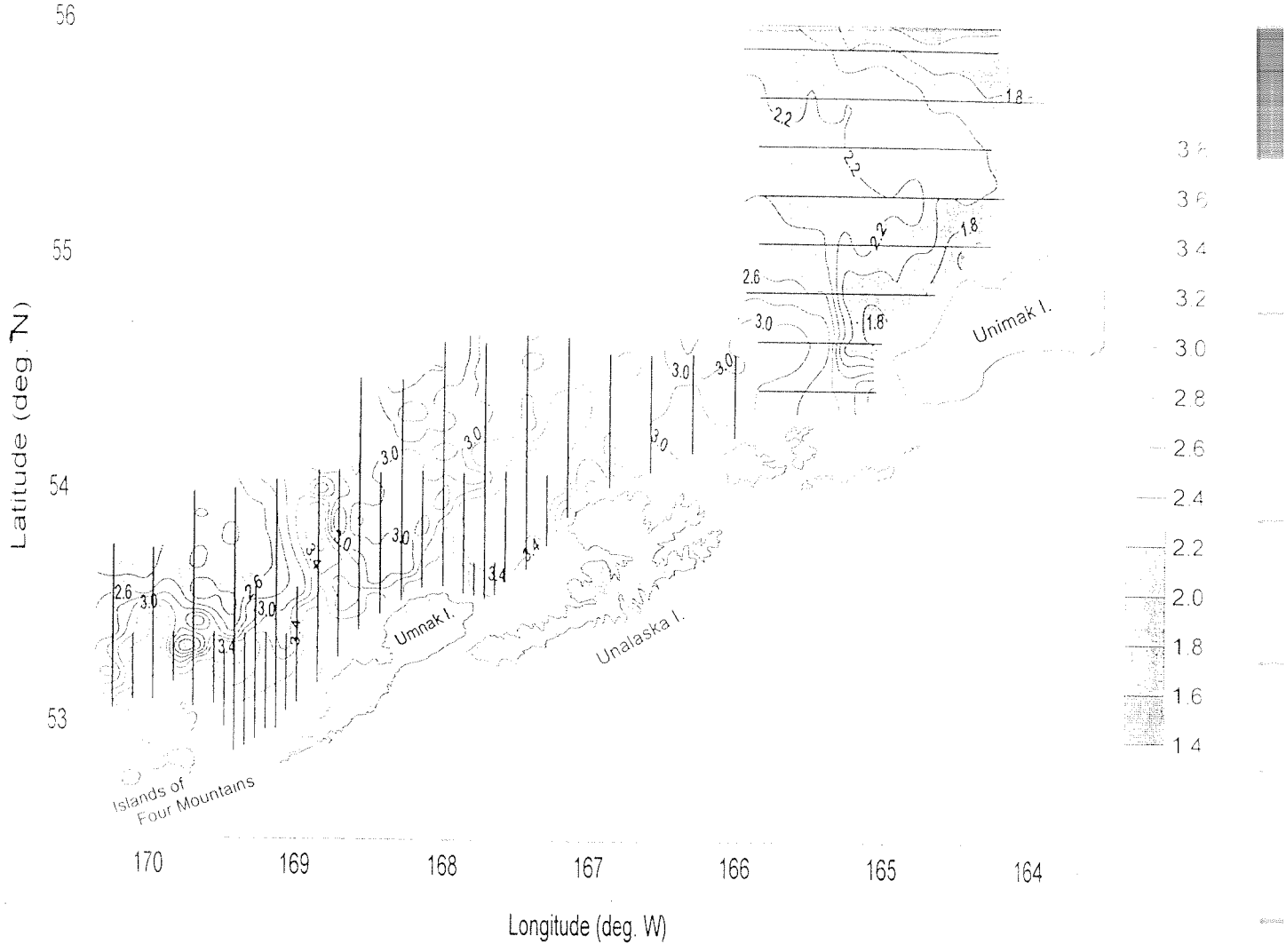


Figure 4. Transect lines with surface temperature contours (in degrees C) during the winter 2000 echo integration-trawl survey of the southeast Bering Sea shelf and Bogoslof Island areas.

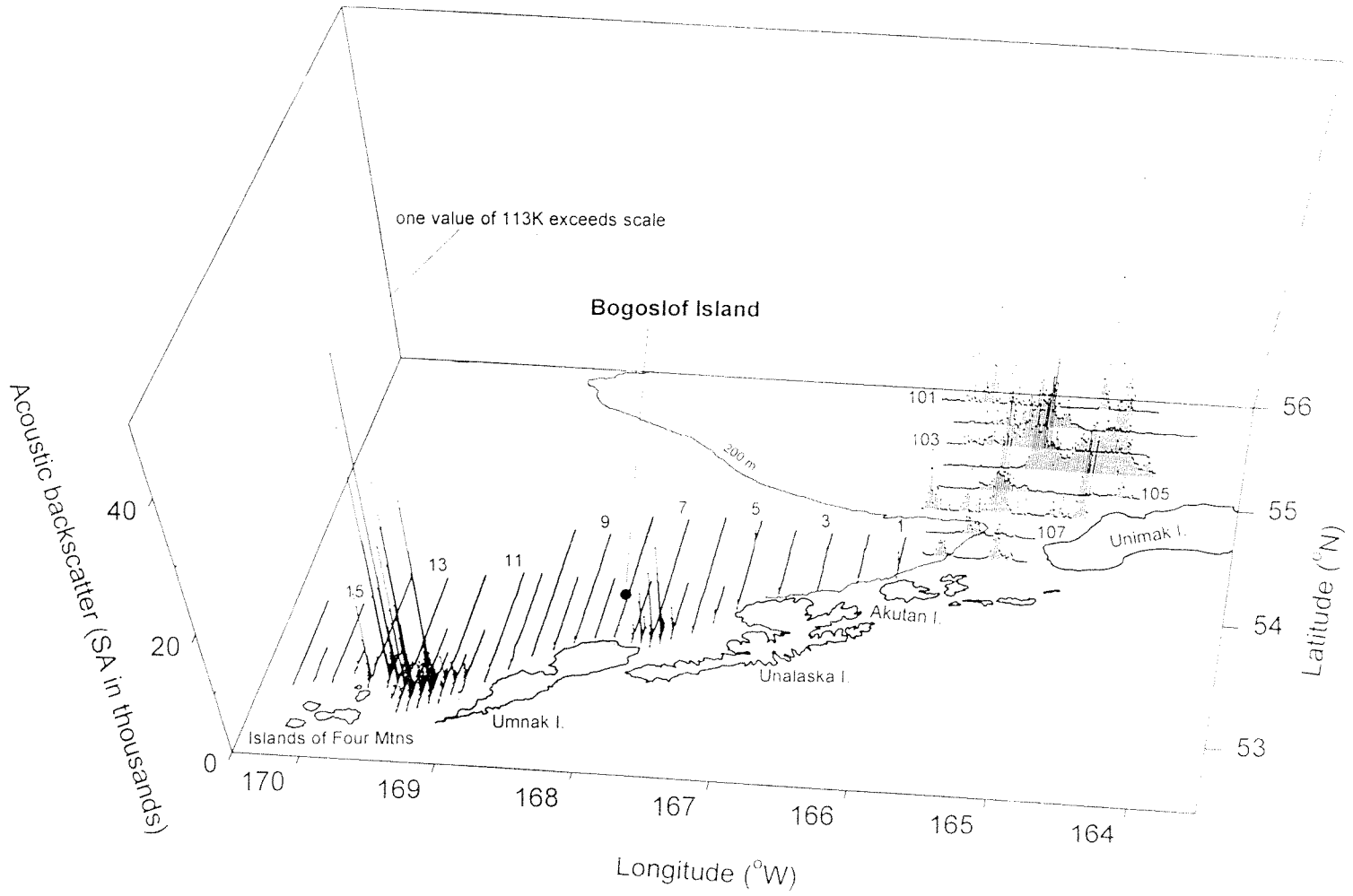


Figure 5. Pollock acoustic backscatter along trackline from the winter 2000 echo integration-trawl survey of the southeast Bering Sea shelf and Bogoslof Island areas. Transect numbers are indicated.

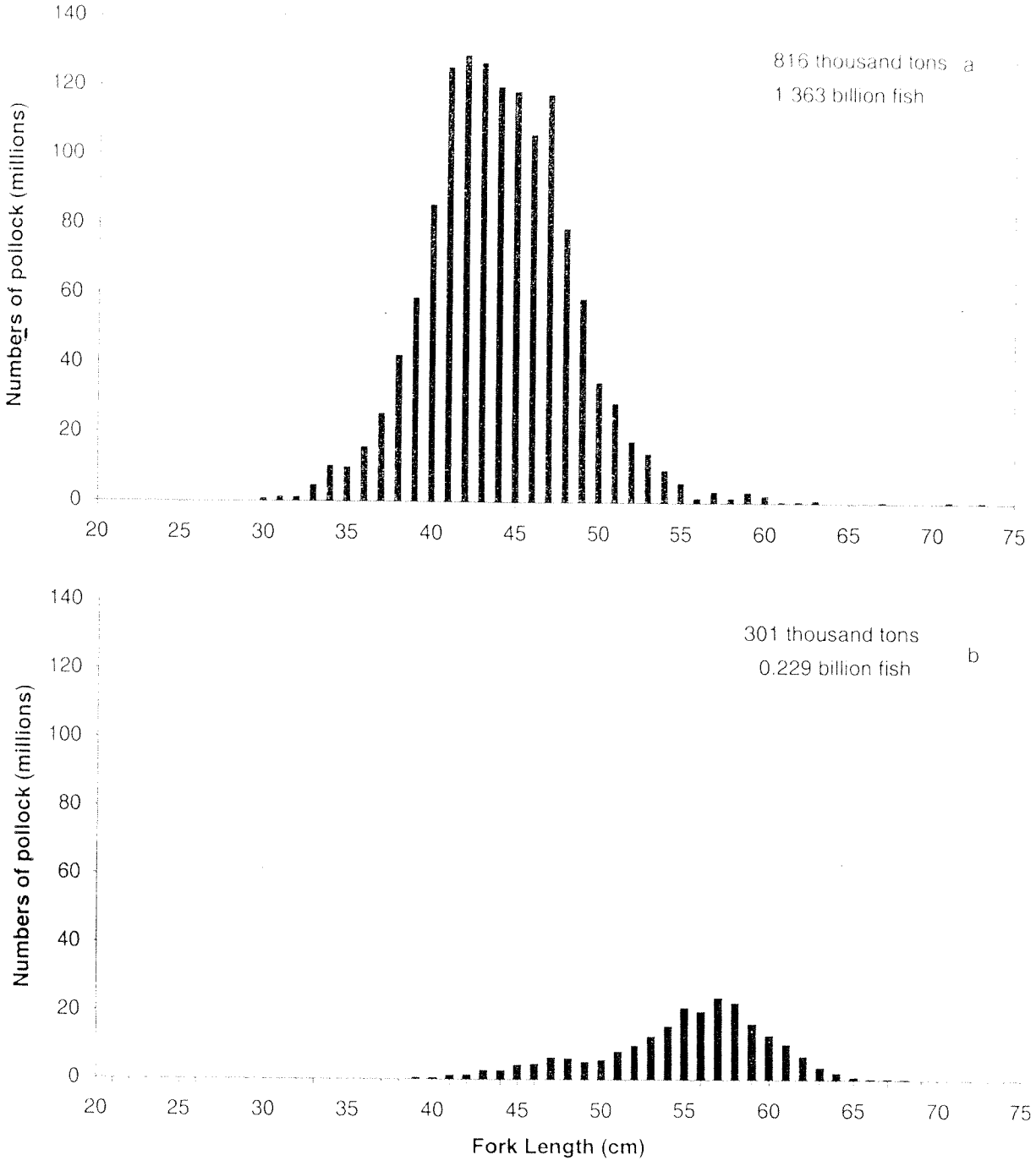


Figure 6. Estimated pollock numbers at length from the winter 2000 echo integration-trawl survey of the southeastern Bering Sea shelf (a) and Bogoslof Island area (b).

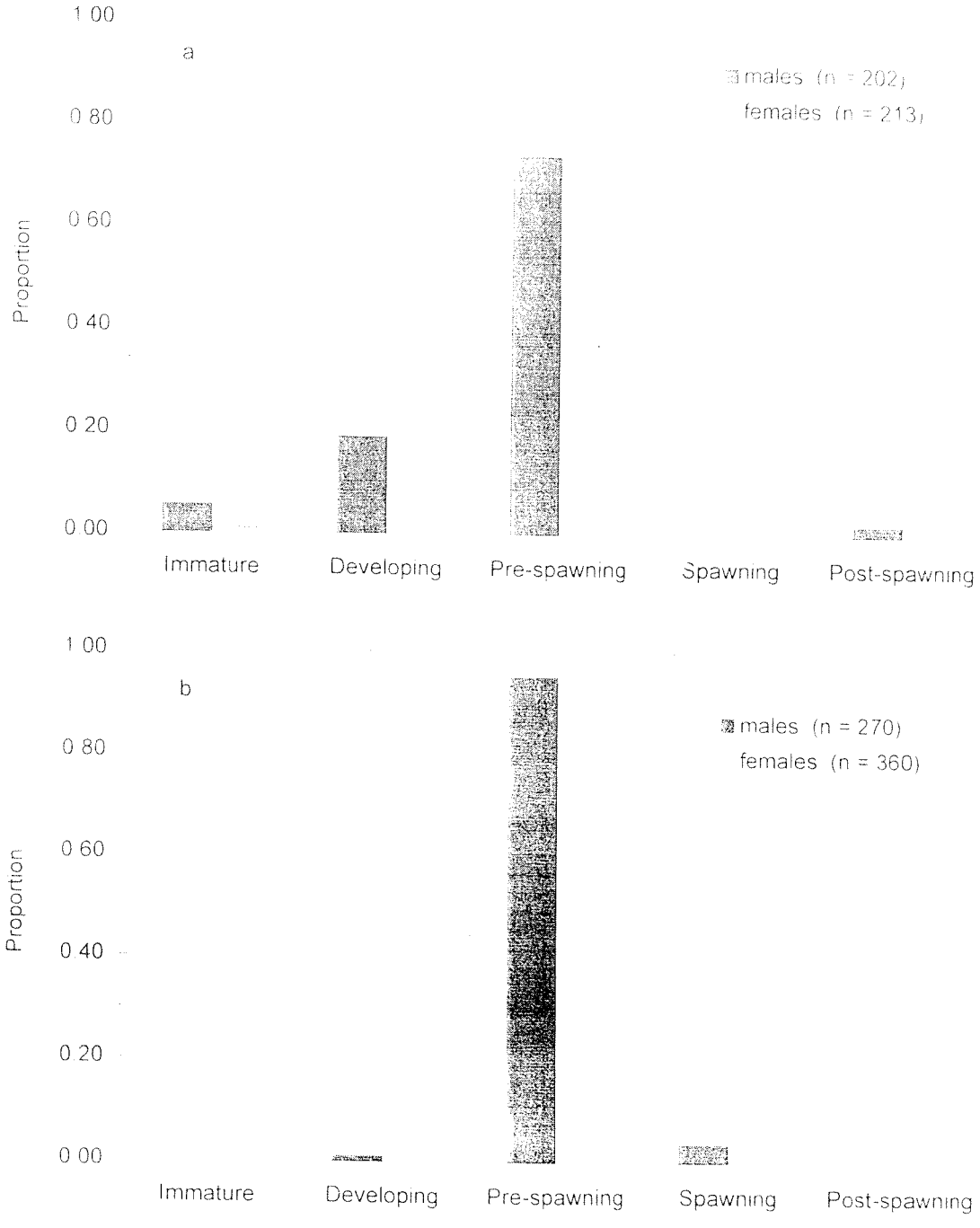


Figure 7. Maturity stages of pollock observed during the winter 2000 echo integration-trawl survey of the southeastern Bering Sea shelf (a) and Bogoslof Island area (b).

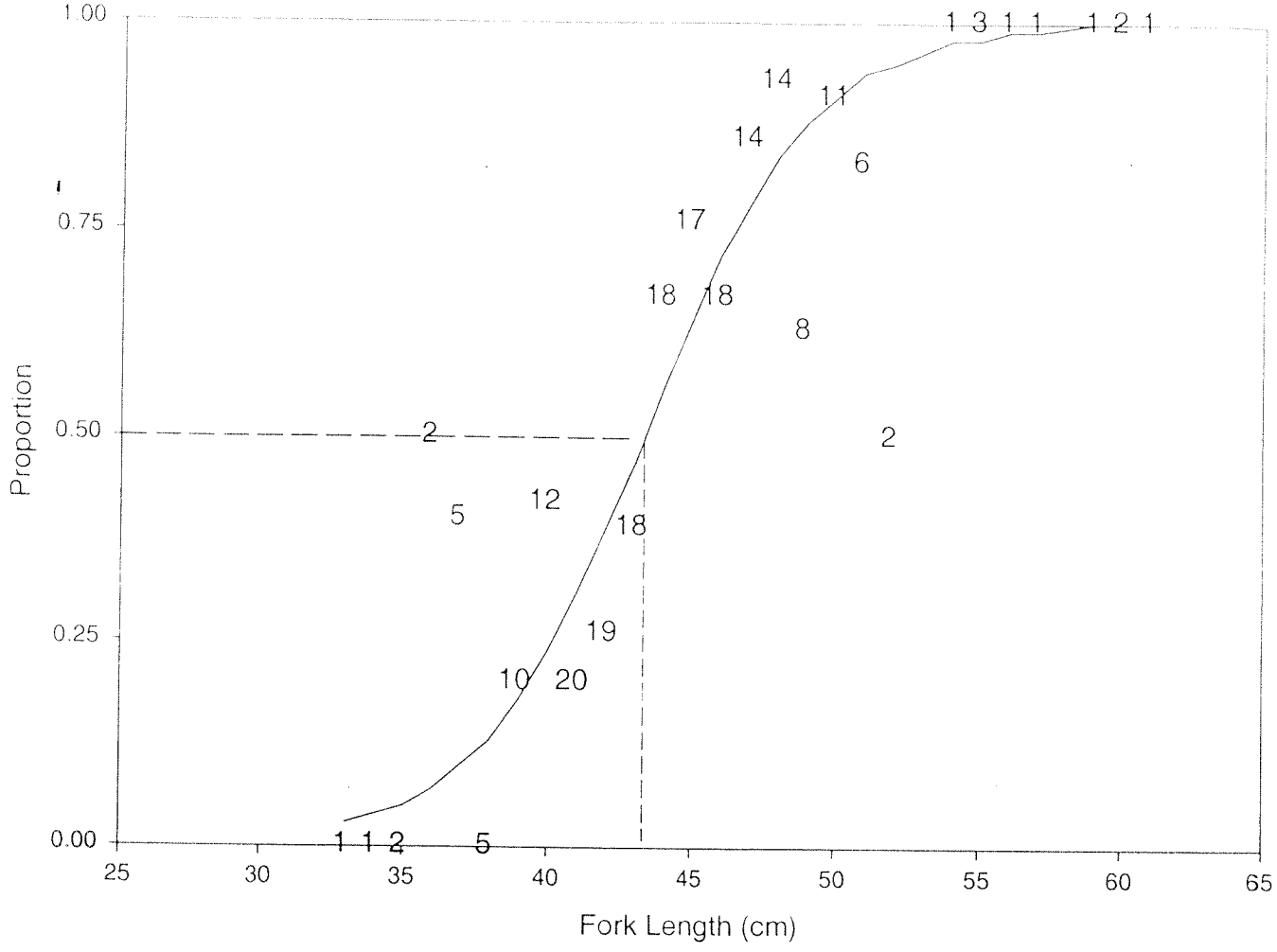


Figure 8. Maturity at length for female pollock from the winter 2000 echo integration-trawl survey of the southeastern Bering Sea shelf. Numbers indicate actual observations. Solid line indicates predicted values. Dashed line indicates length at 50% maturity.

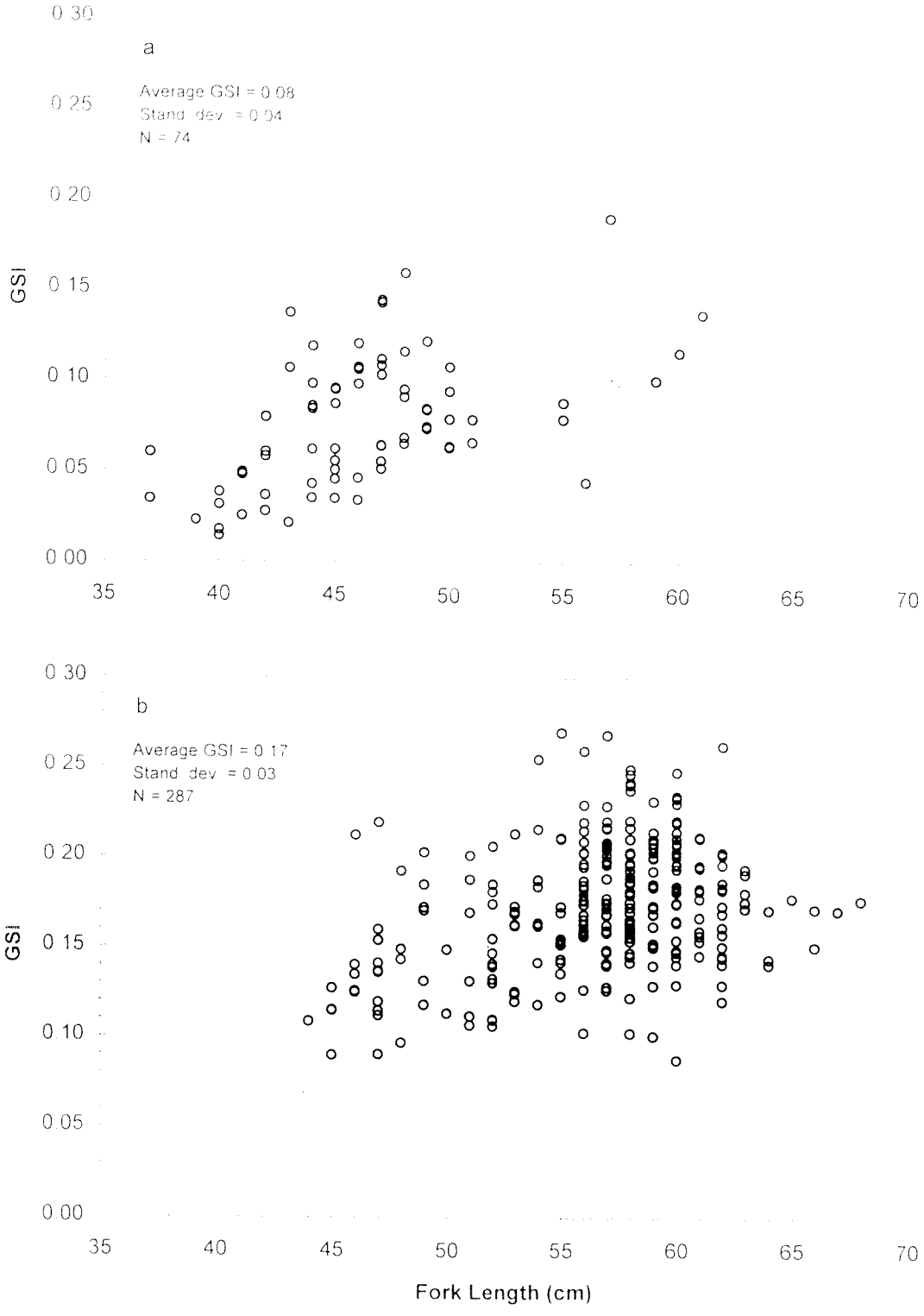


Figure 9. Pollock gonadosomatic indices for mature females as a function of length from the winter 2000 echo integration-trawl survey of the southeastern Bering Sea shelf (a) and Bogoslof Island area (b).

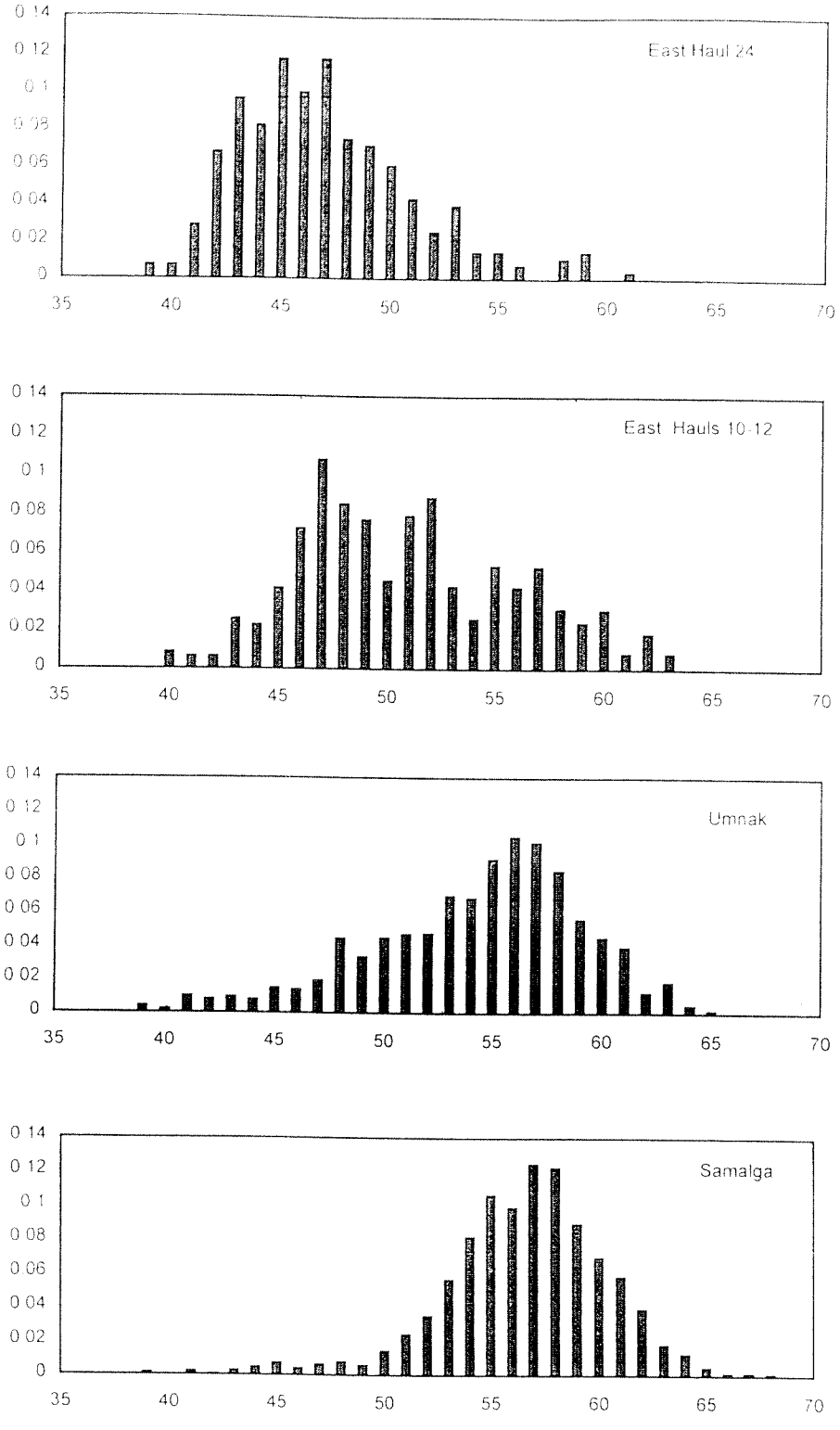


Figure 10. Pollock proportion at length for subregions of the 2000 winter Bogoslof echo integration-trawl survey. Average length increases from east to west (top to bottom panel).

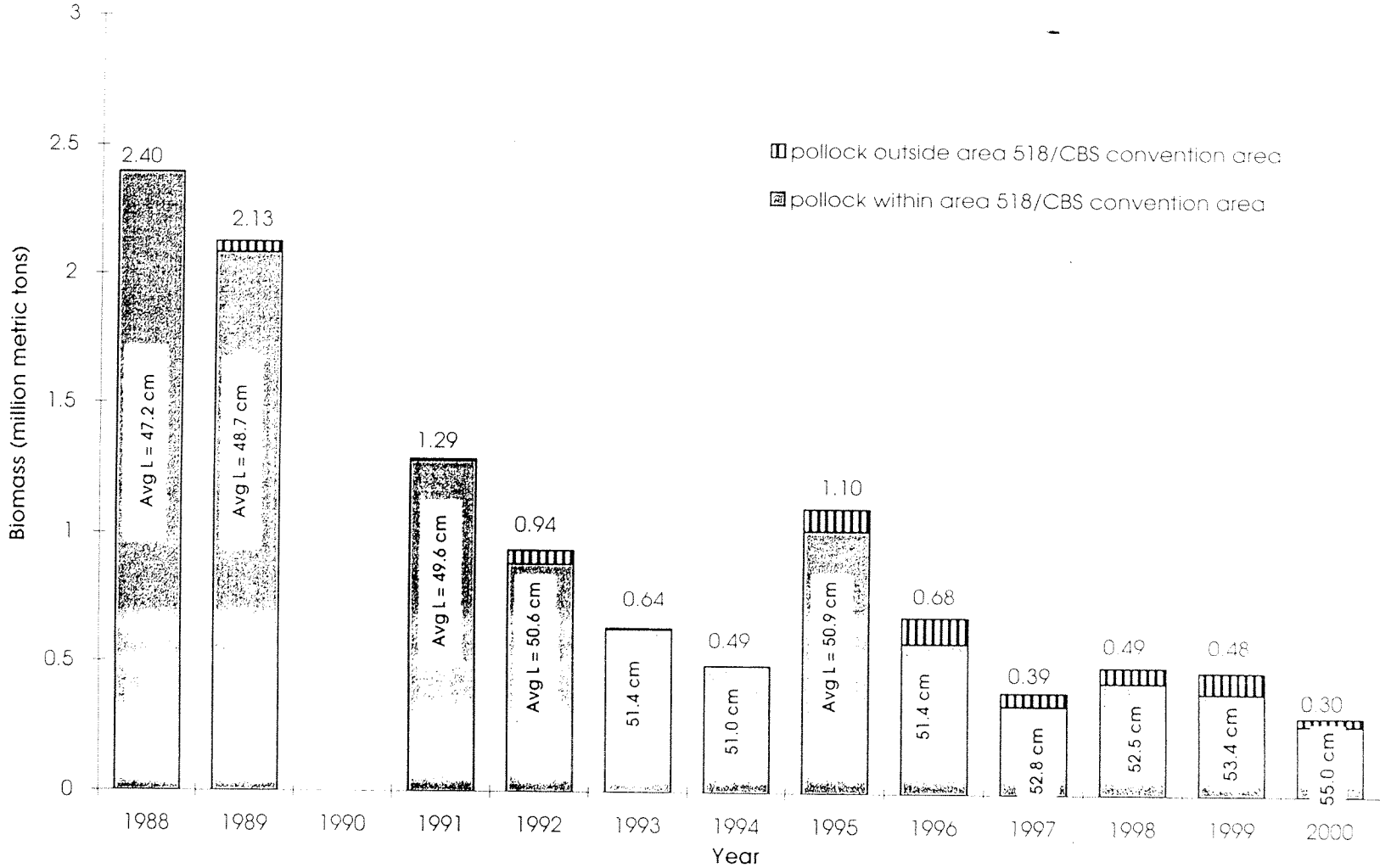


Figure 11. Biomass estimates and average fork lengths obtained during winter echo integration-trawl surveys for spawning walleye pollock near Bogoslof Island, 1988-2000. U.S. surveyed '88-'98, and '00. Japan surveyed in '99. There was no survey in 1990. Total pollock biomass for each survey year is indicated.

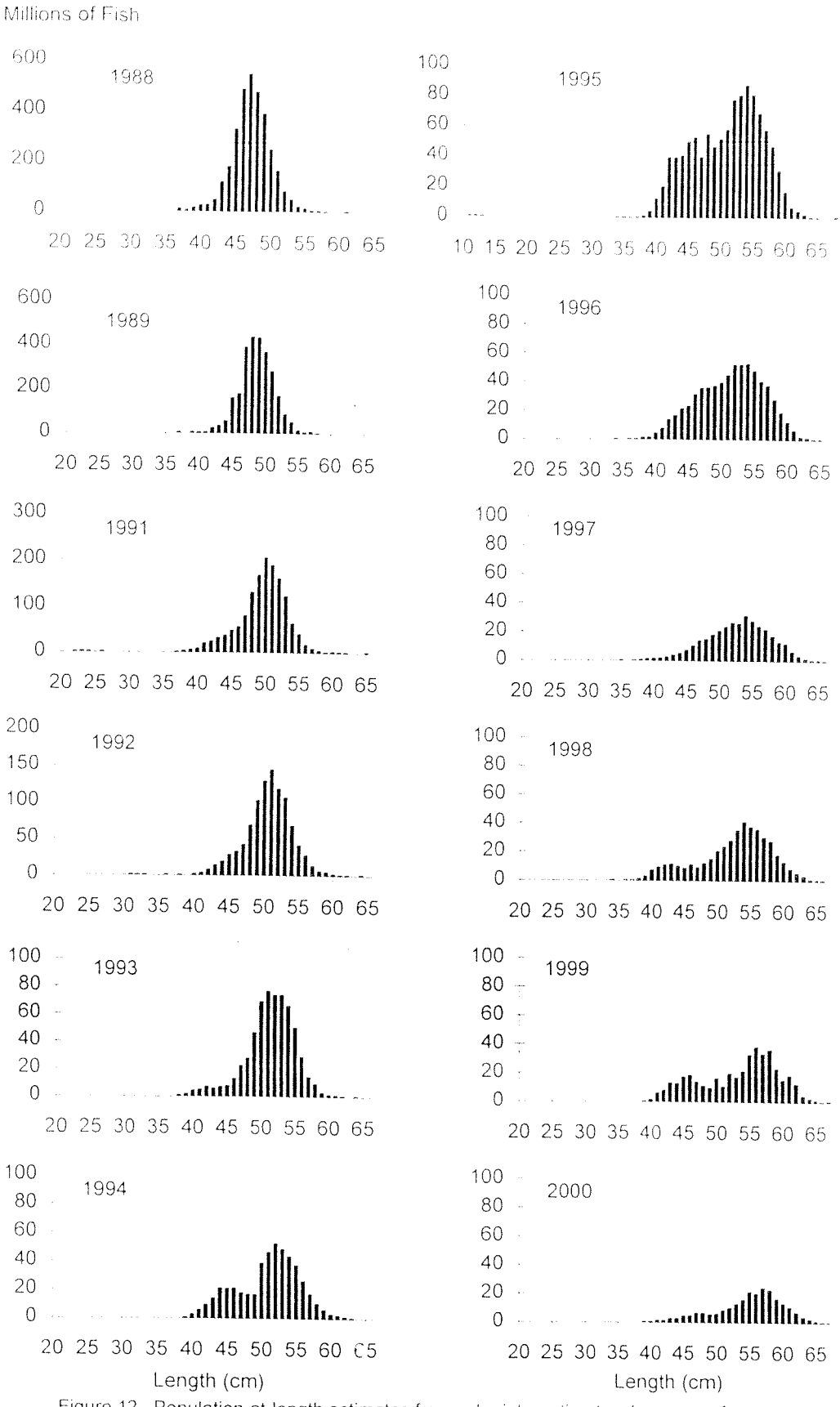


Figure 12. Population-at-length estimates from echo integration-trawl surveys of spawning pollock near Bogoslof Island in winter 1988-2000. US surveyed '88-'98 and 2000; Japan surveyed in 1999. There was no survey in 1990. Note y-axis scales differ.

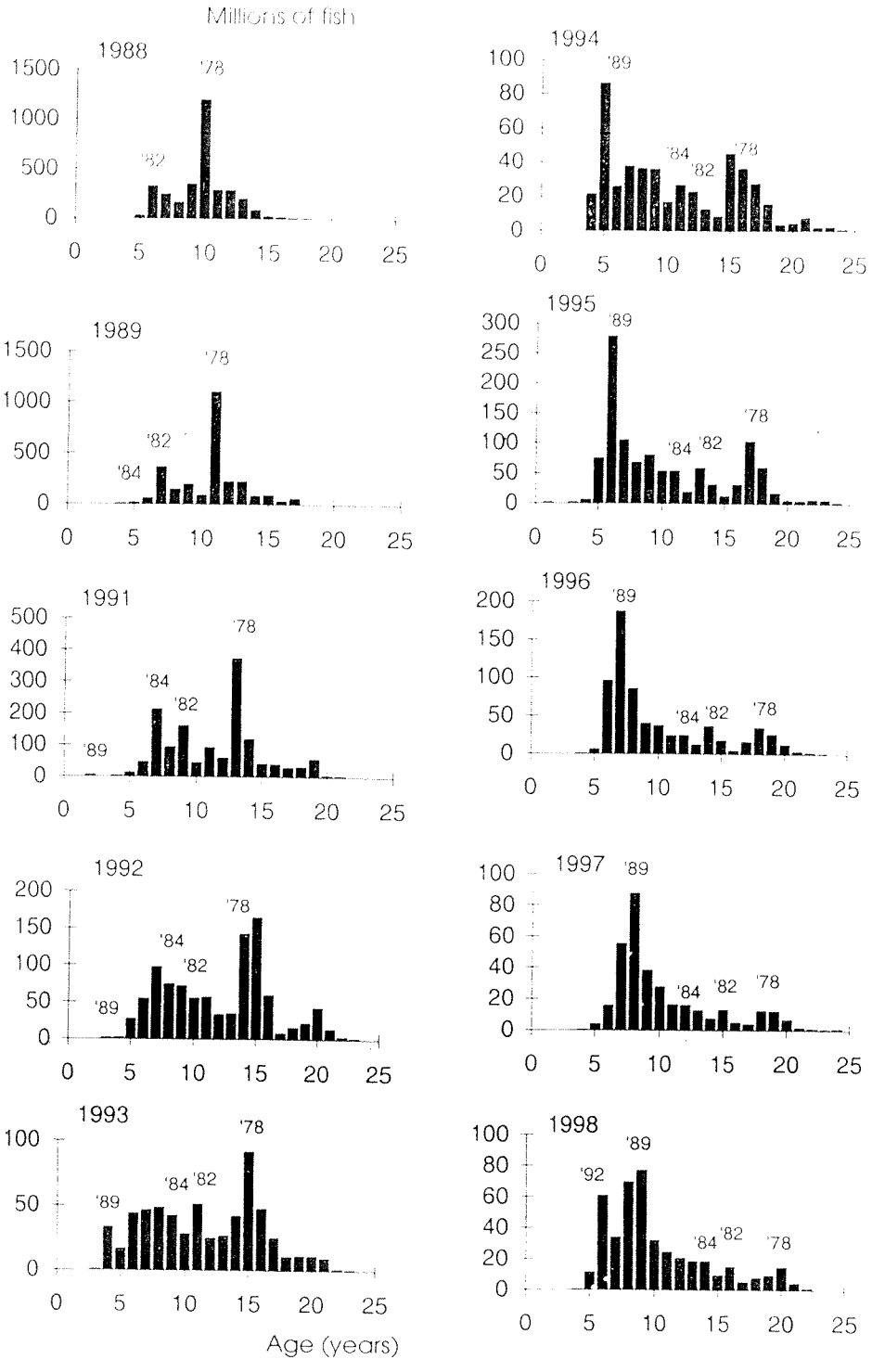


Figure 13. Population-at-age estimates obtained during echo integration-trawl surveys of spawning walleye pollock near Bogoslof Island in winter 1988-99. Major year classes are indicated. US surveyed in 88-98. Japan surveyed in 1999. No survey was conducted in 1990. Ages are not yet available for 2000.

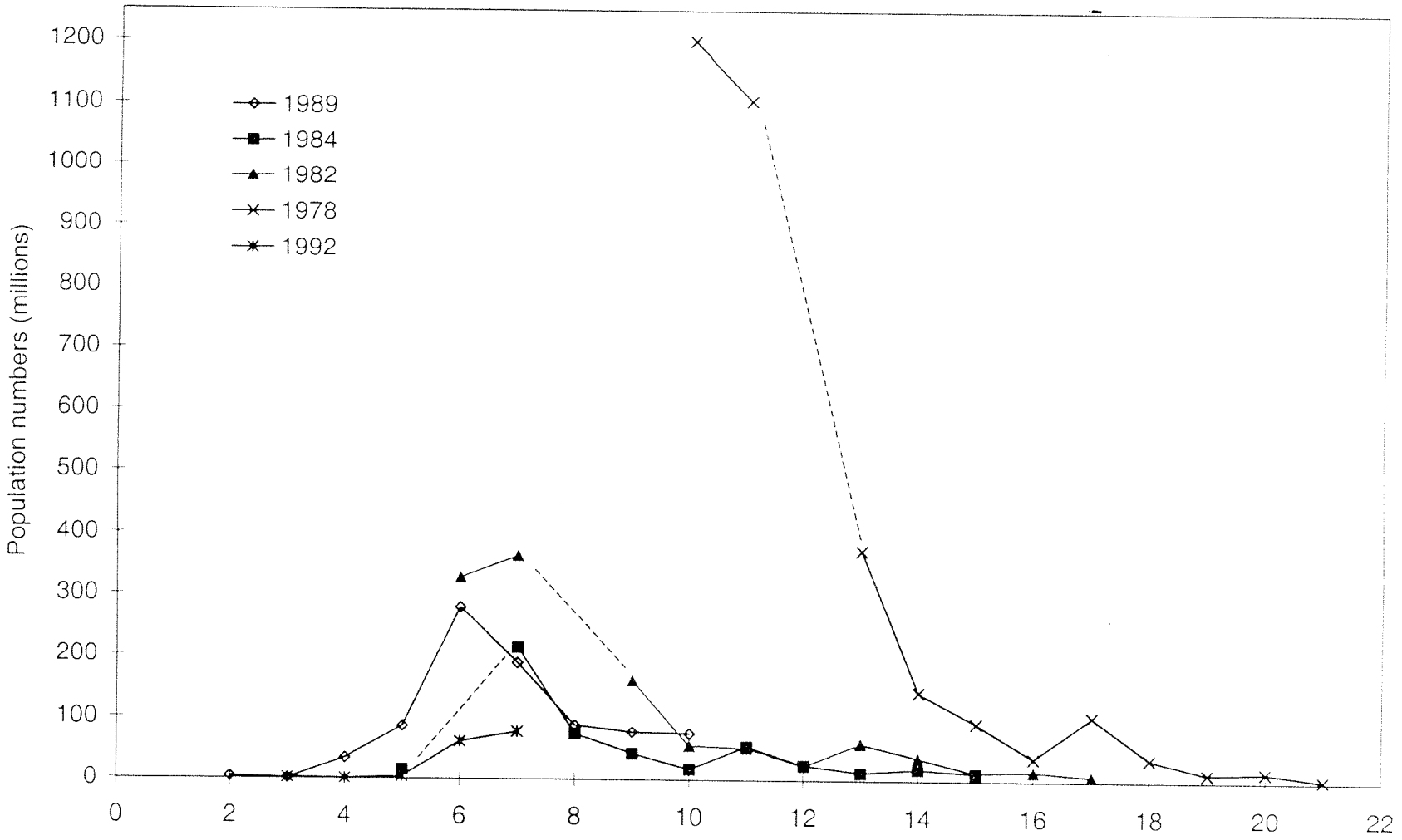


Figure 14. Population numbers at age for dominant year classes observed in winter echo integration-trawl surveys of Bogoslof area spawning pollock. Data are from surveys conducted in 1988-89 and 1991-1999. No survey was conducted in 1990 (dashed lines). U.S. surveyed '88-'98. Japan surveyed in '99.

Miller Freeman survey plans winter 2001

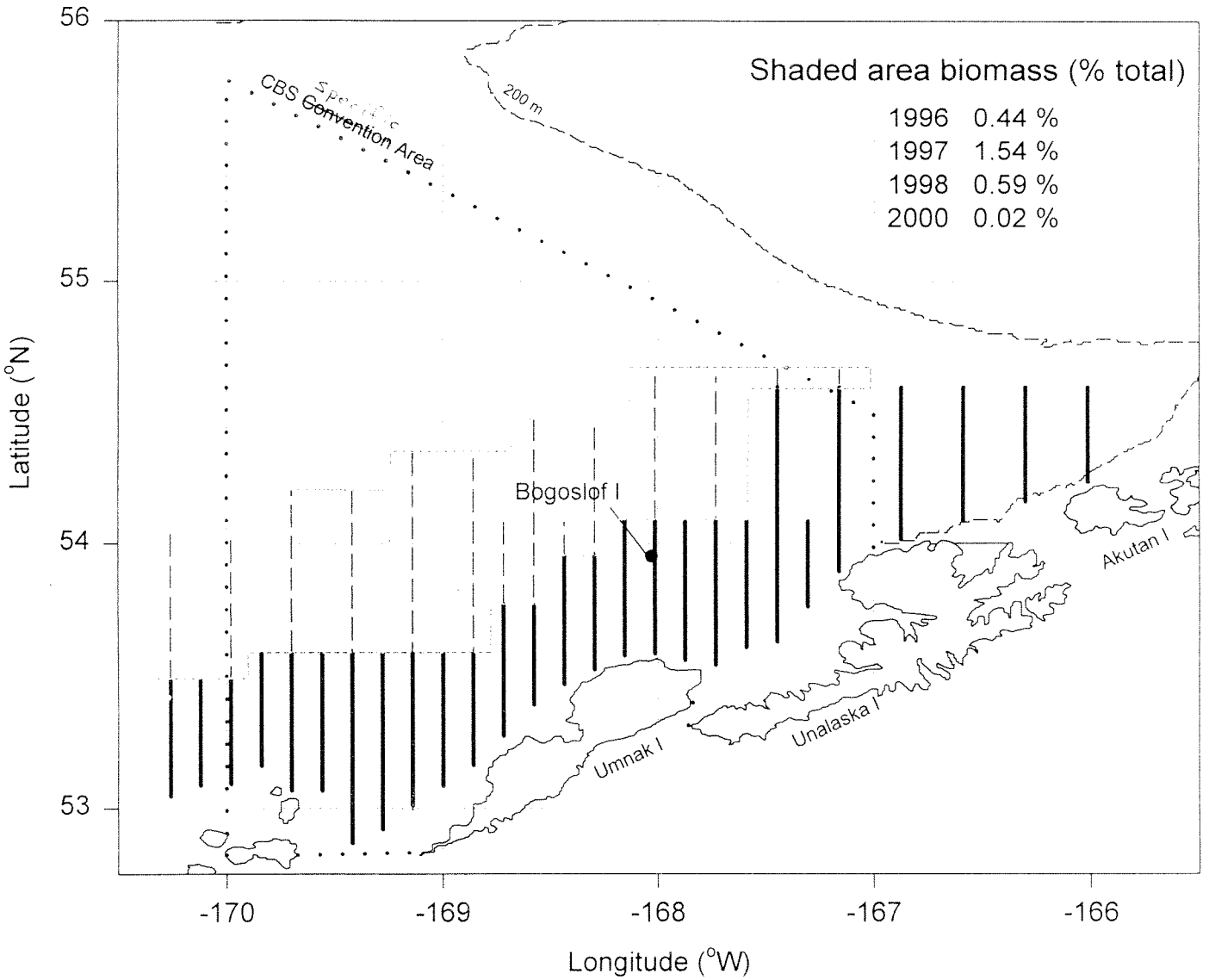


Figure 1. Proposed trackline (solid lines) for the winter 2001 echo integration-trawl survey of the Bogoslof Island area, March 1-11. The shaded area was surveyed historically, but will not be included in the 2001 survey trackline. The time saved is approximately 2 days.

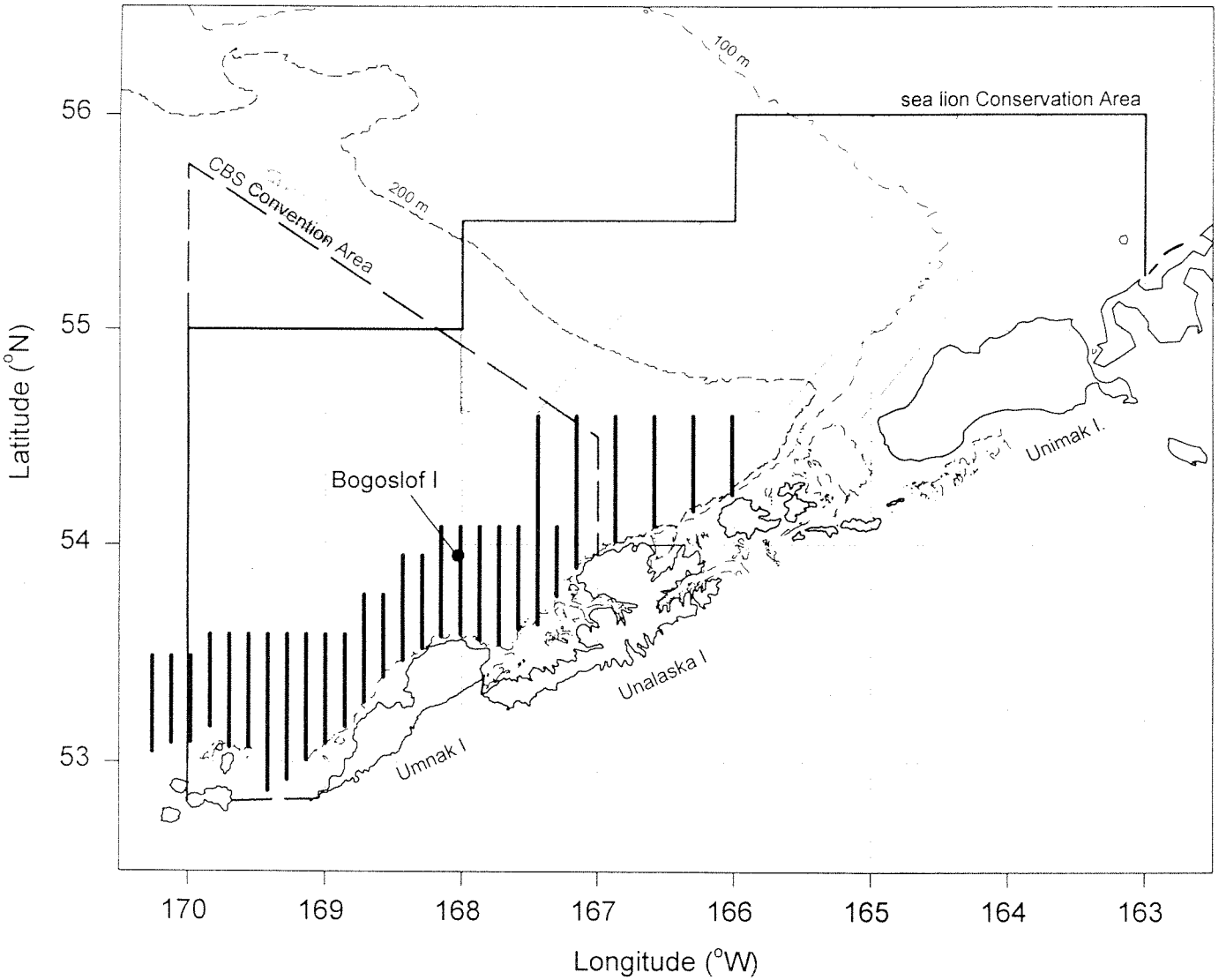


Figure 2. Proposed trackline for the winter 2001 echo integration-trawl survey of the Bogoslof Island area. Solid line indicates boundary of the sea lion Conservation Area, and dashed line outlines U.S. management area 518/Central Bering Sea convention area. ~~Shaded~~ region will be surveyed February 15-27. Survey

Cross-hatched

[illegible] is not yet decided.

Attachment 8

Pollock Stock Assessment Document

Submitted by

The Russian Party

For the

Meeting of the Science and Technical Committee

Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea

November 6-10, 2000

Shanghai, China

WESTERN BERING SEA POLLOCK STOCK

To assess the state and to forecast TAC of Western Bering Sea pollock the methodology proposed by Babayan et al. (1999) was added with elements of meta-analysis and harmonic analysis of time series. The analysis of the combined recruitment index for 4 Far East pollock stocks (East Okhotsk Sea, West Bering Sea, East Kamchatka, and North Okhotsk Sea) revealed a clear periodicity in deviations from the mean long-term level. Over the investigated time interval 3 periods were distinguished: period of low recruitment (until 1975), period of increased recruitment (from 1975 to 1989) and another period of low recruitment (from 1990 till now). The use of methods of time series analysis, including ARIMA, allows to suppose that the current period will continue till 2002-2005. Since that time a new period of increased recruitment will likely start. Thus, judging from the results obtained, a marked recovery of stocks is expected not earlier than middle or end of the first decade of XXI century.

Our calculations (with the use of biofishery data for 1970-1999) showed that in 1999 the Western Bering Sea stock biomass remained at a very low level. an estimate of total stock biomass (2+) was 185,000 t; spawning stock biomass – 87,000 t, and fishing stock biomass (4+)- 1000,000 t.

Forecast calculations show the further decline of total (down to 130,000 t), fishing (down to 73,000 t) and spawning (down to 24,000 t) Western Bering Sea stock biomass in 2000.

The estimates of TAC obtained with the use of modified management scheme (Fig 1) force us to talk about the necessity of fishery ceasing and transition to control catching of 5,000-15,000 t. The retrospective and forecast estimates of stock biomass and catches are shown in Fig.2 and Table 1.

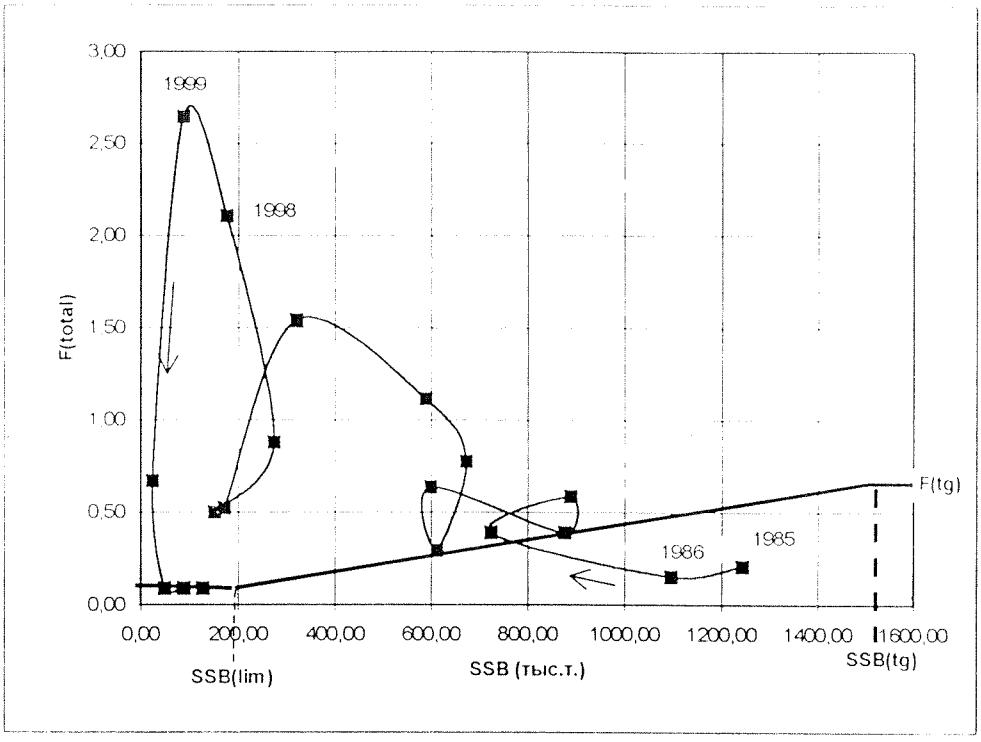


Fig 1 Management Scheme (precautionary approach)
SSB(tg)=SSB(max)=1500
SSB(lim)=SSB(loss)=200
F(tg)=F(max)*exp(-sigma)=0.66
Catch(2000) is assumed to be equal 20,000 t

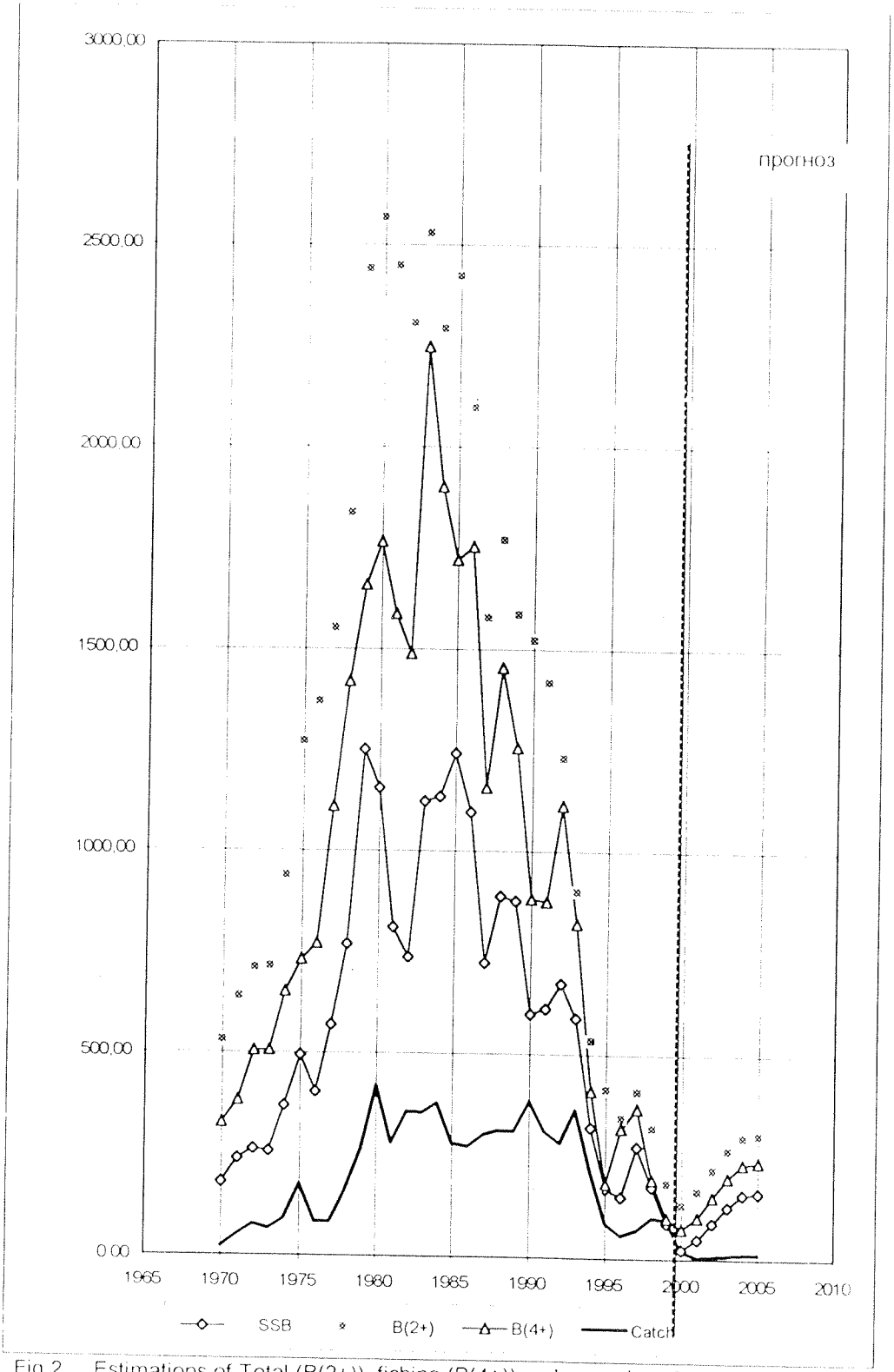


Fig 2 Estimations of Total (B(2+)), fishing (B(4+)) and spawning (SSB) stock biomass

Year	SSB	B(2+)	B(4+)	Catch	Ftotal
1970	180,10	529,19	326,68	22	0,09
1971	238,10	638,59	381,82	52	0,27
1972	261,48	709,59	504,59	76	0,06
1973	255,99	713,74	505,90	66	0,15
1974	369,20	937,94	651,36	90	0,09
1975	494,25	1270,29	730,74	176	0,24
1976	403,56	1370,10	770,44	83	0,13
1977	569,97	1551,14	1110,05	84	0,09
1978	769,03	1836,33	1420,12	161	0,20
1979	1250,38	2439,77	1657,38	261	0,17
1980	1155,76	2567,34	1765,03	419	0,39
1981	811,16	2448,46	1586,26	279	0,18
1982	736,97	2306,40	1489,35	356	0,27
1983	1123,40	2528,96	2247,82	353	0,28
1984	1135,29	2293,20	1901,43	376	0,31
1985	1242,16	2422,17	1719,39	278	0,21
1986	1097,01	2097,62	1752,95	271	0,15
1987	724,38	1577,68	1156,86	300	0,39
1988	889,07	1768,69	1454,58	310	0,59
1989	876,96	1585,69	1256,79	309	0,39
1990	598,20	1521,44	882,21	383	0,64
1991	611,14	1416,90	875,71	309	0,29
1992	673,35	1231,31	1113,35	281	0,78
1993	588,82	900,27	821,35	363	1,12
1994	319,89	533,33	409,73	210	1,54
1995	170,79	414,03	181,83	86	0,52
1996	150,94	343,95	318,90	56,2	0,50
1997	273,88	407,99	367,25	69,44	0,88
1998	175,59	319,17	194,80	100	2,10
1999	87,33	185,46	100,73	95,61	2,64
2000	23,7	132,4	73,4	20	0,67
2001	48,8	165,7	101,6	4,8	0,09
2002	88,2	217,9	152,4	8,3	0,09
2003	127,6	265,2	199,7	11,2	0,09
2004	158	298,1	232,5	13,3	0,09
2005	162,5	303,8	238,2	13,8	0,09

Table 1.

Western Bering Sea pollock. Retrospective estimates of stock biomass and forecast.

(in forecast: R=Rmean for 1995-1999)

THE PRESENT STATE OF NAVARIN POLLOCK STOCK

The present analysis is based on data of previous years and materials of expeditions conducted in the second half of the 1990s and in spring-autumn period, 2000, aboard Russian trawler "Novokievka" (Nakhodka) and Japanese trawler "Kayo maru 28".

During the spring-autumn season, 2000, pollock in the northwestern Bering Sea kept the depths down to 320 m. In the deeper areas, they were not found in catches. Pollock size ranged from 9 to 88 cm (fork length), being 53.9 cm on the average (without counting of juveniles captured during the survey with the use of small-mesh net). The average pollock size in scientific and fishery catches in 2000 was larger compared with the maximal annual size of Western Bering Sea pollock in previous years.

In the first half of summer pollock with weight from 3 to 3,750 g (1,220 g on the average) were noted in the catches. A female-to-male ratio in catches was 717:283, i.e. a share of males was somewhat lower than in 1999. This may be associated with a severe winter of 1999/2000. By this reason, pollock spawned later than usual. As it is known, males stay on the spawning grounds longer than females. Therefore, just after spawning feeding concentrations of pollock consist mainly of females.

The stomach fullness index was determined on a 5-step scale (0=empty stomach, 4=full stomach). An average stomach fulness equaled to 2.11 that was on 0.45 units higher than in 1999 and 1997. As in 1999, a diet of pollock of all age groups in 2000 was composed mainly of invertebrates – euphasiids and shrimps. An increase in feeding intensity and transition of older age groups from predation to feeding on invertebrates were associated with the climatic conditions of 2000 favourable for mass development of zooplankton against a background of

concurrent decrease in abundance of fishes on which large pollock fed Physiological parameters also evidence favourable conditions for pollock feeding in the northwestern Bering Sea in summer 2000 (Table 1)

In the last years the abundance of pollock in the northwestern Bering Sea declined sharply concurrently with its decrease within the entire areal. Formerly continious pollock concentrations registered on the northwestern Bering Sea shelf from Karaginsky Bay to Gulf of Anadyr disintegrated in the end of 1990s. In the western Bering Sea the densest concentrations remained only in Navarin area However, a sharp decline of biomass occurred in this area from 1996 to 1999 also (Table 2). According to data of bottom trawl survey in the beginning of summer 2000, the biomass of Navarin pollock stock on the aquatory of 9,762 sq. miles was 254,000 tons (Table 2). Recalculations on the area of survey conducted in June 1999 showed that biomass remained at a low level of previous year Compared to 1997 (in 1998 the summer survey was not conducted), the biomass decreased by about 2.5 times. In autumn, 2000 the biomass of bottom pollock was 291,000 tons on the aquatory of 10,0006 sq.miles and that of pelagic pollock equaled to 111,000 tons (total area of 8,176 sq.miles). A slight increase in pollock biomass in September-October, 2000 resulted from the beginning of pollock return from the feeding to wintering grounds.

In late June of current year the main pollock concentration in the Navarin area was registered on the outer shelf edge at depths of 260-264 m. The formation of concentrations with increased densities in the southern part of the area was obviously associated with features of bottom relief. In this place continental slope forms an angle where individuals of pollock from Gulf of Anadyr proper and fish migrated from the southeastern and southwestern shelf are concentrated during the wintering and spawning periods. In the area of winter-spring concentration formation shelf is cut by two canyons. In the first half of summer pollock spread via these canyons to the shelf (2 "waves" on the map, Fig.1) concentrating with

juveniles in the quasistationary gyre off Navarin Cape. According to surveys of previous years, with the warming of upper layer and development of zooplankton pollock concentrations off Navarin Cape become larger, while on the outer shelf edge they become smaller. With the beginning of autumn cooling pollock start to migrate backward to the wintering grounds, i.e. on the outer shelf edge

Size composition of Navarin pollock is shown in Fig.2. The catches consisted mainly of large pollock with indistinct modal groups of 56-57 cm and 63 cm. In contrast to 1999, the strong 1995 year-class was not clearly distinguished in catches. The average pollock length in the investigated area in July, 2000 was 56,4 cm with a range of 27-88 cm (Table 2). As usual, in summer, 2000 very large pollock with the average size of about 70 cm was found in shallow waters of Gulf of Anadyr north of 61°45' N. The average weight of Navarin pollock was 1,315±29 g with a range of 275-3,036 g.

The physiological state of Navarin pollock evidences that in 2000 their spawning, as in previous years, occurred later compared with other stocks. According to data of spring ichthyoplanktonic surveys and control trawlings, spawning of pollock was mainly completed by mid-May. 50% of females became matured at length of 44-45 cm and 50% of males – at length of 43 cm (Fig.3).

Euphasiids (36%) and shrimps (37%) prevailed among food objects of Navarin pollock in summer, 2000 (Table 1). In places of juvenile concentrations, juveniles become very important in the diet of adult pollock. Thus, north of 62°N the intensity of cannibalism (by occurrence in stomachs) reached 18-25% even in summer months (Table 3).

According to results of ichthyoplanktonic survey conducted in the Navarin area from 6 to 14 May 2000, the abundance of developing pollock eggs on the aquatory of 4,866 sq.miles was 4.546×10^{12}. This value corresponds to the total

quantity of eggs counted in Karaginsky and Olyutorsky Bays, the main centers of Western Bering Sea pollock reproduction. In the Navarin area eggs at the 1st stage of development in some samples constituted 40-100%, eggs at the 2nd stage - 0-100%. Eggs of the 3rd stage were met rarely. On the average, in the first half of May, 2000, eggs at the 1st stage of development constituted 80%, eggs at the 2nd stage- 19% and those at the 3rd stage- 1% of the total egg number. Data of ichthyoplanktonic survey combined with results of other investigations prove that in the second half of the 1990s the importance of the northern (Navarin) spawning grounds of pollock in the Bering Sea increased essentially.

Intensification of pollock spawning in the Navarin area is confirmed by results of autumn-winter juvenile surveys in the northwestern Bering Sea. If in Karaginsky and Olyutorsky Bays number of 0+ pollock did not exceed 12-19 individuals per catch, in the Navarin area during the same period catches of juveniles ranged from 138 to 1357 individuals (372 individuals per trawling, on the average). Such high catches of 0+ pollock in the Navarin area are well agreed with the data of ichthyoplanktonic survey. The approximate survival from egg stage to 0+ pollock in autumn-winter was 0.0108 %. Such a low survival evidences that a part of fish at age of 0+ is not counted during the autumn-winter surveys. The underestimation of 0+ pollock is explained by 2 reasons: 1) Pollock at age 0+ have small size and a part of them slipped through mesh; 2) During the autumn-winter period, 2000 very severe ice conditions prevented the more extensive survey.

During the juvenile survey conducted in the Navarin area from 26-30 June on the aquatory of 8198 square miles with the use of small-mesh liner in the codend of standard trawl no individual of 2000 year-class was caught. This, as during the autumn-winter survey, is associated with a small size of 0+ pollock. By this reason, from the end of June until autumn they could not be caught by trawl with a small-mesh liner in the codend.

Pollock of age 1+ (1999 year-class) were represented by two main concentrations The larger (by area) concentration was found in the northern part of the Navarin area between 62°N and 62°30'N, 180-178°W (Fig.4) at depths of 106-107 m This concentration was located within Navarin quasistationary gyre which retained zooplankton, forming favourable conditions for juvenile feeding. The second concentration was located on the outer shelf edge between 179°30' and 178°W The total abundance of pollock of 1+ age was maximal among 3 investigated age groups and equaled to 1 bln 238 mln individuals (Table 4). Comparison with the long-term data showed that 1999 year-class in the Navarin area was middle In late June length of 1+ pollock ranged from 9 to 17 cm with an average value of 12.99 cm and a modal value of 12 cm. Their average weight was 12.67 g (Table 5).

During the juvenile survey in the Navarin area 2 concentrations of 2+ pollock (1998 year-class) were registered (Fig.5). The core of the densest concentration was located in the point with coordinates: 61°N, 179°59' E at depth of 186-187 m This concentration, as concentration of 1+ pollock, was recorded on the outer shelf edge. The second, less dense, concentration was found in the Navarin quasistationary gyre.

In late June the total abundance of 2+ pollock was 908 mln individuals. The survey carried out from 6-14 May 2000 at irregularly located stations showed that during the investigated period the 2+ pollock abundance was much higher and with recalculation on the same area (8,198 sq.miles) it was 4.5 bln individuals. Thus, during winter the juvenile abundance in the Navarin area increases (Table 4) and reaches maximal values in the period of maximal water cooling, i e probably in March-early May. Then, as for adult pollock, spring warming and development of food base result in beginning of feeding migrations toward the shallow areas. As a result, by the end of June a number of counted juveniles

decreases significantly. According to the results of multiple surveys, both 1998- and 1999 year-classes may be considered as middle.

In the beginning of summer a length of 2+ pollock ranged from 18 to 24 cm, with an average length of 21.37 cm and a modal length of 22 cm (Fig.2, Table 5). Their average weight was 60.54 g.

In contrast to the younger age groups, 3+ pollock (1997 year class) in the Navarin area were concentrated only within the outer shelf edge. Unlike 1+ - and 2+ pollock, there was no the second, shallow-water concentration of 3+ pollock (Fig.6). The maximal catches were registered in the same area as for 1998 year-class pollock. In early June the abundance of 3+ pollock was minimal among juveniles. It was 321 mln individuals (Table 4). However, juvenile investigations of the last 2 years showed that 1997 year-class at age of 3+ had a higher abundance compared to 1996 year-class at the same age. As a result, the former grow slower than the latter. Thus, in the end of June, 2000, the length of 3+ pollock (1997 year-class) varied from 25 to 32 cm with an average length of 27.8 cm and weight of 138.11 g (Table 5). The same characteristics for 3+ pollock of 1996 year-class in late June, 1999 were: an average length- 28.93 cm with a range of 25-33 cm, an average weight- 154.67 g.

As mentioned above, Olyutorsky Bay is one of two main areas where the spawning grounds and fishing concentrations of Western Bering Sea pollock still remained. In July, 2000 pollock were fished at depth less than 260 m. The most successful trawlings were registered in the area between 59°36'-59°48' N, 166°36'-167°20'E at depths of 195-260 m. In August concentrations of Olyutorsky pollock moved deeper. In this month maximal catches were registered in the area restricted by coordinates: 59°52'N, 167°45'E; 59°52N, 168°44'E; 60°03'N, 167°45'E; 60°03'N, 168°44'E at depths of 250-290 m.

In the beginning of July the catches contained middle-sized pollock. They length was 49.8 cm, ranging from 27 to 73 cm. In July pollock with a length of 55-59 cm and 41-43 cm were most abundant in Olyutorsky Bay. In August with a shift of scientific and fishery trawlings to the deeper areas a length of pollock increased also. The average length was 52.3 cm, ranging from 33 to 71 cm. The values of modal length were 58-59 cm and 53-55 cm (Fig.6). The clear bimodal character of size composition is associated with combining data of two summer months with different depths of trawling in the same Figure.

An average pollock weight from this subarea was 1,056 g, varying from 290 to 3100 g, in July, and 1,178 g with a range of 480-2550 g in August (Table 1).

The curve of maturing shows that in 2000 50% of females from Olyutorsky Bay became mature at length 43-44 cm and 50% of males- at length of 42-43 cm These characteristics were somewhat lower than for Navarin pollock (Fig 3).

Fishery concentrations of pollock were not registered on the Koryak shelf in summer 2000. On the southwestern Koryak shelf the average CPUEs of middle-tonnage vessels were 320 kg per hour trawling, ranging from 40 to 690 kg per hour trawling. The maximal pollock catch was noted in the area between 61°16'-60°52' N and 174°58'-174°08' E at depths of 250-270 m. In this area pollock size was maximal compared with that in all other areas of the northwestern Bering Sea The average fork length was 58.2 cm, varying from 33 to 73 cm Pollock with a length of 51-57 cm was most abundant (Fig.8). The average weight in this area was 1,386 g, ranging from 276 to 3,750 g (Table 2).

On the eastern Koryak shelf CPUEs of middle-tonnage vessels in summer, 2000 did not exceed 100 kg per hour trawling. The average length of pollock from this area was 52.8 cm with a range of 40-64 cm. Modal groups of 49-51 and 56-58 cm

were not defined clearly (Fig.9). The average weight was 1,166 g, ranging from 590 to 2,200 g.

From the analysis of results of investigations and fishery data for the second half of 1999 – spring-summer, 2000 it may be concluded that pollock stocks in the northwestern Bering Sea continue to be in depression. Because of this, Russia makes efforts to decrease fishing stress on pollock in this region. One of the undertaken measures is associated with a regular reduction of fishing efforts. Thus, in 1998 up to 110-115 large-tonnage fishing vessels (LTFV) were involved in pollock fishery. In 1999 maximal number of LTFV in the region did not exceed 61 units, in 2000 their number was reduced to 40-45 units. In 2001 a further reduction of fishing fleet is planned. In accordance with the reduction of a number of vessels, a decrease in annual catches in the western Bering Sea occurs: in 1997 680,000 t of pollock were caught, in 1998- 644,000 t, in 1999 – 596,000 t, and by October 25, 2000 only 311,100 t of pollock were caught.

To maintain and recover pollock stocks in the northwestern Bering Sea Russia, along with reduction of fishing efforts and total catch, takes the following regulation measures:

- Commercial size for captured pollock is established;
- Only trawls with mesh not less than 100 mm are permitted to use for the fishery;
- To decrease juvenile by-catches all trawls are outfitted with a selective cylindric liner between the codend and net;
- Along the border line between the Russian and US Exclusive Economic Zones a buffer guarded zone is introduced from the Russian side;
- During the spawning period the specialized fishery on pollock from Karaginsky Bay to the boundary of Russian EEZ on the east is banned.

Keeping in mind the above-stated, the measures on pollock fishery regulation taken by Russian side fully correspond to a precautionary approach. However, despite the undertaken efforts on pollock conservation the features of the present climatic regime in the North Pacific region do not allow rapid recovery of pollock stocks. The pollock biomass in the northwestern Bering Sea in the next 1-2 years will remain at a low level. As a result, pollock of these populations will not migrate into the deep Aleutian Basin.

Table 1 Characteristics of North-Western Bering sea pollock, July-August 2000

		Olutor bay		W Koryak	E Koryak	Navarin
		July	August	July-August	August	July
Average length, cm		49.8	52.3	58.2	52.8	56.4
Minimum -maximum		27-73	33-71	37-73	40-64	27-88
Mode		55-59	58-59	51,	49-51,	56-57
		41-43	53-55	57-59	56-58	63
Average weight,g		1056±54	1178±27	1386±42	1166±44	1315±29
Minimum -maximum		290-3100	480-2550	276-3750	590-2200	275-3036
Male portion, %		23.8	28.7	22.4	30.0	36.7
Predom stage gonadogenesis	females	VI-II(83)	VI-II(91)	VI-II(86)	VI-II(93)	VI-II(84)
	males	VI-II(70)	VI-II(86)	VI-II(68)	VI-II(100)	VI-II(91)
Average stomach filling		1.83	2.12	1.98	2.62	2.01
Predom food objects (%)		prawn(39) euph(44)	prawn(63) euph(52)	prawn(51) euph(52)	euph(60) myct(42)	prawn(37) euph(36)
Average cubic condition index		0.561± 0.002	0.612± 0.004	0.618± 0.005	0.594± 0.007	0.576± 0.003
Aver gonadosomatic index,%	females	2.20±0.10	2.10±0.11	2.19±0.17	1.90±0.20	2.69±0.23
	males	1.00±0.12	1.36±0.17	0.83±0.12	0.96±0.17	2.36±0.19
Aver hepatosomatic index,%	females	8.84±0.27	10.22±0.16	9.34±0.18	9.54±0.32	7.92±0.16
	males	6.89±0.19	8.58±0.23	9.06±0.36	6.97±0.35	5.76±0.15
Aver heartosomatic index,%	females	0.255± 0.009	0.259± 0.004	0.258± 0.005	0.245± 0.008	0.261± 0.005
	males	0.234± 0.005	0.251± 0.007	0.265± 0.009	0.228± 0.013	0.255± 0.005
Aver spleensomatic index,%	females	0.166± 0.007	0.205± 0.007	0.172± 0.005	0.153± 0.006	0.169± 0.006
	males	0.159± 0.009	0.215± 0.014	0.155± 0.011	0.150± 0.011	0.191± 0.010
Maximum gall-bladder index,%		0.46	0.46	0.47	0.32	0.52

Table 2 Biomass of Navarin pollock 1996-2000

	Date	Surface,sq miles	Biomass,ths t
	1996		
Bottom trawl survey	July-August	23119	2425
	September-October	26178	1098
	Novemb-Decemb	19002	804
Echo integration survey	July-August	23298	1018
	September-October	17500	270
	1997		
Bottom trawl survey	June-July	24522	1030
	September	17000	80
Echo integration survey	June-July	19931	259
	September	17000	410
Bottom trawl survey	1998 November	25000	400
Echo integration survey	November	5000	100
	1999		
Bottom trawl survey	June	7329	181
	August	9609(7329)	121(92)
	December	6707(7329)	282(308)
Bottom trawl survey	2000 June	9762(7329)	254(191)

Table 3 Navarin pollock cannibalism, June-July 2000

Latitude,N	Longitude,W	Numbers, %
$62^{0}20$-$62^{0}30$	$179^{0}27$-$179^{0}50$	25 0
$61^{0}59$	$179^{0}36$-$179^{0}37$	25 0
$61^{0}50$-$62^{0}37$	$179^{0}51$-$179^{0}37$	18 3
$61^{0}10$-$61^{0}40$	$179^{0}14$-$179^{0}29$	8 3
$61^{0}13$-$61^{0}00$	$179^{0}07$-$178^{0}43$	6 7

Table 4 Numbers at age for the Navarin pollock fry (millions)

Date	Year	Surface, sq.miles	Generation 1997	Generation 1998	Generation 1999
26-30.06	2000	8198(11028)	321(431)	908(1222)	1338(1800)
11-16.12	1999	4947(11028)	1578(3518)	843(1880)	490(1092)
22-24.06	1999	11028	1037	146	-

Table 5 Characteristics of Navarin pollock fry, June 2000

		Generation 1999	Generation 1998	Generation 1997
Average length, cm		12.99	21.37	27.80
Minimum -maximum		9-17	18-24	25-32
Mode		12	22	26
Average weight,g		12.67	60.54	138.11
Male portion, %		55.4	21.1	53.7
Predom stage gonadogenesis	females	I-II(100)	II(100)	II(100)
	males	I-II(100)	II(100)	II(60)
Average stomach filling		1.75	1.48	2.24
Predom food objects (%)		copepods(77)	copepods(24) euphausiids(15) pollock(14)	copepods(80)
Average cubic condition index		0.487±0.009	0.503±0.007	0.546±0.006
Aver gonadosomatic index,%	females	-	1.94±0.14	0.72±0.06
	males	-	1.01±0.17	0.66±0.15
Aver hepatosomatic index,%	females	5.72±0.51	6.72±0.38	4.66±0.24
	males	6.24±0.72	4.57±0.56	4.90±0.29
Aver heartosomatic index,%	females	-	0.366±0.011	0.297±0.011
	males	-	0.387±0.009	0.295±0.011
Aver spleensomatic index,%	females	-	0.378±0.062	0.194±0.018
	males	-	0.246±0.013	0.190±0.022
Maximum gall-bladder index,%		-	0.67	0.37

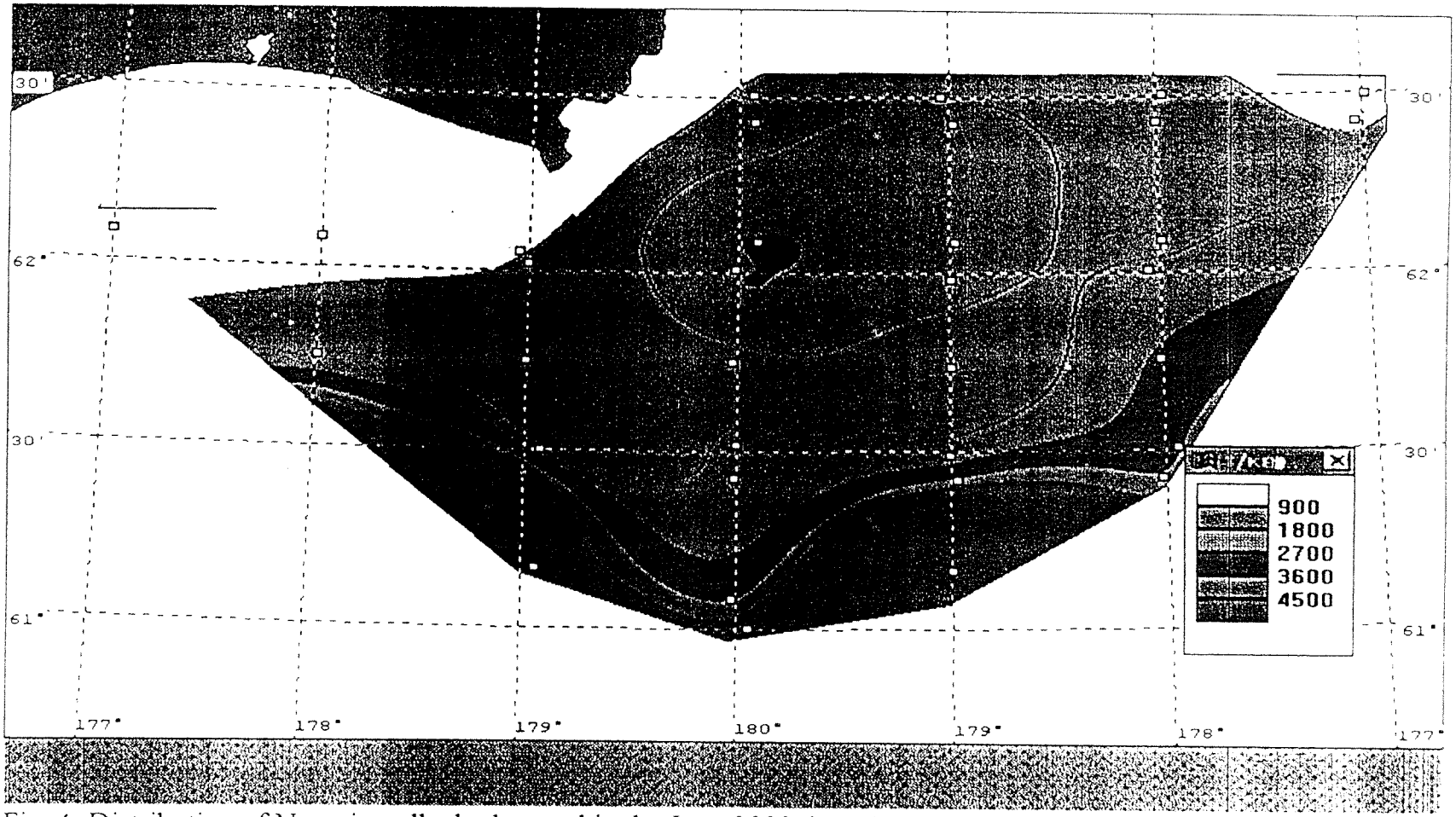


Fig. 1. Distribution of Navarin pollock observed in the June 2000, based on the bottom trawl survey, m.t./sq. mile.

Fig.2 Length frequency of Navarin pollock observed in the June-July 2000, based on the bottom trawl and fry surveys data.

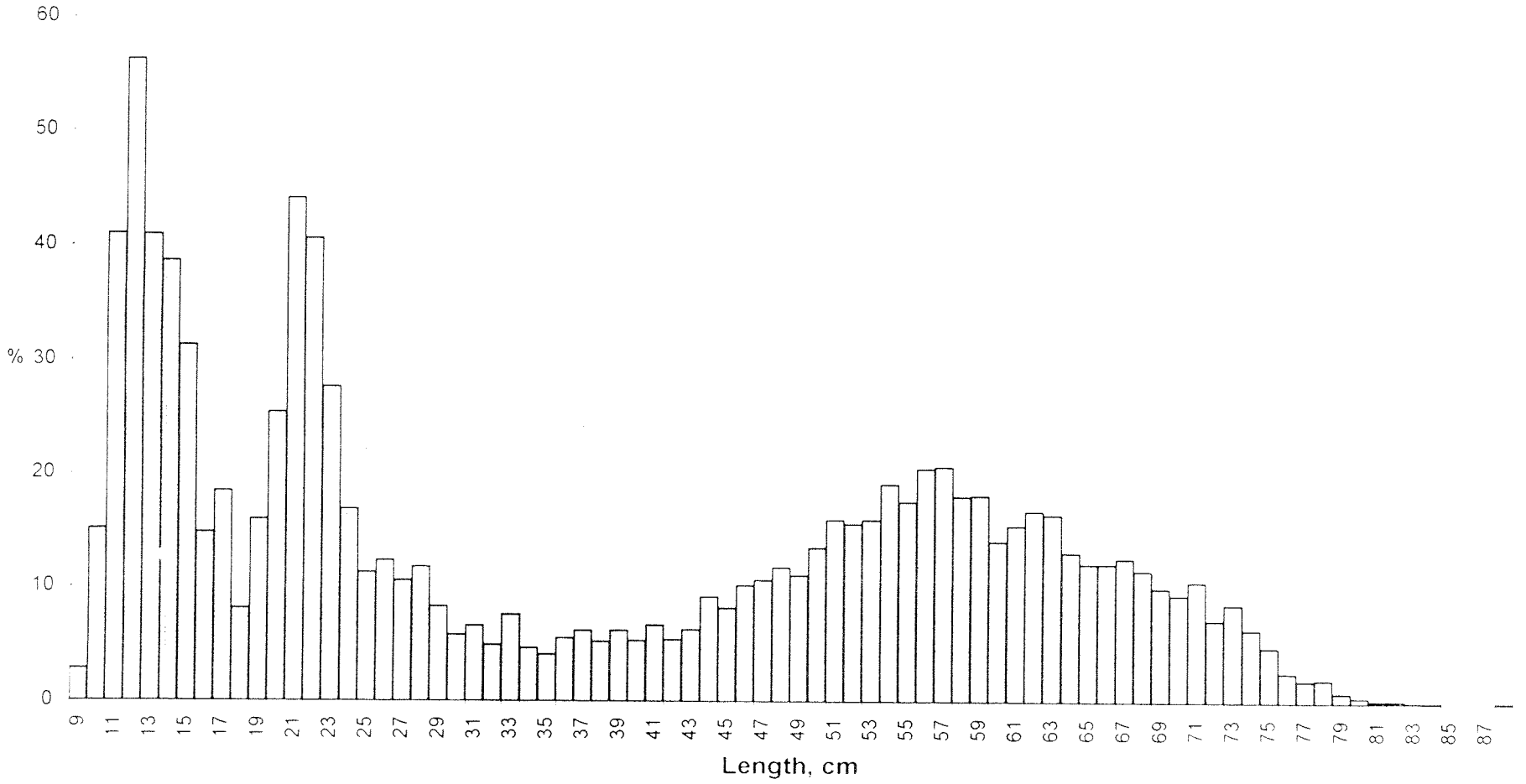
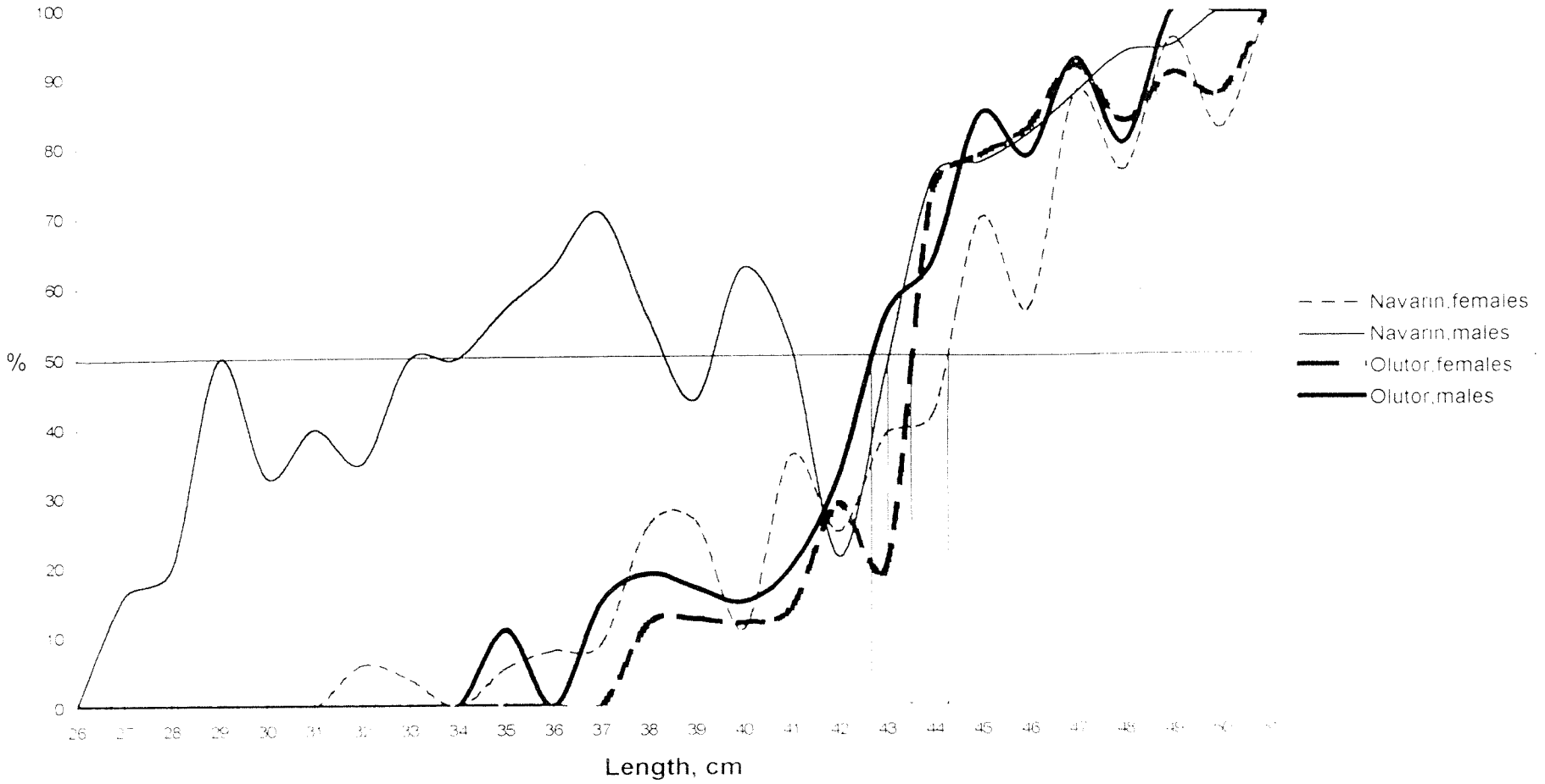


Fig.3 Maturation curve of Navarin and Olutor pollock observed in the June 2000



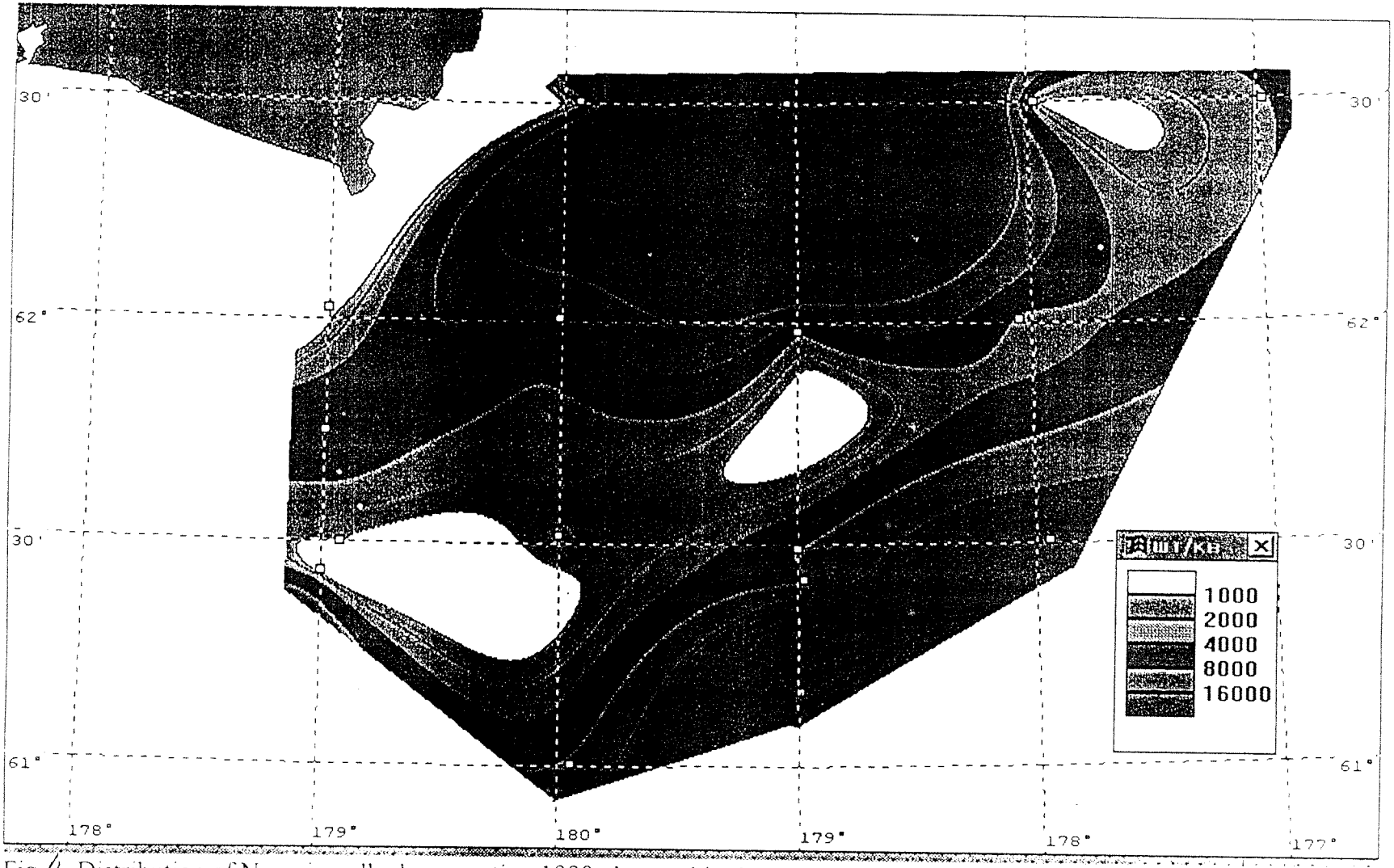


Fig.4. Distribution of Navarin pollock generation 1999 observed in the June 2000, based on the fry survey, thousands/sq.mile

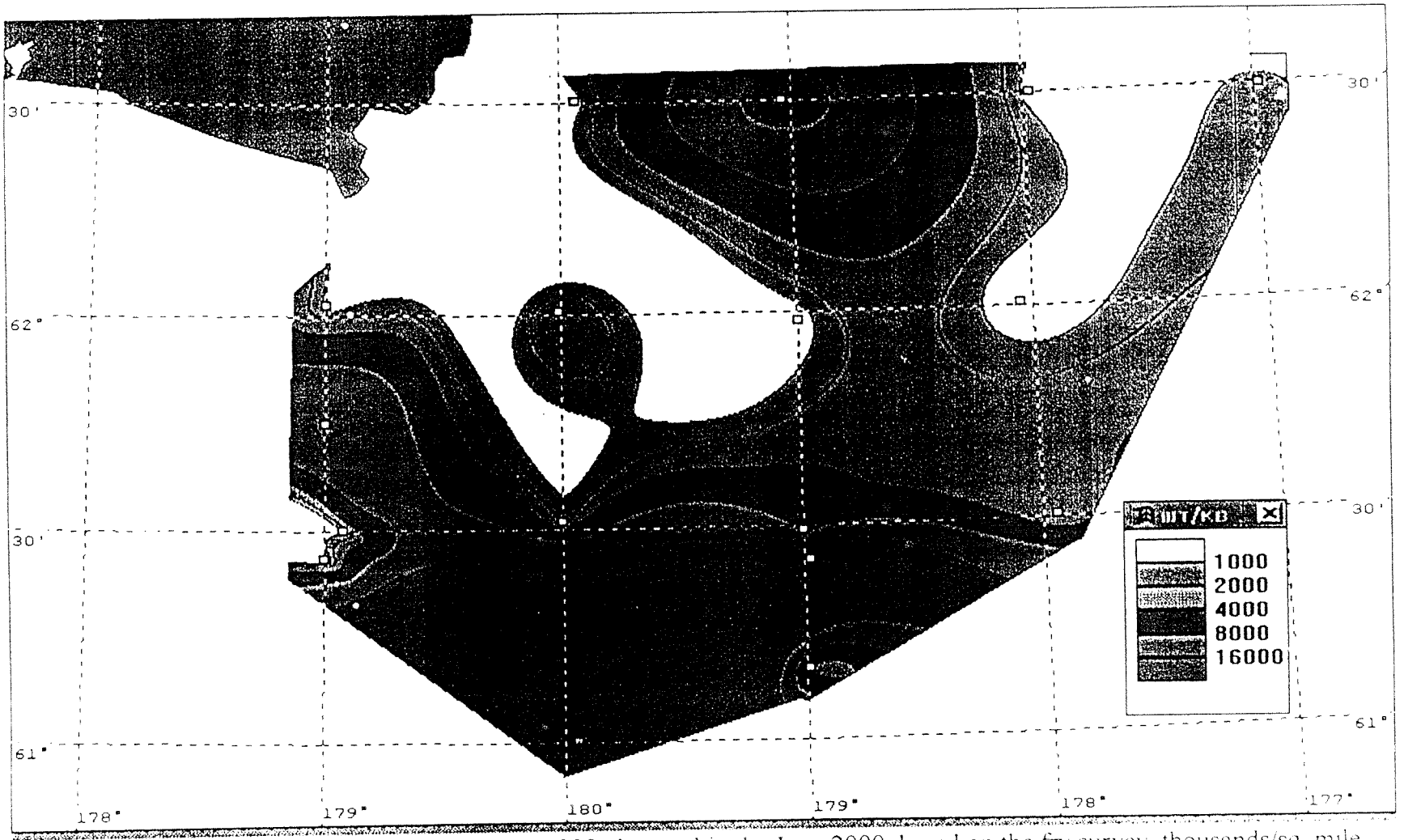


Fig.5 Distribution of Navarin pollock generation 1998 observed in the June 2000, based on the fry survey, thousands/sq mile

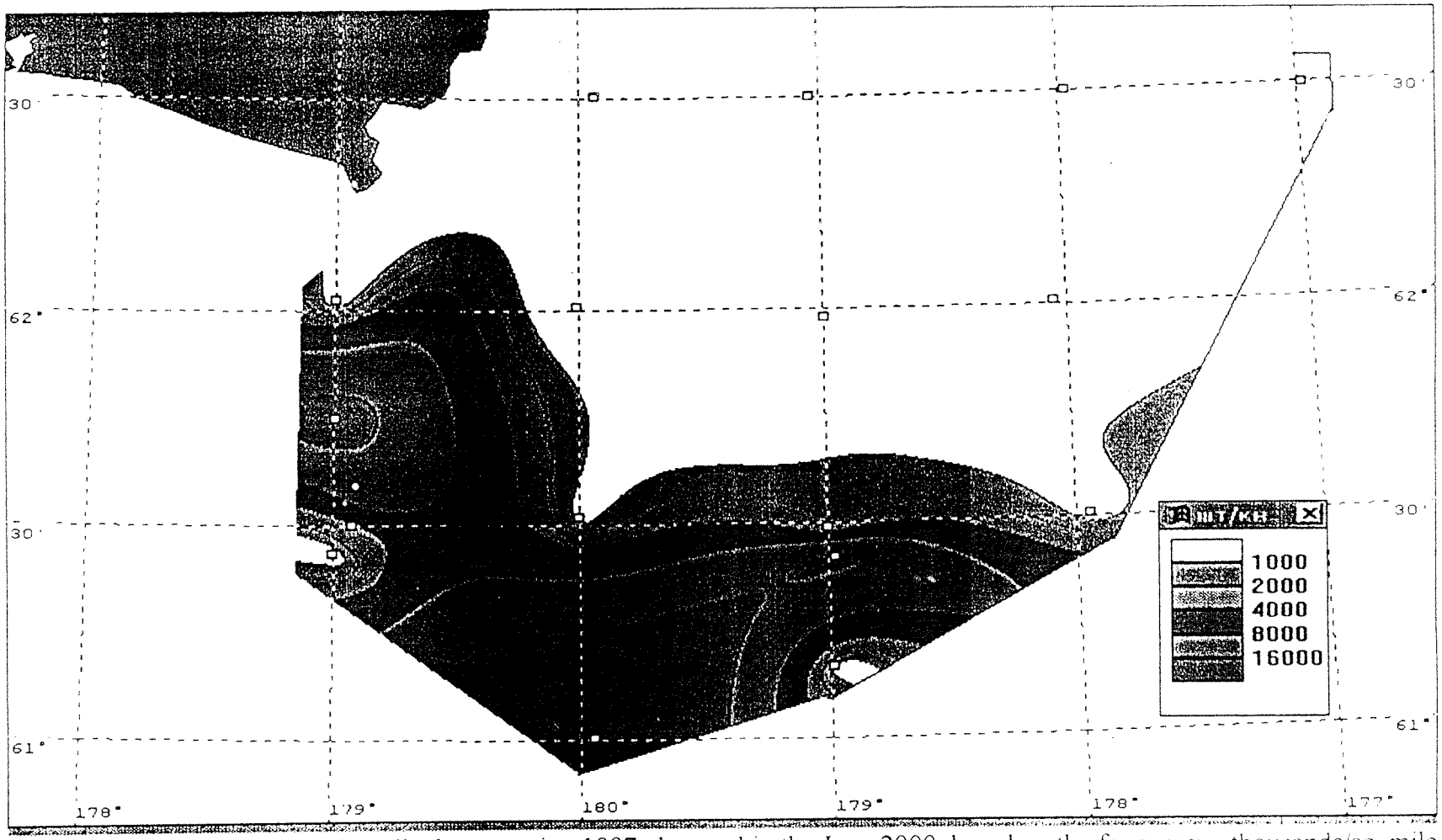


Fig. 6 Distribution of Navarin pollock generation 1997 observed in the June 2000, based on the fry survey , thousands/sq. mile.

Fig.7 Length frequency of pollock from Olutor bay observed in the July-August 2000, based on the bottom trawl survey data.

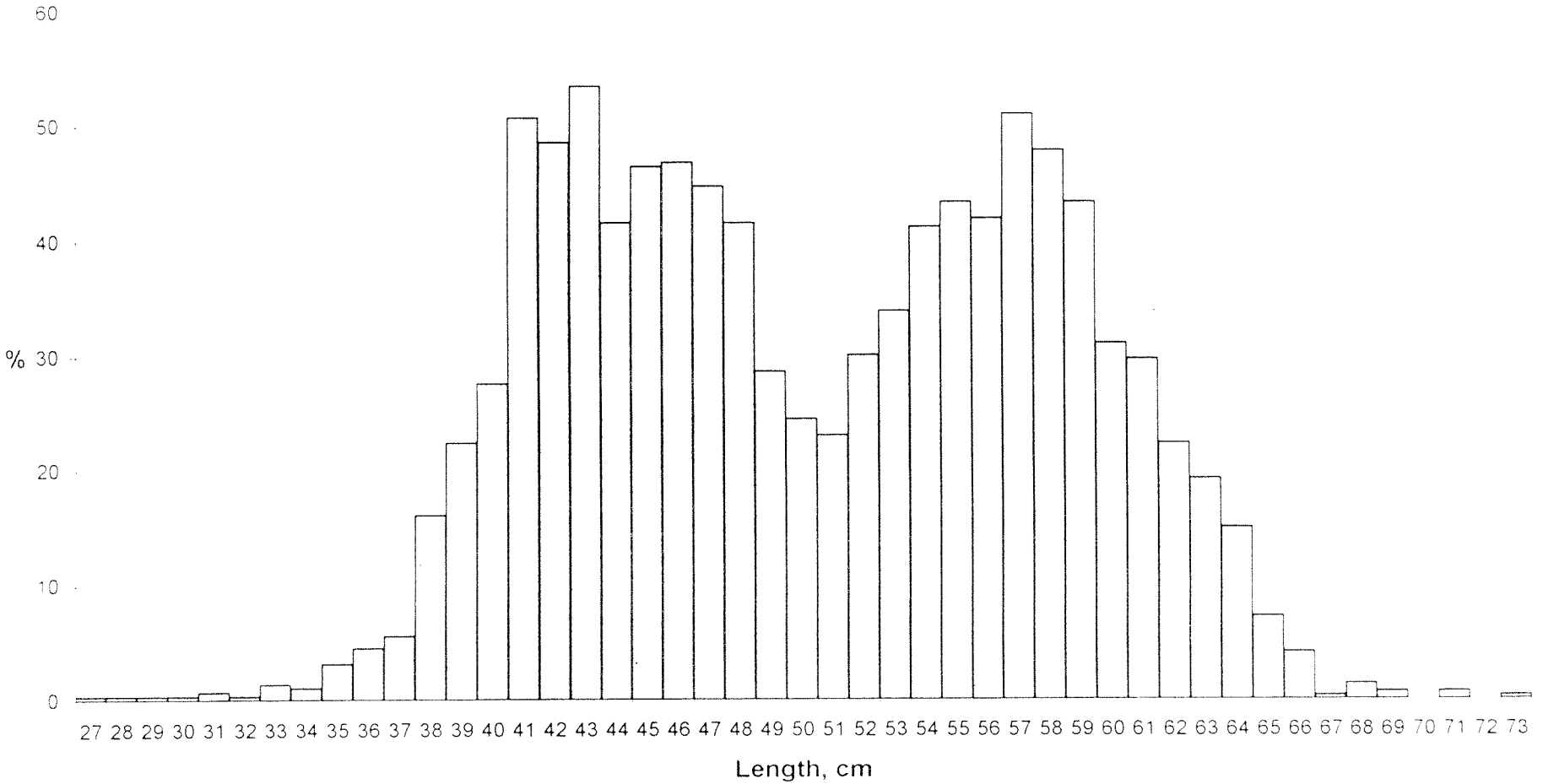


Fig.8 Length frequency of pollock from Western Koryak shelf observed in the August 2000, based on the bottom trawl survey data.

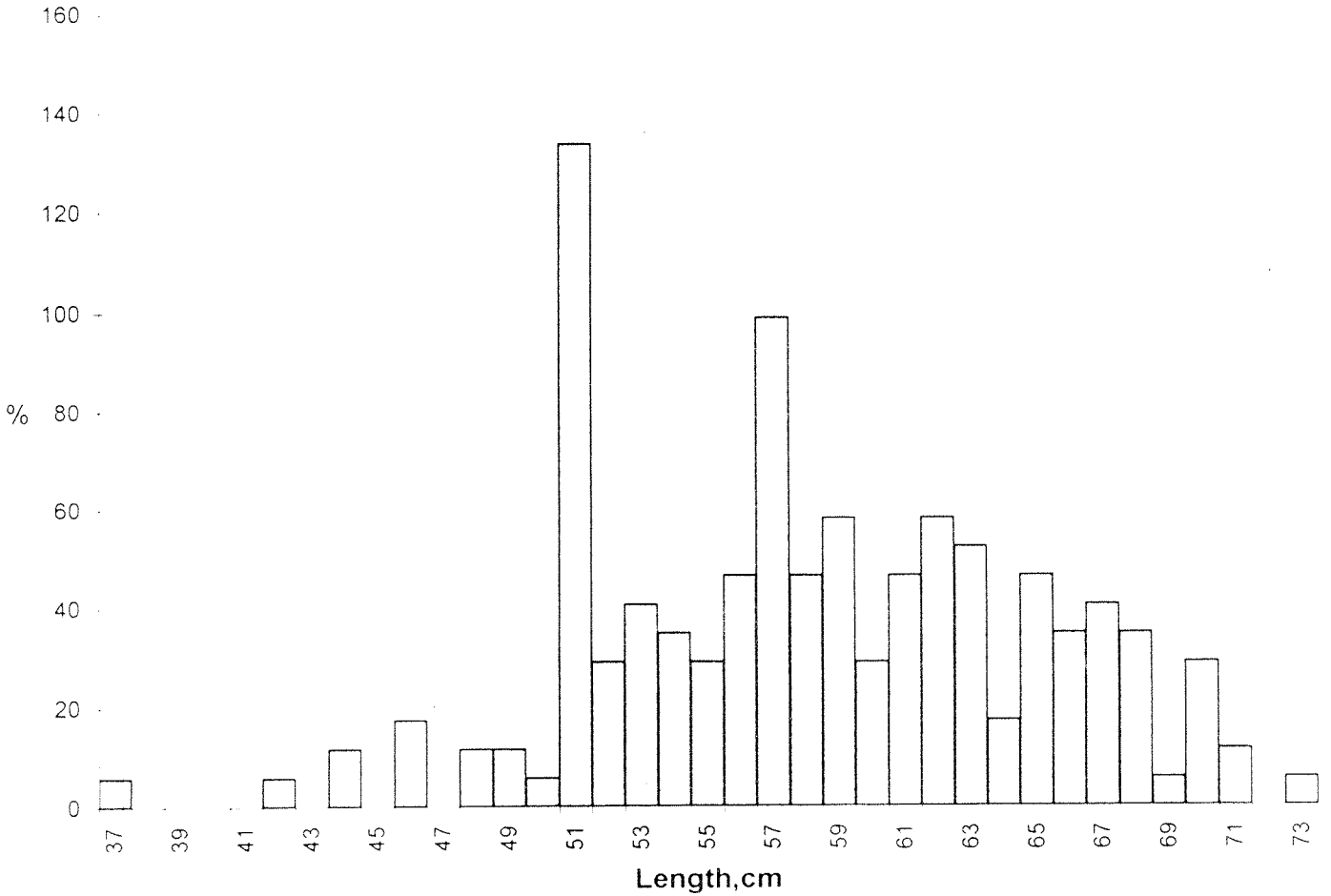
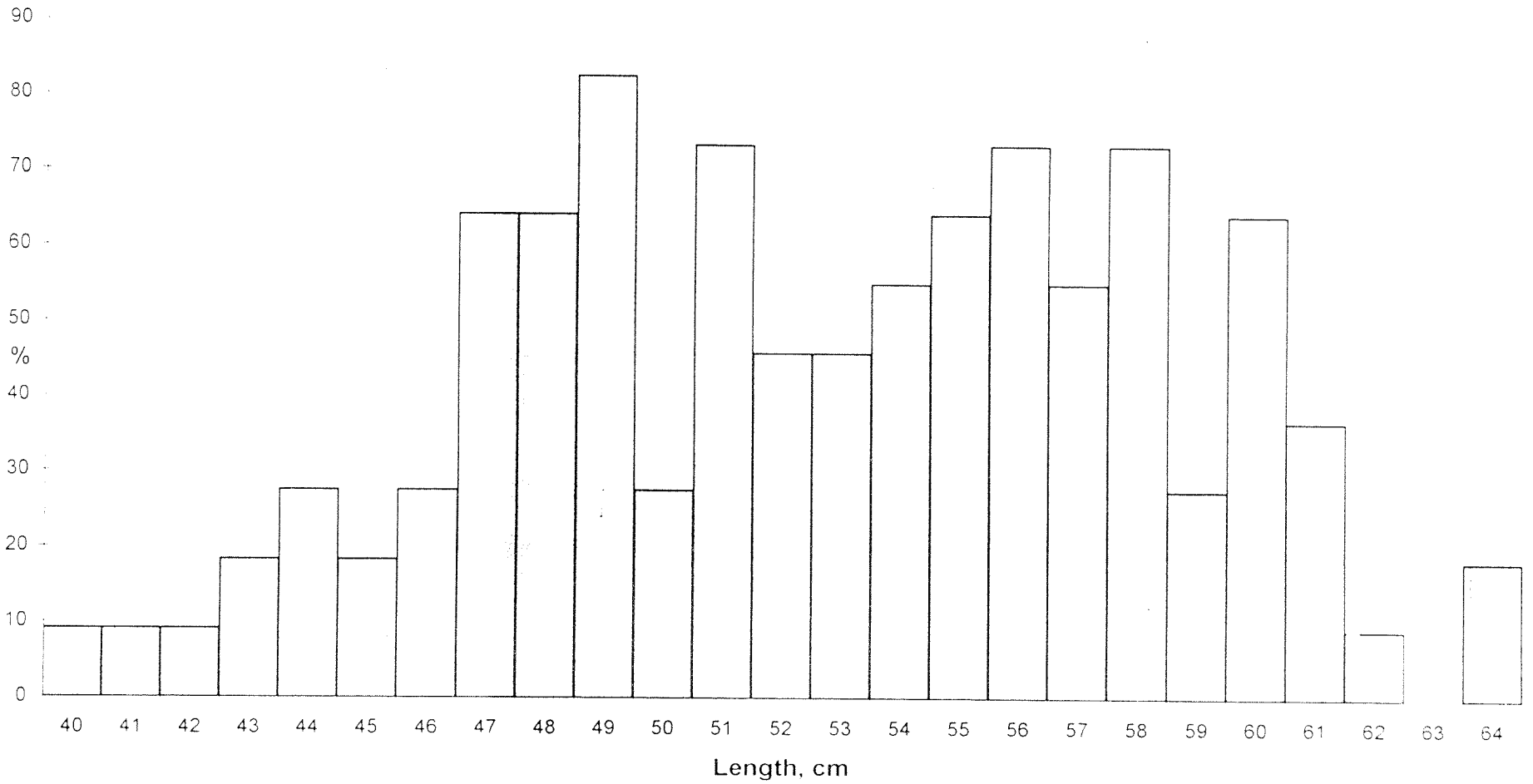


Fig.9 Length frequency of pollock from Eastern Koryak shelf observed in the August 2000, based on the bottom trawl survey data.



Cruise Plan for Mid-water Trawl Survey on Pollock in the International Waters of the Bering Sea, 2000

Fisheries Agency of Japan

Ⅰ. Objectives

The objectives of the 2000 autumn cruise are to:

① Collect information about pollock distribution in the international waters in the Bering Sea, in Autumn.

② Collect biological information of pelagic pollock in the International Waters in the Bering Sea, in Autumn.

Ⅱ. Institution

Hokkaido National Fisheries Research Institute (HNF)
116, Katurakoi, Kushiro, Hokkaido, 085-0802, Japan
Tel: +81-543-92-1716
Fax: +81-543-91-9355
Groundfish Biology Section
Akira Nishimura (anishimu@hnf.affrc.go.jp)

Ⅲ. Research Vessel

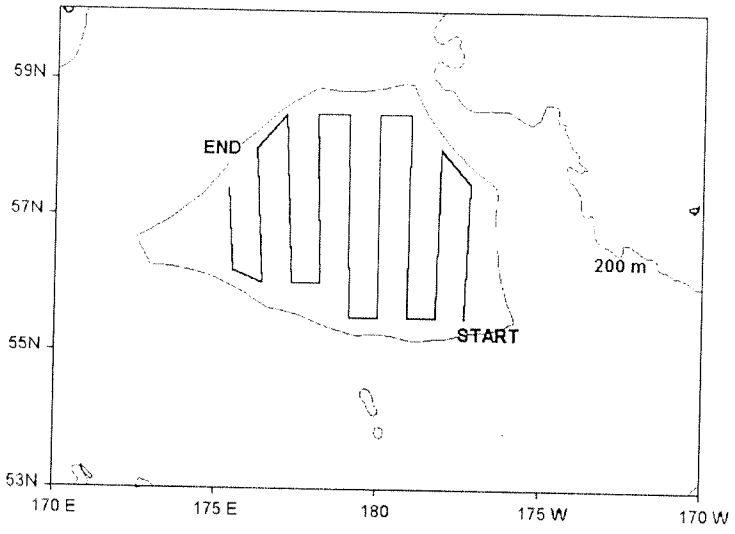
Name: No.11 Daitoku Maru (279ton)
Call Sign: 7KLV
INMARSAT: 001-872-120-1567

Ⅳ. Itinerary (Tentative)

Date	Item
Oct. 19	Leave Kushiro
Oct. 19-27	Transit to Donut Hole
Oct. 28-Nov.6	**Survey in Donut Hole**
Nov. 7-15	Voyage to Shiogama
Nov. 15	Arrive Shiogama

V. Survey areas

International waters of the Bering Sea (Donuts Hole; Fig. 1).



VI. Scientific Personnel

Researcher: Koutarou Ono (Fisheries Agency of Japan)

VII. Research Items

1) Collection of the information about pollock distribution in the Donut hole by using vessel equipped acoustic system.

Fish distributions will be observed by vessel equipped echo sounder system (not quantitative system) continuously along the transects (Fig. 1). When significant echo sign appears, trawl haul will be conducted to identify the echo sign and to provide biological data for these organisms. Ship speed is expected to average 8 knots in favorable weather.

2) Collection of the biological samples by using mid-water trawl net. Duration of each trawl haul should be kept to minimum time necessary to ensure an adequate sample size (600-1000 kg). The following biological data will be collected from the samples.

Species composition and weight / numbers of each species.
Pollock length frequencies of each trawl haul.
Age composition from otolith reading.
Growth analysis and bio-chemical analysis.

VIII. Data

All data will be analyzed at HNF. The data and results of analysis will be submitted to the annual meeting of the Convention.

Central Bering Sea Pollock Workshop
(Seattle NOAA Sand Point Facility, 17-21 July 2000)

Results from the 2000 Echo Integration and Midwater Trawl Survey on the Bering Sea Walleye Pollock by the *R/V Tamgu 1*

Seok Gwan CHOI, Jin-Yeong KIM, Yeong-Seung KIM,
Joo-il KIM, Jong Bin KIM and Hyun Su JO

National Fisheries Research and Development Institute

1. Introduction

The National Fisheries Research and Development Institute (NFRDI) conducted an echo-integration and midwater trawl survey of walleye pollock from the Bogoslof Island area to the Donut Hole area in the Bering Sea by the Korean *R/V Tamgu 1* during February~April 2000. The purposes of the survey were to determine the geographical distribution of walleye pollock, to collect echo integration data and biological information of walleye pollock to estimate the biomass, to collect the oceanographic and biological environments during the winter in the survey area.

The itinerary of the *R/V Tamgu 1* was as follows;

Feb. 10~17, 2000 : Departure from Pusan port and navigation of *R/V Tamgu 1*
Feb. 18~19 : Anchor near the Attu Islands and Sphere Calibration
Feb. 20~29 : Change the survey plan due to the bad weather
Mar. 1~4 : Inport Dutch Harbor and supplies
Mar. 5 : Transfer to the Captain Bay and confirm sphere calibration
Mar. 6~27 : Acoustic-midwater trawl surveys from the Bogoslof Island area to the Donut Hole area
Mar. 28~Apr. 4 : Navigation of *R/V Tamgu 1* and arrival in Pusan port

2. Materials and Methods

1) Research vessel and fishing gear

The *R/V Tamgu 1* is a stern trawler with 90.2 m long, 2,550 gross tonnage, and 7,500 horsepower. Midwater trawl net was employed to identify the detected echosigns and to collect biological samples. The codend mesh size of midwater trawl net was 100 ㎜. Both head-rope and footrope lengths were 53.2 m, respectively.

2) Survey area, oceanographic and biological environments

The survey areas in the Bering Sea were covered from the Bogoslof Island area

to the Donut Hole area (Fig. 1). A total of 37 research stations were selected to collect oceanographic and biological environments. Water temperature and salinity profile data were collected from surface to 500 m in the stations with a CTD system. Bongo net was used for collection of fish larvae and zooplankton samples from surface to 100 m layer in each stations. Seawater samples for chlorophyll *a* determination were collected at sixth layer (0, 25, 75, 100, 200, 400 m) with a Losette Sampler.

3) Echo intergration

Scientific quantitative echo-sounding system, Simard EK500, was used in acoustic data collection (Bodholt et al. 1989). Data from the SIMRAD EK500 sounder were stored and processed using a SIMRAD BI500 Integrator with the graphic workstation, SUN sparc 5 workstation compatible with the SUN workstation, installed an echo integration and target strength data analysis software (Foote et al.1991).

Transects were spaced 5 or 10 nautical miles in the Bogoslof Island area and 50 or 60 nautical miles in the other areas apart in parallel north-southward. The survey cruise was started from near Dutch Harbor and proceeded to the westwards with speeds of 8~12 knots. Echo integration data were logged each 1 nautical miles in the Bogoslof area and 5 nautical miles in the other areas during the survey.

Echo integrator output, S_a, was reintegrated with a SV threshold of -69 dB currently used in the Alaska Fisheries Science Center. To convert S_a into absolute density, the above equations were used in length-target strength relationship (TS= 20 log FL- 66; Traynor 1996).

4) Midwater trawl and biological sampling

Midwater trawl hauls were made to identify fish species and biological sampling at the selected location where a good echosign was encountered in day time. In each trawl haul, all species caught were counted and weighed. Samples of walleye pollock were treated to analyze sex ratio, maturity stage (five stage), gonad weight, fork length and body weight. Lengths were measured on the measuring board with a caliper scaling in 1 mm and body weight was scaled in gram. At the same time, otoliths, female gonad, and stomach were collected.

3. Results

1) Standard sphere calibration

Calibration procedures were conducted in the near the Attu Islands. The values of the split beam target strength were corrected repeatedly to find the known value of -33.6 dB/-40.5 dB and the TS transducer gain parameter. The values of the echo integration for the sphere were corrected repeatedly to find the value identical to the theoretical value and the Sv transducer gain parameter. Transducer beam pattern characteristics (longitudinal offset, transversal offset and

3 dB beam width of the beam) were used to obtain the values from EKLOBES software. Calibration results and overall system parameters were presented in Table 1.

2) Oceanographic conditions

The surface water temperature was 0.7~3.8℃ in the whole survey areas. It was higher than 2.6 ℃ in the Bogoslof Island area and lower than 2.0℃ in the Donut Hole area. Water temperature was little changed from surface to 120 m layer, increased rapidly from 120 m to 210 m, and variated a little over 210 m. In spring 1999, there was a cold water mass of 1.0 ℃~3.0 ℃ at the 50~180 m layer from the Donut Hole area through the Bogoslof Island area. It can be suggested that the cold water mass is isolated at 50~180 m due to increase the surface water temperature and air temperature as the season is transformed winter into summer. It may influence the distribution of walleye pollock in the Central Bering Sea by intensity of the cold water mass.

Salinity was fluctuated from 31.93 to 34.75 PSU in the survey area. It was presented about 33.2 PSU at the 20~120 m layer and increased as deeper as depth at over 120 m layer (Fig. 2).

3) Catch and CPUE

A total of 7 hauls were made in the cruise; six hauls in the Bogoslof island area, one haul in the Continental Shelf area. The total catch and Catch Per Unit Effort (CPUE ; kg/hour) of walleye pollock was 14,789.4 kg and 5,153.1 kg. The CPUE of pollock was larger than 4,000 kg/hour in Bogoslof island area except the haul station 3 was conducted to identify the fish species of non-pollock echo sign. The highest CPUE of pollock was obtained from haul station 4 (Table 2).

4) Length and weight of pollock

Fork length compositions of walleye pollock were described in Figure 3. Two modes of 34 cm and 42 cm in FL were shown in the east of Bogoslof Island area (east of W167°), one mode of 55 cm in the west of Bogoslof Island area (west of W167°), and one mode of 35 cm in the Continental Shelf area. The large sized group, over 55 cm, were distributed in the west of Bogoslof Island area in winter. The mean fork lengths of female and male were 56.6 cm and 54.2 cm in the west of Bogoslof Island area, 40.6 cm and 39.4 cm in the east of Bogoslof Island area, and 35.7 cm and 34.8 cm in the Continental Shelf area.

The patterns of weight compositions of pollock were similar with the fork length compositions (Fig. 4). The mean body weights of female and male were 1,526 g and 1,192 g in the west of Bogoslof Island area. In the Continental Shelf area it was smaller than that in the Bogoslof Island area.

Relationships between fork length and body weight by area were expressed as follows (Fig. 5);

Female of east Bogoslof Island area : $BW = 0.0111 \times FL^{2.8714}$ (r^2=0.93)
Male of east Bogoslof Island area : $BW = 0.0067 \times FL^{3.0052}$ (r^2=0.97)
Female of west Bogoslof Island area : $BW = 0.0239 \times FL^{2.7326}$ (r^2=0.71)

Male of west Bogoslof Island area : $BW = 0.0128 \times FL^{2.9615}$ (r^2=0.65)
Female of Continental Shelf area : $BW = 0.0133 \times FL^{2.7934}$ (r^2=0.92)
Male of Continental Shelf area : $BW = 0.0043 \times FL^{3.1076}$ (r^2=0.82)

where, FL is fork length in cm and BW is body weight in g.

5) Sex ratio and maturity of pollock

Data from 6 hauls showed that female percentages by area was 53.8 % in the east of Bogoslof Island area, 59.6% in the west of Bogoslof Island area, and 53.5 % in the Continental shelf area. Haul station 4, located at the edge of high-density aggregation of spawning pollock, had a percentage of female pollock that was 35.9%.

Maturity composition data revealed differences among three area (Fig. 6). Maturity for females were 90.7% immature/developing/pre-spawning in the east of Bogoslof Island area, 99.4% pre-spawning/spawning/post-spawning in the west of Bogoslof Island area, and 98.5% immature/developing in the Continental shelf area. Maturity for males were very similar to females. In the west of Bogoslof Island area, maturity for females were 46.8% pre-spawning, whereas males were 56.2% post-spawning.

6) S_a distribution and biomass estimation

Density (S_a) distribution of pollock was presented in Figure 7. Higher density was observed the inshore of the survey area from W164° 55′ to W166° 5′ , the east of Umnak Island, and an area between Umnak Island and Islands of Four Mountains. The highest density of the pollock echo sign was distributed in the area between Umnak Island and Islands of Four Mountains. Vertical distribution of pollock echo sign was dense at 300~600 m depth layer in the area of over 200 m bottom depth, at 80~150 m depth layer in the area of below 200 m bottom depth. Pollock echosigns were never appeared in the Central Bering Sea and middle area between Bogoslof area and Central Bering Sea except the Continental shelf area.

The results of pollock biomass was shown in Table 3. Biomass of pollock in the whole survey areas was 487 thousand tons; 455 thousand tons in the Bogoslof Island area, 32 thousand tons in the Continental Shelf area. Inside the area 518/CBS convention area, pollock biomass was 257 thousand tons and pollock numbered 192 million.

Table 1. The results from the standard sphere calibration conducted in the near Attu Island in February 18~19, 2000 for echo integration and midwater trawl survey by the *R/V Tamgu 1* in the Bering Sea

CALIBRATION REPORT EK500

VESSEL : R/V TAMGU 1 DATE : Feb. 19, 2000
PLACE : Near Attu Island BOTTOM DEPTH : 43.8 M
SST : 2.1 ℃. SALINITY : 33.18 PSU. SOUND VELOCITY: 1,460 M/SEC

FREQUENCY	38	120	kH
ABSORPTION COEFFICIENT	10 dB	38 dB	dB/km
TRANSDUCER	ES38B	ES120-7	Sensor type
ANGLE SENSITIVITY	21.9	21.0	
PING INTERVAL	1.0	1.0	sec
TRANSMIT POWER	Normal	Normal	
MAX. POWER	2000	1000	W
PULSE LENGTH	Medium	Medium	
BANDWIDTH	Wide	Wide	
TS OF SPHERE	-33.6	-40.4	dB
DEFAULT TS TRANSDUCER GAIN	26.5	26.5	dB
MEASURED TS	-32.1	-42.0	dB
ADJUSTED TS TRANSDUCER GAIN	27.21	25.32	dB
CALIBRATED TS	-33.6	-40.4	dB
DEFAULT EQUIVALENT 2-Way Beam Angle	-20.6	-20.8	dB
Transducer Data 2-Way Beam Angle	-20.6	-20.8	dB
Depth to Sphere	28.2	25.3	m
Default Sv Transducer Gain	26.5	26.5	dB
Theoretical Sa	2,721	721	m^2/nm^2
Measured Sa	3,079	439	
Calibrated Sv Transducer Gain	26.79	24.90	dB
Calibrated Sa	≒2,747	≒712	m^2/nm^2
Default -3dB Beamwidth Fore-Aft*	7.1	7.1	degrees
Default -3dB Beamwidth Athwart*	7.1	7.1	degrees
Calibrated -3dB Beamwidth Fore-Aft*	7.01	7.40	degrees
Calibrated -3dB Beamwidth Athwart*	6.79	7.62	degrees
Fore - Aft. Offset*	-0.11	-0.90	degrees
Athwartship Offset*	-0.04	-0.27	degrees

Table 2. The summary of midwater trawl results for walleye pollock form the survey of *R/V Tamgu 1* in the Bering Sea during March 2000

Haul No.	Date (LST)	Haul				Catch			
						Total		Pollock	
		Position	Duration time (min.)	Vessel speed (knots)	Depth (m)	Catch (kg)	CPUE (kg/hr)	Catch (kg)	CPUE (kg/hr)
1	Mar. 8	N54° 41.8′ W166° 05.4′	45	4.4	170	3,034.0	4,045.3	3,034.0	4,045.3
2	Mar. 10	N53° 33.9′ W167° 42.4′	5	4.0	400	3,778.5	45,360.1	3,628.0	43,710.8
3	Mar. 11	N53° 45.3′ W168° 32.1′	35	4.2	300	1.4	2.4	-	-
4	Mar. 12	N53° 05.8′ W169° 23.6′	1	3.5	430	1,647.6	98,658.7	1,640.0	98,203.6
5	Mar. 13	N53° 12,.1′ W169° 32.9′	5	3.7	420	757.9	9,098.4	746.4	8,960.4
6	Mar. 14	N54° 26.5′ W165° 36.5′	41	4.0	100	4,059.0	5,940.3	4,059.0	5,940.3
7	Mar. 17	N56° 48.3′ W172° 40.7′	40	3.9	130	1,682.0	2,521.7	1,682.0	2,521.7
Total			172			14,960.4	5,212.7	14,789.4	5,153.1

Table 3. Estimated biomass of walleye pollock from the survey of *R/V Tamgu 1* in the Bering Sea during March in 2000

Item	Bogoslof area	CBS 518 area	Middle areas (including C. Shelf)
Area swept ($n.mile^2$)	1,119	699	56,002
Transect length ($n.mile^2$)	10,755	6,555	31,350
Mean Sa (m^2 /$n.mile^2$)	417	371	8
Population ($x10^6$)	563	192	108
Biomass (thousand tons)	455	257	32

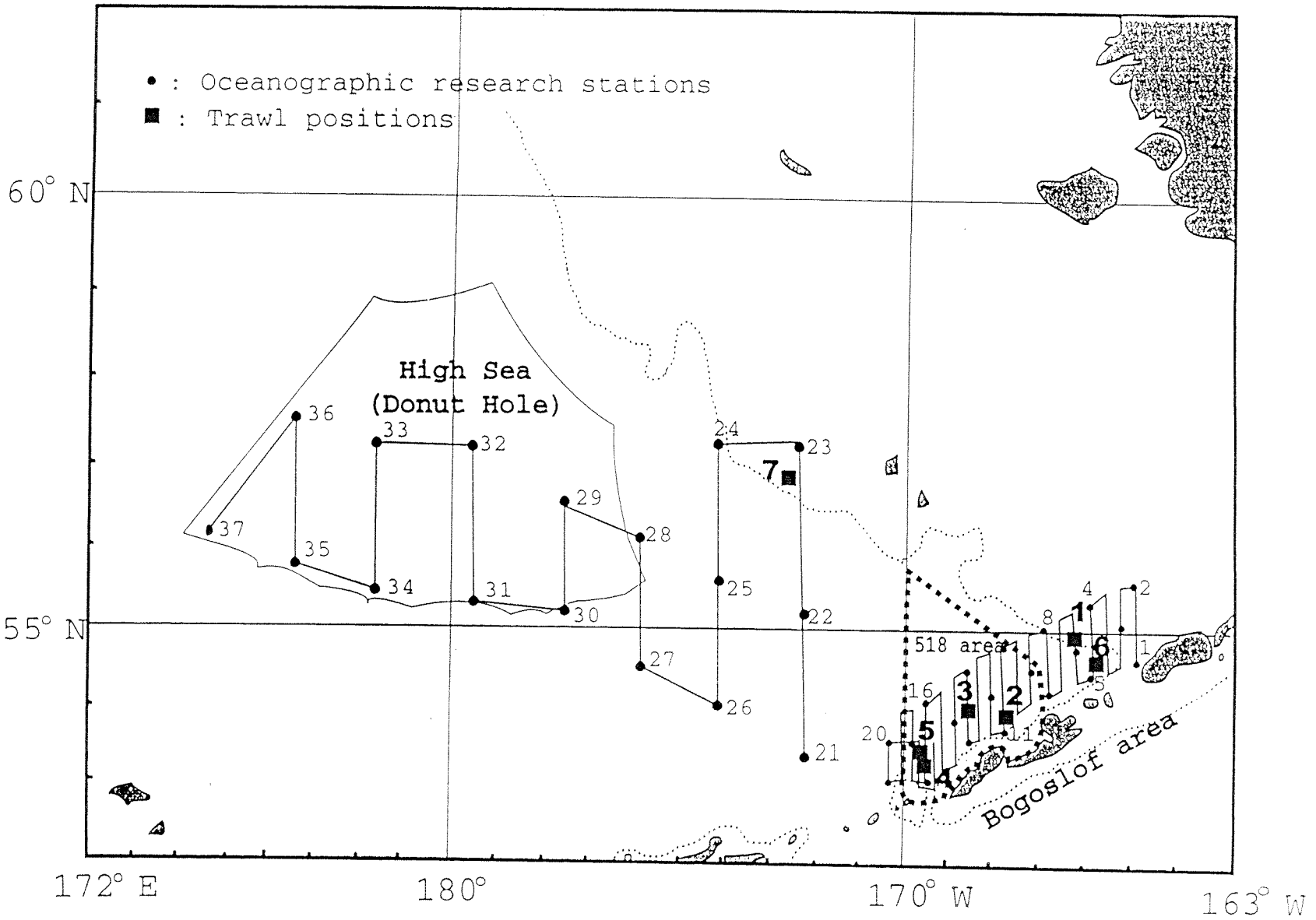


Fig. 1. Trackline and oceanographic research stations for the Echo Integration and Midwater trawl survey on the Bering Sea walleye pollock by *R/V Tamgu 1* during March in 2000.

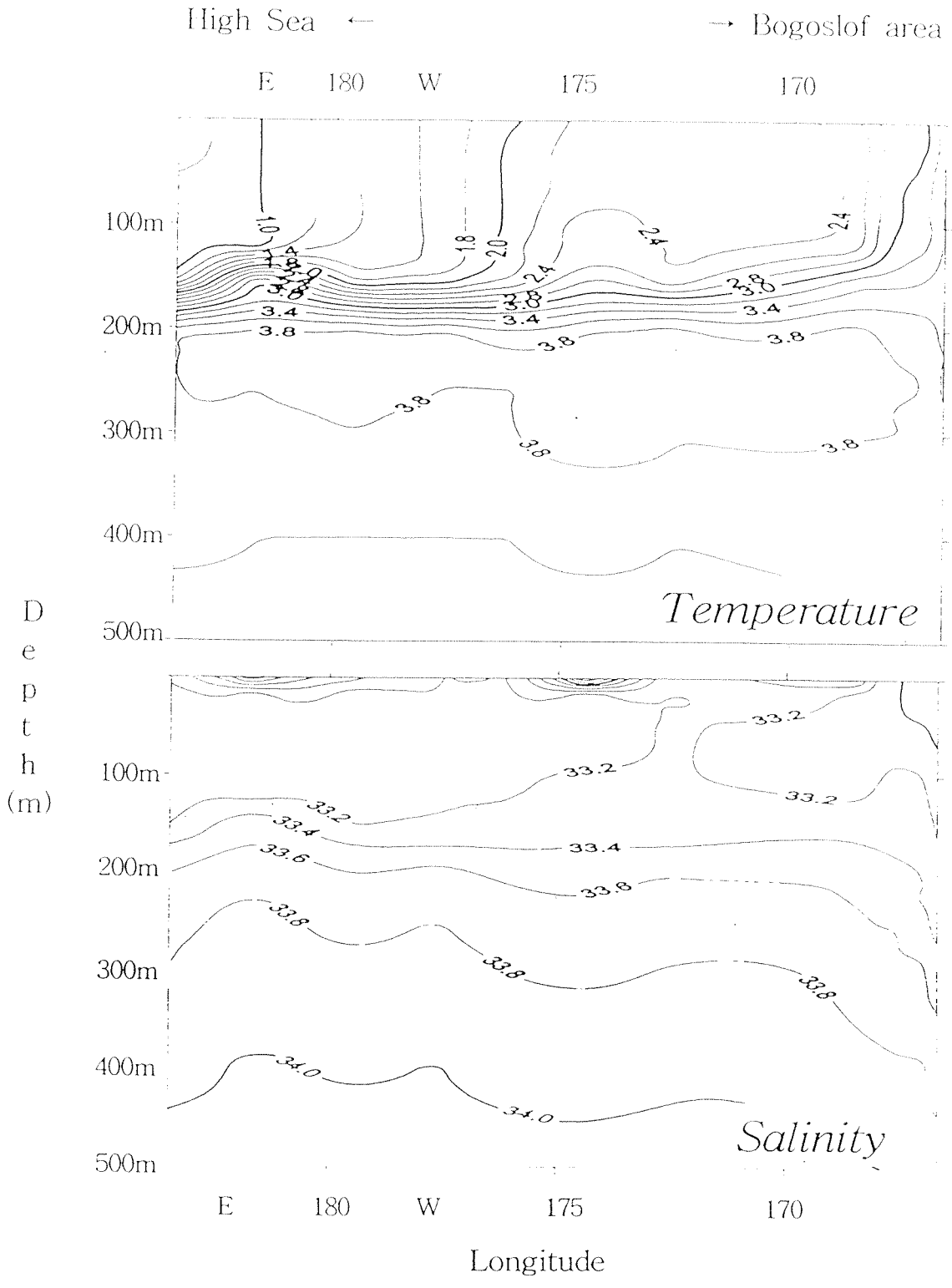


Fig. 2. Vertical distribution of Water temperature and Salinity in the Bering Sea during March in 2000.

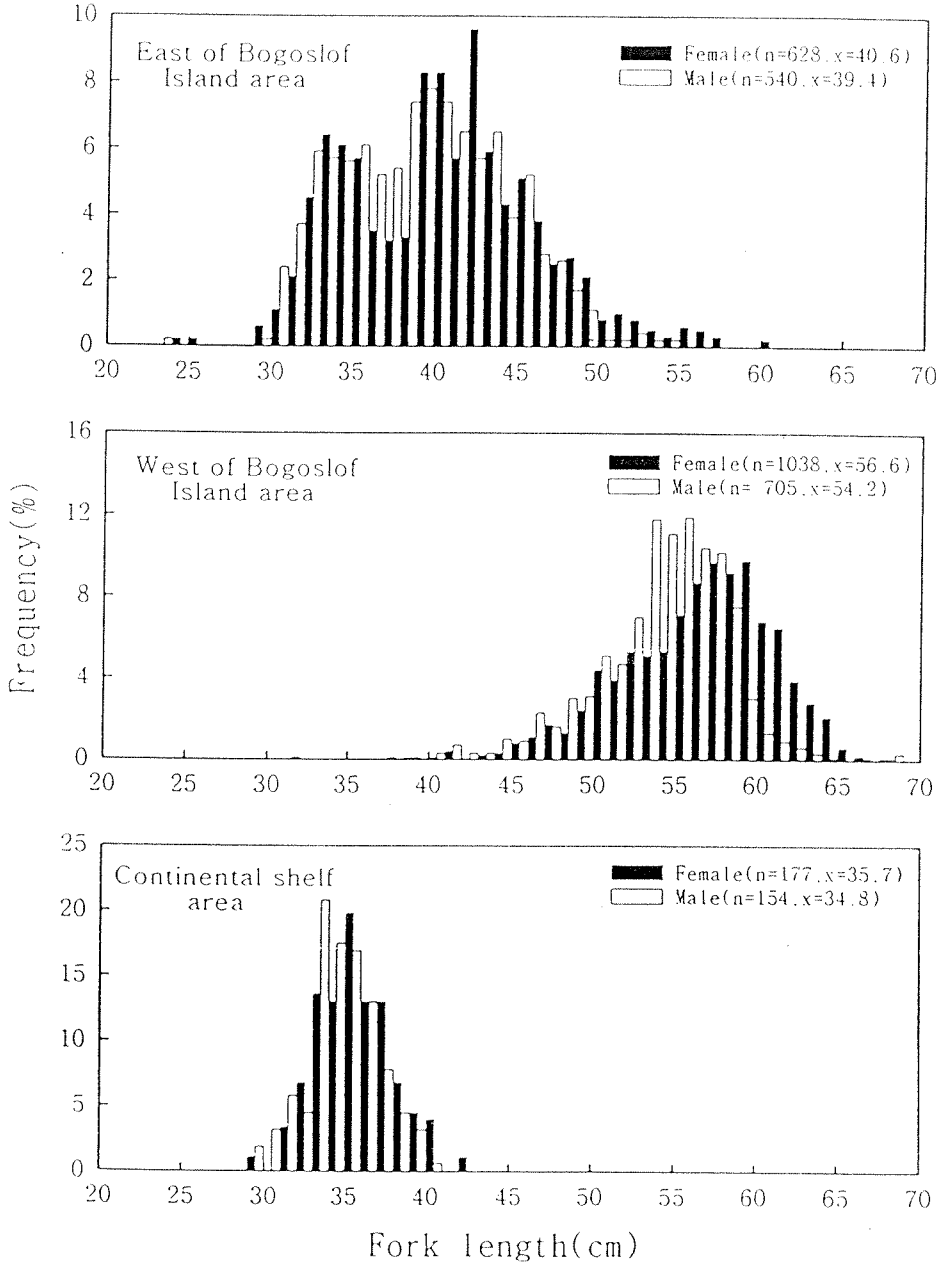


Fig. 3. Length composition of walleye pollock caught by midwater trawl in the Bering Sea during March in 2000.

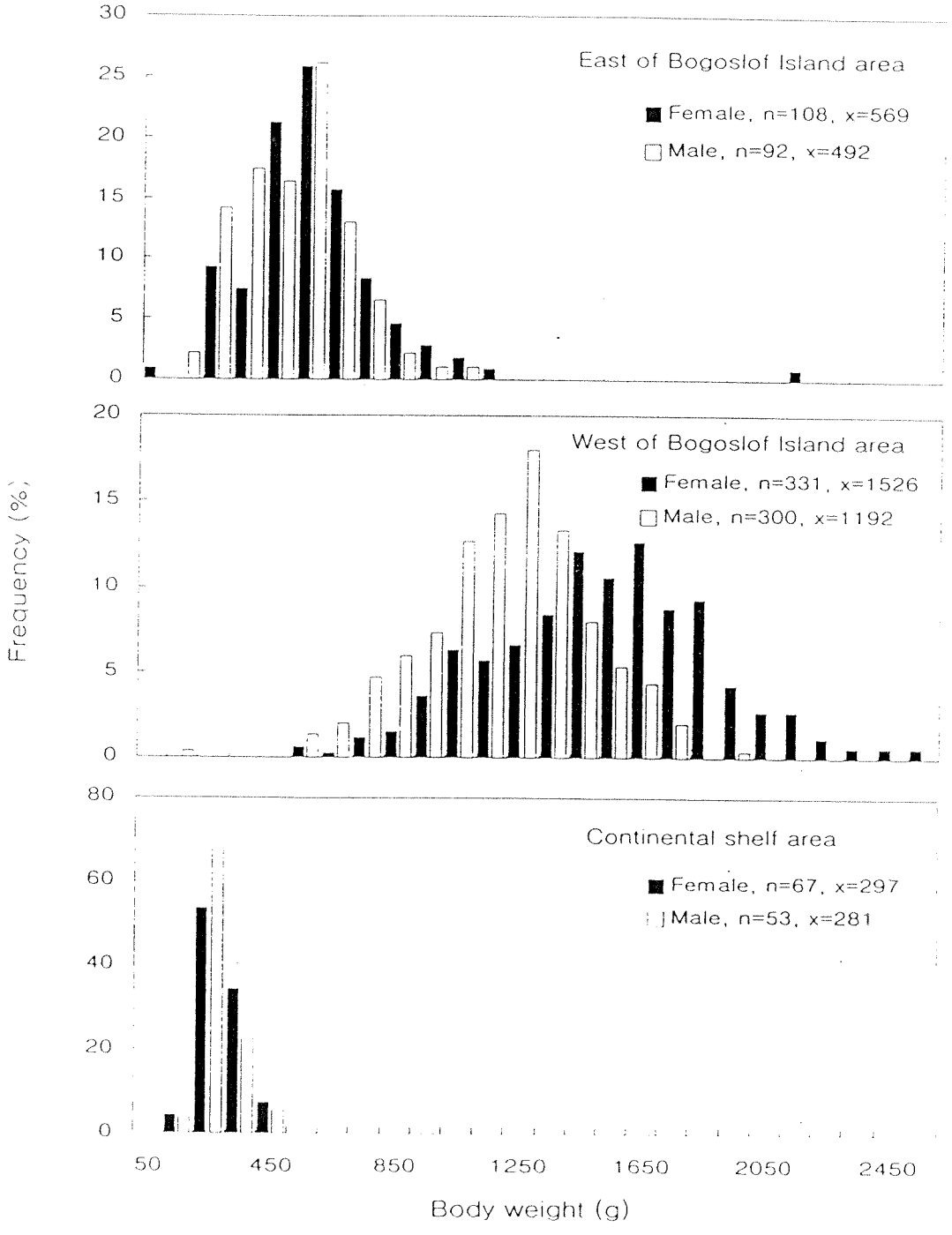


Fig. 4. Body weight composition of walleye pollock caught by midwater trawl in the Bering Sea during March in 2000.

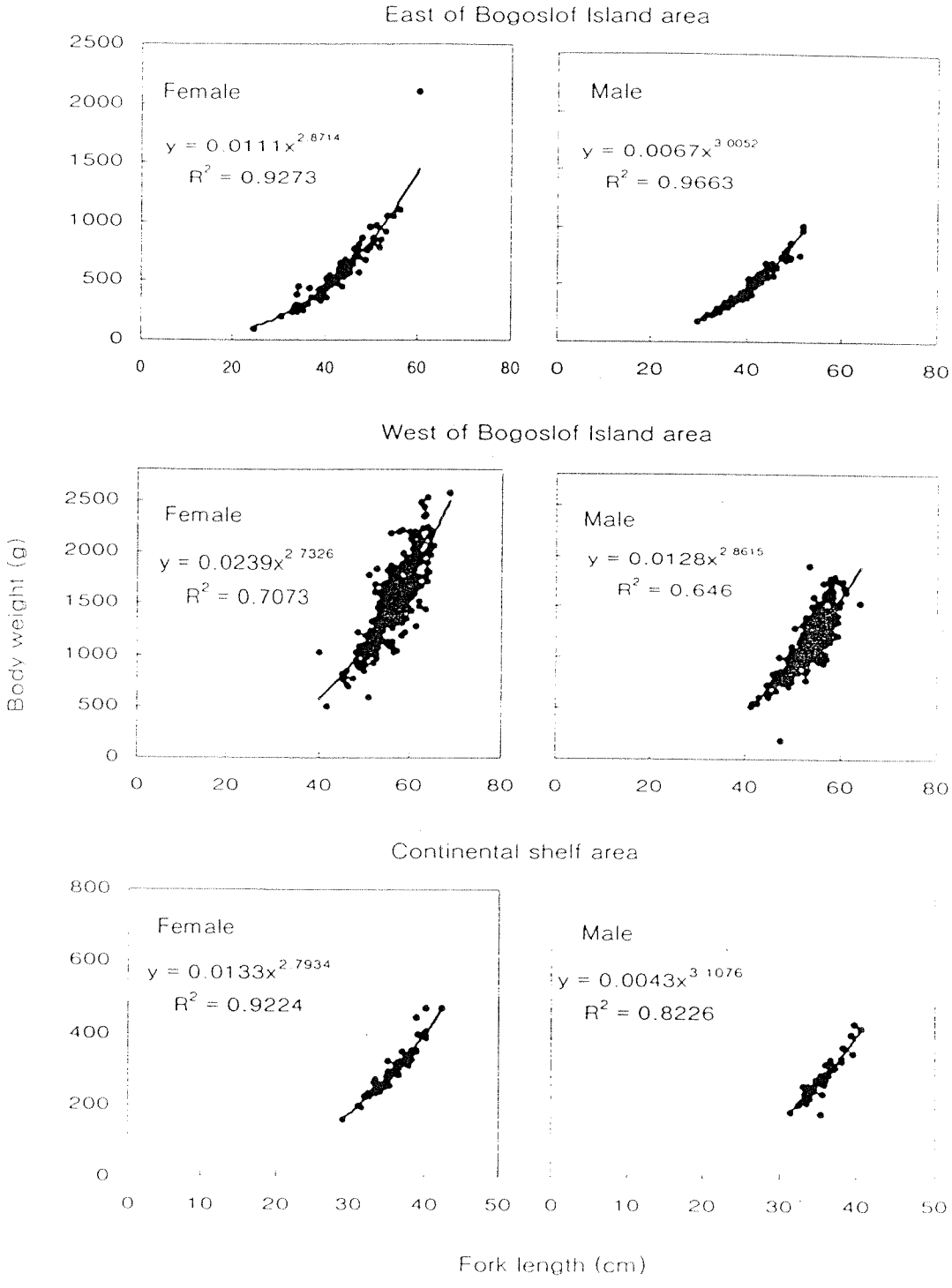


Fig. 5. Relationship between fork length and body weight of walleye pollock caught by midwater trawl in the Bering Sea during March in 2000.

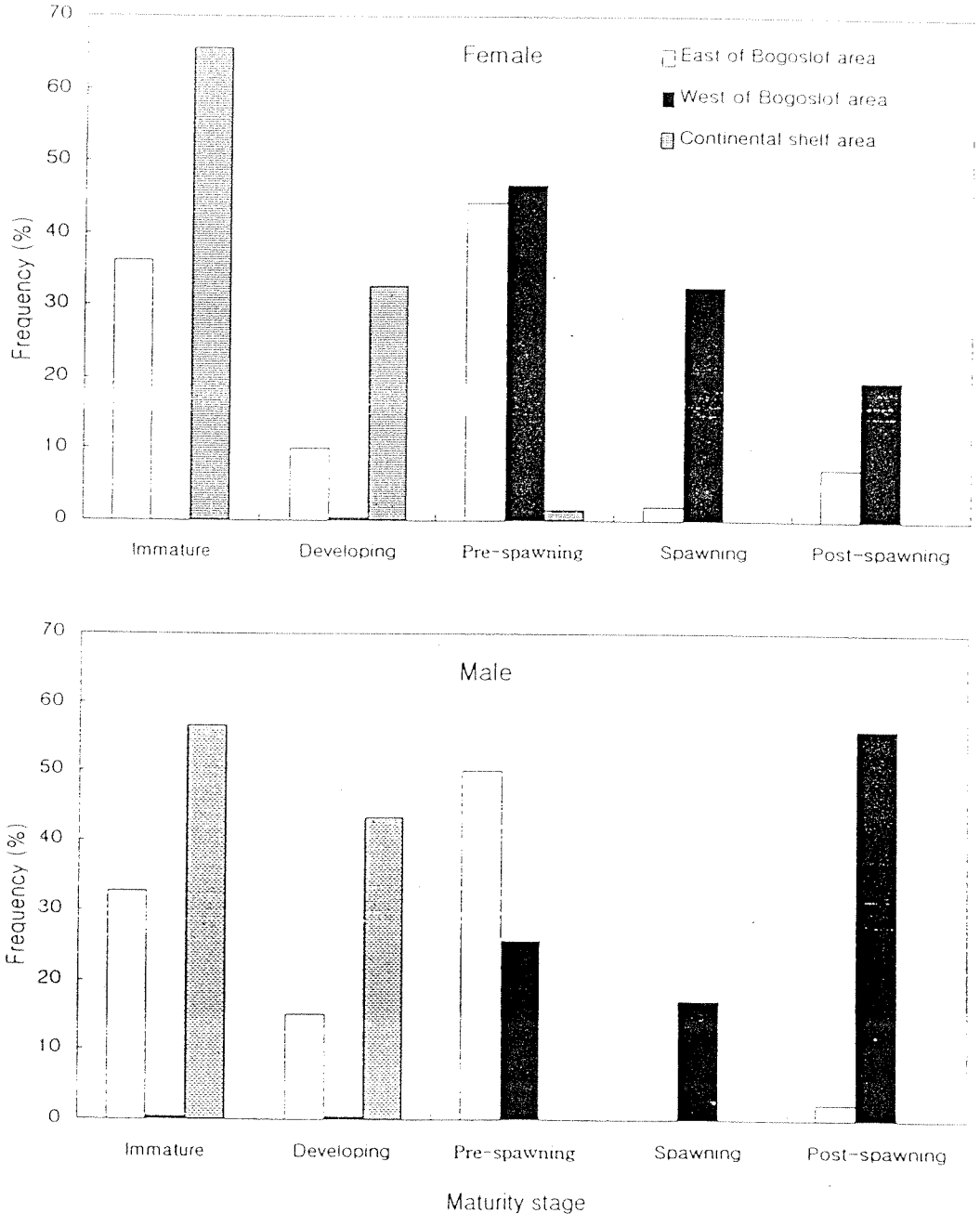


Fig. 6. Maturity stages of pollock observed from the survey of *R/V Tamgu 1* in the Bering Sea during March in 2000.

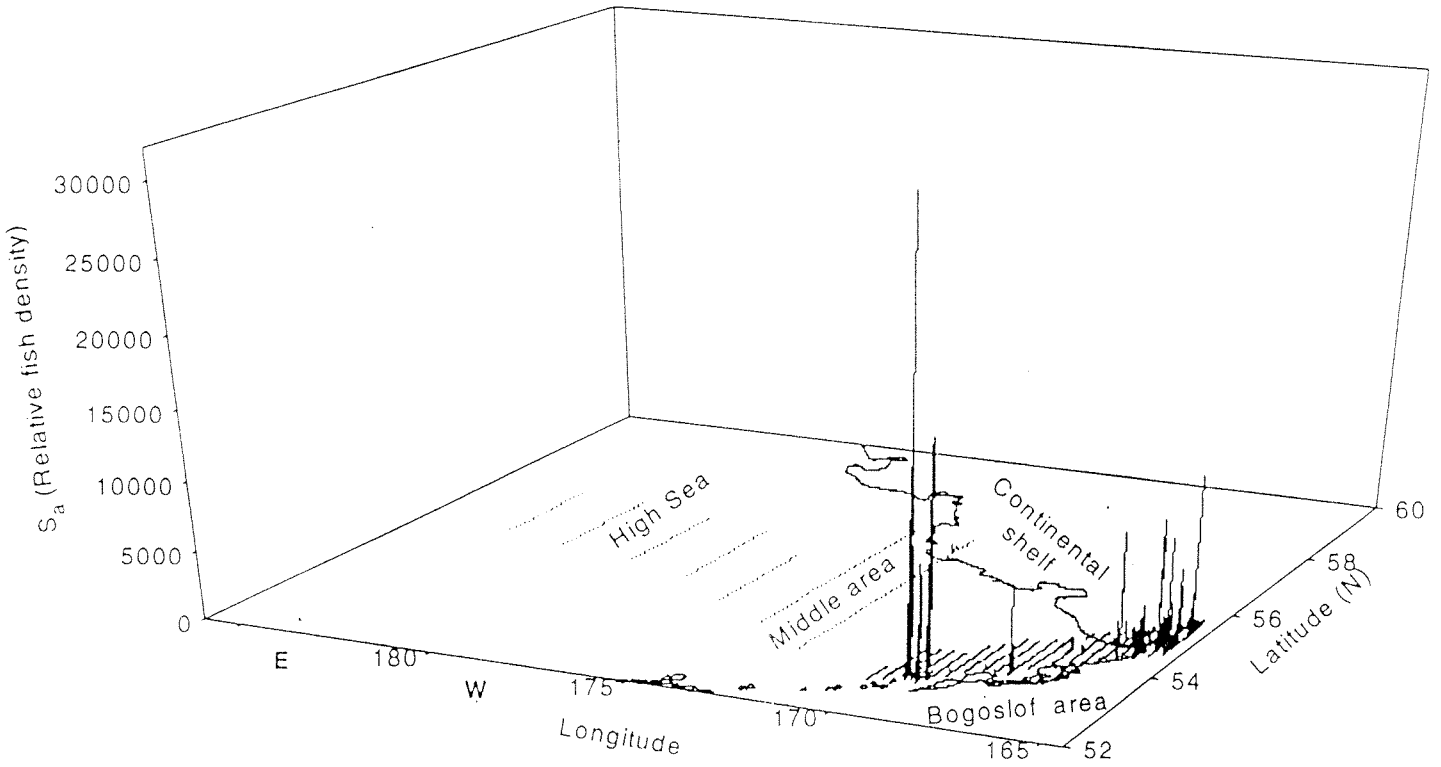


Fig. 7. Relative density of walleye pollock along trackline from the echo integration and midwater trawl survey by R/V Tamgu 1 in the Bering Sea during March in 2000.

Excerpt From: **CENTRAL BERI NG SEA POLLOCK WORKSHOP**
17-21 JULY 2000
SEATTLE, WASHINGTON

3. Effects of the moratorium and its continuation

Dr. SungKwon Soh (Korea) chaired this session. Dr. Soh reviewed the history of fishing and the fishing moratorium in the CBS. He reminded participants that there has been no directed commercial pollock fishing in the CBS since 1993, but despite this action, pollock stocks have still not recovered. He called on participants to provide their economic and ecological or natural resource perspectives on the effects of the moratorium on their countries.

Mr. Ichiro Kanto presented Japan's viewpoints on this issue (Attachment 10). Japan classified the effects of the moratorium into biological, economic, and social categories. Biological effects include the fact that the moratorium has not produced an improvement in stock conditions. Japanese fishermen and persons in related industries expected to see the stocks begin to recover after 4-5 years of the moratorium. Consequently, Japan's fishing industry has been economically damaged. Socially, Japan's fishing and related industries have begun to lose their trust in the existing framework of the Convention.

The United States delegation reminded participants that it has taken some fisheries many years to recover. The California sardine fishery has taken 70 years to recover, and it is still at a much lower level than it was originally.

Dr. Low reviewed the effects of the moratorium on the United States. He reiterated that U.S. fishermen have foregone fishing on the Bogoslof Island pollock spawning concentrations for many years, even though the area is within U.S. waters. U.S. fishermen have also stopped pollock fishing in the Aleutian Basin area because of potential impacts on marine mammal populations. He said that, in economic and conservation terms, the United States may have suffered more than any of the Parties.

Dr. Radchenko (Russia) said that Russian fishermen also suffered large pollock harvest losses from the time of the moratorium (mostly due to overfishing in the CBS area)--approximately 600,000 t annually. Russia has made a significant effort to manage pollock stocks in the WBS in such a way as to support the recovery of these stocks. He mentioned a number of management measures Russia has taken, such as the use of pelagic trawls with mesh size in the codend no less than 110 mm, the introduction of square mesh before the codends of trawls to allow juveniles to escape, increasing the minimum size of pollock in the catch from 34 cm to 37 cm in 2001, prohibition of fisheries in areas of high juvenile concentrations, and prohibition on bottom trawling. The Russian Government also plans to prohibit directed pollock fishing in the WBS westward of 178°E in 2001. The pollock quota for the small boat groundfish fishery in the coastal zone will be capped at 30,000 t.

Mr. Tae-Won Kim (Korea) presented a Korean industry perspective on the moratorium (Attachment 11). Bering Sea fishing industries in Korea suffered tremendous economic losses when they could no longer fish in the CBS. Since 1992, the number of fishing companies and fishing vessels has been reduced to 15 and 32, respectively, from a total of 20 companies and 46 vessels prior to moratorium. Mr. Kim said that from 1993 to 1998, 10 fishing companies have

been dishonored or bankrupted due to the moratorium. Other results of the moratorium include a greater dependence on foreign imports to meet domestic demand, a decrease in price of domestically produced pollock due to the cheaper imports, and loss of a major source of protein for the Korean people.

There was some discussion over whether the hardships suffered by Asian fishing companies could be attributed solely to the decline of the CBS pollock fishery and the moratorium. A number of other factors had significant impacts on the economic situation in Asia, such as the stock market crash in Asia and exclusion of foreign fishing vessels from the U.S. and Russian zones.

Dr. Janusz reported that Polish companies suffered the same hardships as the other countries. Approximately 30 Polish fishing vessels were displaced from the CBS when the pollock fishery failed.

Dr. Kotenev (Russia) commented that the social consequences of the moratorium are difficult to separate from other problems. Approximately 78 percent of Russian fishing companies have a negative balance. Although the Russian Government has been supporting these companies, in the next few years a decision will be made to allow them to go bankrupt if they do not show a positive balance. Dr. Kotenev also noted a trend in migration of the population away from coastal areas, largely due to the decrease in pollock fishing.

Participants agreed that all Parties suffered economically from the moratorium on fishing and that a shared goal is to resume pollock fishing in the CBS. They also agreed that the moratorium has not been successful in restoring pollock stocks in the CBS and that other factors must also be affecting the recovery. These factors could include predator-prey interactions and oceanographic variability.

Dr. Low (United States) observed that for a recovery to take place, three things are needed: (1) adequate spawning biomass, (2) good oceanographic conditions, and (3) a reappearance of the pelagic pollock type. Unfortunately, neither the optimum spawning biomass nor the parameters for "good conditions" are known. The spawning biomass responsible for the strong 1978 year class was relatively small--perhaps 2 million t. By this standard, there would appear to be an adequate spawning biomass for pollock recovery when environmental conditions are favorable.

Several delegations pointed out that when the Parties consider rebuilding the AB pollock biomass, they must also consider the management of pollock stocks surrounding the Basin. Intensive fishing in areas adjacent to the AB may impact pollock recovery. The U.S. delegation reminded the participants that U.S. EEZ pollock stocks are dominant stocks and little is known about how much they contribute to the AB area. U.S. fishery scientists believe there is a tendency for the stocks to remain in "good condition" areas. They do not believe that the CBS is such an area; it is not a preferred feeding area for pollock. Pollock may only use the CBS as a migration route or as a "spillover" area from the EBS shelf. They don't believe that the "spillover" effect is a common occurrence.

Attachment 12

CBSPC meeting in Shanghai Nov.,2000

Japanese proposal for the ABC of 2001 in the Convention area

Fisheries Agency of Japan

1. Japan tried to calculate the ABC in the Convention area for the year 2001 in case of which the pollock biomass in the Specific Area is less than one million tons.

2. The estimated values of ABC in the Specific area are as follows:

$$3{,}768 \text{ t} \leq ABC_{2001} \leq 33{,}150 \text{ t}$$

3. Base of estimation of ABC

Operational definition: Summary of the Bering Sea and Aleutian Islands Groundfish Fishery Management Plan 1997, published by North Pacific Fishery Management Council.

ABC estimates in the Specific Area were calculated by using Tier 3 and Tier 5.

Tier 3

(1) With considering the lowest biomass estimate in 2000, we do not expect the newly recruitment for the year 2001.

(2) Natural mortality rate of M=0.2 gives a projected biomass of B_{2001}=221,000 t for 2001.

(3) The values of B40%, and F40% were estimated 2,000,000 t. and 0.27, respectively.

$$F_{ABC}=F_{40\%} \times (B_{2001}/B_{40\%} - 0.05)/(1-0.05) = 0.017$$

(4) ABC for 2001 in the Specific area is

$$ABC_{2001}=B_{2001} \times (1 - e^{0.017}) = 3{,}768$$

Tier 5

(1) ABC for 2001 in the Specific area is

$$ABC_{2001}=B_{2001} \times M \times 0.75 = 33{,}150$$

4. Estimation of ABC in the Convention area

We tried to calculate the ABC in the Convention area taking into consideration the provisions of the Annex part I(b) of the Convention that the pollock biomass for the Specific Area shall be deemed to represent 60% of the Aleutian Basin biomass.

(1) ABC_{2001} in the Convention area from Tier 3:

$$ABC_{2001} = 3{,}768 / 0.6 = 6{,}279 \text{ t}$$

(2) ABC_{2001} in the Convention area from Tier 5:

$$ABC_{2001} = 33150 / 0.6 = 55{,}250 \text{ t}$$

Precautionary approach as New AHL (KOREA)

All Parties agree that the moratorium has not been successful in restoring pollock stocks at a level of the resumption of fishing operation in the Central Bering Sea. According to the Convention, the level of the resumption of the pollock fishing is 1.67 million tons. The estimated biomass of pollock stocks in 1995 was about 1.70 million tons. However, it was a temporary phenomenon due to a "spillover" area from the EBS shelf and other reasons. During the period of 8 years of the fishing moratorium except for 1995, the pollock biomass has never been closed to the level of 1.67 million tons.

As we are aware, the Convention was established by politics in a negotiation manner of member parties and 1.67 million tons threshold was not based on scientific data. Since then, our fishermen have been suffering economically from a cessation of commercial fishing. At those days, fishermen believed that the pollock fishing will be resumed and the moratorium will not be long. They don't care what the Convention said. Fishermen do care for only their shared goal of resuming fishing operation as soon as possible.

Clearly, there ~~is~~ is not any sign to indicate the recovery of pollock stocks (not even in the near future) It is difficult to predict when the stock status of pollock is restoring at a reasonable level in a scientific manner because the current criteria of 1.67 million tons is established in a non-scientific manner. Anyway, it will takes many years to recover pollock stocks. In this regard, member Parties should take a step to compromise such ~~an~~ reasonable criteria which will give fishermen a hope for the re-opening of the pollock fishing.

Korea would like to emphasise a need for implementing the Precautionary Approach, in particular for the sustainability of pollock stocks. The Precautionary Approach is a relatively new concept in fisheries management. However, the Precautionary Approach is a clue to reduce uncertainty in stock assessment we faced such as a biomass estimate, an appropriate fishing mortality rate, the migration route and so on. It also contributes to more precisely quantify biological information to guide our management decisions.

Korea reiterates the importance of the establishment of a cautionary AHL on the basis of the current biomass. A cautionary AHL is possibly too small to operate the pollock fishery but it gives fishermen a hope for the resumption of fishing activity someday ~~as soon as possible~~. Korean fishing companies are willing to install square mesh with ~~less~~ greater than 110 mm codend in a trawl to protect juveniles when a cautionary AHL is established.

Russian Delegation Precautionary Approach to Conservation and Management of Pollock in the CBS

In accordance with the New York 1995 UN Agreement, States are widely applying the precautionary approach to the conservation, management, and utilization of straddling stocks and highly migratory species in order to protect living marine resources and to conserve the marine environment (Article 6.1 of the UN Agreement).

> *"Two types of precautionary reference points should be used: conservation, or limit, reference points and management, or target, reference points. Limit reference points set boundaries which are intended to constrain harvesting within safe biological limits within which the stocks can produce maximum sustainable yield. Target reference points are intended to meet management objectives."* (Annex 11.2)

Does the Central Bering Sea Pollock Convention (CBSPC) correspond to these provision? Comparison of catches in the CBS and the biomass in the Bogoslof areas (see table below) indicate that the border point criteria of the Convention (1.67 mmt) was established in full accordance with the New York 1995 UN Agreement. When the Bogoslof biomass is 1 mmt, the Aleutian Basin biomass reaches 1.67 mmt and the catch should be at the level of 130,000 mt. This fully corresponds to the past situation in the CBS in the 1980's and early 1990's as shown in the table below.

Year	Biomass in Bogoslof Region (million metric tons)	Catch in the CBS (million metric tons)
1988	2.4	1.40
1989	2.1	1.45
1990		0.92
1991	1.3	0.29
1992	0.88	0.01
1993	0.68	0.002

(Table reproduced from page 11 of CBS Workshop Report July 2000)

Provisions of the CBSPC allowing for trial fishing (2 vessels from each Party), which enables to monitor the stock level and fishing conditions in the CBS, also correspond to the precautionary approach principles.

Establishment of an allowable biological catch (ABC) or AHL when the stock level is lower than 1.67 mmt contradicts the New York 1995 UN Agreement and does not take into account scientific data both on the state of the pollock stocks and the state of marine ecosystems of the Bering Sea in recent years.

Outline of cruise plan for echo integration and mid-water trawl survey on pelagic pollock in the Bering Sea (Tentative Plan)

Fisheries Agency of Japan

1. Cruise description and objectives

Hokkaido National Fisheries Research Institute (HNF) will conduct an echo integration mid-water trawl survey of walleye pollock (*Theragra chalcogramma*) in the southeastern Aleutian Basin and eastern Bering Sea shelf area aboard the R/V *Kaiyo Maru* of Fisheries Agency of Japan. The primary objectives of the survey are:

1) To determine the geographical distributions of the walleye pollock in the southeastern Aleutian basin area and in the southern part of the eastern Bering Sea shelf.
2) To collect echo integration data to determine the biomass of walleye pollock in the area.
3) To collect biological information on walleye pollock in the basin and shelf area.
4) To collect the information on the oceanographic and biological environments during the winter in the area.

This survey will be a cooperative survey between HNF and Alaska Fisheries Science Center (AFSC). Detailed survey plan will be discussed between the institutions and all data and information will be exchanged freely among the different agencies. The survey results will be used to determine biomass in the Specific Area that is defined in the Annex Part1-b in the Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea.

2. Research Vessel

Name:	*Kaiyo Maru* (Fisheries Agency of Japan, Tokyo)
Type:	Stern trawler
Length:	93.01 meters
Tonnage:	2,630 tons
Hull color:	White

Radio call sign: JNZL

3. Crew and researchers on board

1) Crew:

2) Japanese Researchers

Preliminary survey

Akira Nishimura, Hokkaido National Fisheries Research Institute (HNF)
Takashi Yanagimoto, HNF
Yoshimi Takao, NRIFE
Atsushi Nanami, NRIFE

Main survey

Japanese researchers
Akira Nishimura, HNF, (Chief scientist; biology)
Takashi Yanagimoto, HNF, (Acoustic and oceanography)
Undecided

4 Assistant researchers	Undecided
Foreign researchers	Undecided

4. Vessel Itinerary (Tentative)

Preliminary survey (in the adjacent waters of Tokyo)

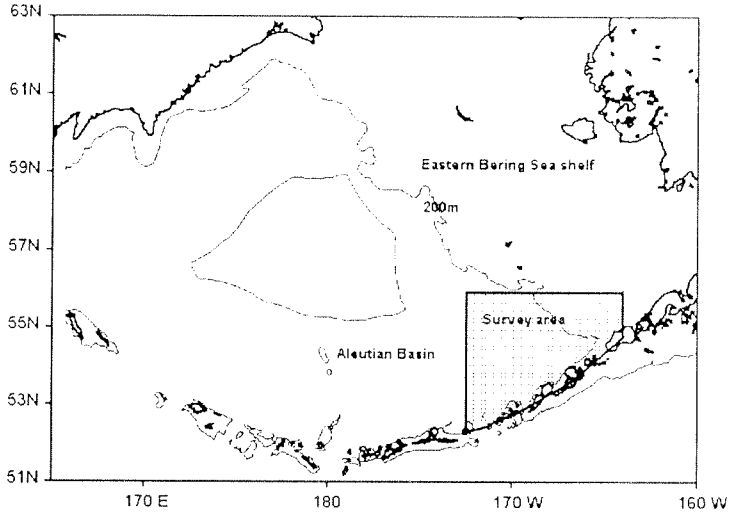
Dec. 15, 2001	leave Tokyo
Dec. 16-20	Acoustic system calibration
Dec. 21	arrive Tokyo

Main survey (in the Bering Sea)

Feb. 13, 2002	leave Tokyo
Feb. 16-19	Kushiro
Feb. 19	Leave Kushiro
Feb. 27-28	System calibration in the Captain's Bay
Mar. 1-12	Leg 1 survey
Mar. 19	arrive Kushiro
Mar. 22	leave Kushiro
Mar. 25	Arrive Tokyo

5. Research area

Southeastern part of the Aleutian Basin. All of the survey areas are included in the U.S. EEZ. Acoustic system calibration and pollock sampling by hook and line will be carried out in the Captain's Bay of Unalaska Island, inner 12-miles territorial limit seaward. We also plan to conduct our survey in the Specific Area (Bogoslof area) that is defined by the Annex Part 1 of the Convention on the Conservation and Management of Pollock Resources in the Central Bering Sea. To get the accurate biomass estimates of walleye pollock in the Specific Area, it is necessary to conduct a survey within 3-mile of the coast including trawling.



6. Research items

1) Preliminary survey (Dec. 15-21, 2001)

- Check of the acoustic systems
- Calibration of transmitter and receiver system
- Noise measurements
- Determination of standard parameters for acoustic systems
- Calibration between two systems (KFC3000 and EK500)

2)Main survey (Feb. 13-Mar. 25, 2002)

① Acoustic survey

- Calibration of acoustic system
- Target strength estimation by split-beam method
- Abundance estimation of walleye pollock by echo integration

- Inter-system calibration between KFC3000 and EK500
- Analysis of relationship between behavior of walleye pollock and echo strength

②Midwater trawl survey

- Weight and number measurement of catch by species
- Body length, weight measurement and collect biological data from gonad, otolith, stomach, and DNA sample.
- Collection of frozen samples of walleye pollock.

② Biological operation

- At selected stations, adult pollock will be collected by hook and line.
- Double NORPAC nets (0.154 and 0.333 mm mesh size) sampling
- Continuous counting of zooplankton and monitoring of surface environment by EPCS (Electric Plankton Counting System)

④Oceanographic observation

- CTD casts and water sampling will be conducted at selected stations.
- Vertical profile of water temperature will be observed by XCTD system.
- Collection of satellite data (NOAA HRPT)

7. **Other measurements and observation for weather and sea conditions will be recorded.**

Comprehensive Survey Planning for Central Bering Sea Pollock Resource Assessments

At the 17-21 July 2000 Central Bering Sea Workshop, the Parties agreed to from a subgroup consisting of the organizers of the Bering Sea Pollock Workshop (Loh-Lee Low, Boris Kotenov, Vladimir Radchenko, Ichiri Kanto, Tokimasa Kobayashi, Chong-Guk Park/SungKwon Soh, Jerzy Janusz, and Liu Xiaobing) to develop a comprehensive plan to survey the central Bering Sea pollock resources. This subgroup will be charged with developing a research plan to address the following two questions:

(1) What are the pollock spawning locations in the Aleutian Basin?, and
(2) What are the migration patterns and geographical distribution of pollock stocks?

The use of both industry (commercial fishing vessels) and government resources would be considered in the development of this plan. These resources would be used to comprehensively survey the Aleutian Basin. During the process of conducting such a survey, emphasis would be placed on the collection of both data that would provide information on biomass and distribution, as well as biological samples, such as otoliths, scales, and other measures that would help the Parties better define the biological characteristics of the stocks.

The goal of the subgroup is to have a draft research plan available for the introduction and discussion at the 4th Annual Conference in Shanghai, China, in November 2000. Dr. Loh-Lee Low has been given the lead to develop this research plan.

Here are some ideas that are being suggested about the surveys:

1. It is probably not practical to consider organizing such a comprehensive survey until such time that data suggest the Aleutian Basin stock is rebuilding to pre-moratorium levels. In the event that such rebuilding does occur, substantial amount of time and effort will be required for the national Parties to plan and obtain necessary resources to conduct the surveys. While comprehensive planning would be premature at this stage, preliminary planning would establish a framework for possible comprehensive planning efforts in the future.

2. The area of sampling within the Aleutian can essentially be divided into 3 zones -- the international central Bering Sea zone (donut hole area), the Russian EEZ, and the U.S. EEZ. Special research permission will have to be obtained from the respective Governments for the research vessels to survey in the Russian and the U.S. EEZs. It is anticipated that only government-authorized research vessels will be permitted to survey the EEZs while "trial fishing vessels" would be confined to survey the international central Bering Sea zone only.

3. There are five Government research vessels that could potentially be available to conduct surveys: the *Miller Freeman* (U.S.-NMFS), the *Kaiyo Maru* (Japan - FAJ), *Tamgu I* (Korea - NFRDA), the *Kagonosky* (Russia - TINRO), and *Bei Dou* (China - YSFRI). In the event that the condition of the stock merit comprehensive survey activities at some time in the future, extensive planning and coordination will be necessary. Not all the five vessels may be available to survey

the Aleutian Basin at the same time. It is anticipated that at least three vessels would be needed to provide a comprehensive survey of the entire Aleutian Basin. The timing of the survey would best be the mid-February to mid-April period when spawning pollock are anticipated to be present in the survey area.. Survey track design and station locations will have to be determined among the Parties. It will also be necessary to carry out inter-ship calibrations studies.

4. The commercial fishing vessels that would also be engaged in "trial fishing" will likely be confined to survey the international central Bering Sea area (donut hole area). The maximum number of vessels that could participate is currently 2 vessels per Party, or 12 total. Since the donut hole area has been virtually devoid of fish the past few years, there should be little need to have too many vessels survey the area.

U.S. Department of Transportation
United States Coast Guard

Commander
Seventeenth Coast Guard District

P.O. Box 25517
Juneau, AK 99802-5517
Staff Symbol: p
Phone: (907) 463-2226
FAX: (907) 463-2216

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JUL 19 2000

Honorable Delegates,
Convention for the
Central Bering Sea Workshop,
Seattle, Washington

Dear Esteemed Colleagues,

A recent policy change by Inmarsat Company requires government agencies to provide written permission from the vessel owner and Inmarsat equipment owner, if different, at the time such agencies request access to Vessel Monitoring System information (transponder data).

For your convenience I am providing each of you with a sample authorization letter developed in consultation with Inmarsat Company. This letter should be completed by the owner of a trial fishing vessel and provided to their respective government officials. Parties should transmit such letters when they provide notification of intent to conduct trial fishing operations. Parties receiving such notification will then be able to include the authorization letters in their request to an Inmarsat Service Provider for transponder data.

Use of these procedures will ensure Parties meet their obligations under the Convention to provide transponder data from their vessels operating in the Convention Area. I hope this simple change meets with your approval. If your have any questions or comments about this procedure please contact me by phone, fax, or e-mail; all are provided on my attached business card.

In closing I would like to thank you all for your continued spirit of cooperation in working with me to implement the provisions of this important Convention.

With Great Respect,

J.V. O'Shea

J.V. O'Shea
Captain, U.S. Coast Guard
Chief, Planning and Policy Division
Seventeenth Coast Guard District
By direction of the District Commander

Encl: Sample Authorization Letter

Date

Company Name
Address
Contact numbers

To Whom It May Concern,

1. This letter hereby authorizes government officials from People's Republic of China, Japan, the Republic of Korea, the Republic of Poland, the Russian Federation, and the United States of America to obtain real time satellite position information by polling the Inmarsat C terminal(s) listed below. This authorization is only for the period of time our vessels are involved in Trial Fishing for Pollock in the Central Bering Sea as designated below or by the government agency responsible for managing fishing in the Central Bering Sea:

Vessel Name	Call Sign/ Official Number	Terminal Number (9 digit IMN)	Terminal Manufacturer	Primary Reporting Ocean Area	Start Date	Stop Date

Terminal Owner _____ Date_____
(signature)

Vessel Owner_____ Date_____
(signature)