38th ANNUAL ADVISORY COMMITTEE MEETING

U.S.-POLAND JOINT FISHERY ECOLOGY STUDIES PROJECT

Seattle, USA
23-27 April, 2012

38th ANNUAL ADVISORY COMMITTEE MEETING
U.S. – POLAND JOINT FISHERY ECOLOGY STUDIES PROJECT

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REPORT OF THE 38th ANNUAL MEETING OF THE ADVISORY COMMITTEE OF THE ZAKLAD SORTOWANIA I OZNACZANIA PLANKTONU

Seattle, USA
23-27 April 2012

The 38th Annual Meeting of the Advisory Committee of the U.S. – Poland Joint Fishery Ecology Studies Project was held in Seattle, USA (see Annex 1 for the Meeting Agenda). Participating in the discussions were scientists from the United States and Poland:

United States	**Poland**
Kenneth Sherman Jon Hare NMFS, NEFSC, Narragansett, RI	Dariusz Fey MIR, Gdynia
Jeffrey Napp Ann Matarese NMFS, AFSC, Seattle, WA	Wanda Kalandyk Małgorzata Konieczna ZSIOP, MIR, Szczecin
Joanne Lyczkowski-Shultz NMFS, SEFSC, Pascagoula, MS	

Overview

The 38th U.S. – Poland Joint Fishery Ecology Studies Project Advisory Committee Meeting was held in Seattle, USA from 23-27 April 2012. The meeting opened with a welcome from Steve Ignell Deputy Science & Research Director, Alaska Fisheries Science Center. Deputy Director Ignell recognized the long-standing history of cooperation between the U.S. and Poland on marine ecosystem research, as well as the outstanding professionalism and high level of competence by Polish experts in the application of taxonomic criteria for the separation and enumeration of both zoo- and ichthyoplankton. He noted that as a result of the efforts of the scientists involved in the Joint Fishery Ecology Studies Project, especially those at the Zakład Sortowania i Oznaczania Planktonu (ZSIOP), NOAA-Fisheries can work to understand and predict the consequences of human activities on the oceans and their living marine resources. These remarks were followed by a welcome from Dr. Kenneth Sherman, lead of the U.S. delegation. In his remarks Dr. Sherman pointed to the many highly significant scientific accomplishments achieved during the 38 years of collaboration between Poland and the U.S. under the Joint Fishery Ecology Studies Project.

Following these opening remarks from the U.S. hosts, the Polish delegation, led by Dr. Dariusz Fey, extended their appreciation for 38 years of cooperation with the U.S. National Oceanic and Atmospheric Administration (NOAA) and their interest to continue the cooperation in the coming years. Special thanks were given to Dr. Sherman for his long-standing leadership and commitment to the Joint Studies Project.

Jointly, the Advisory committee was pleased to acknowledge the important contributions made by the staff of the Morski Instytut Rybacki - Państwowy Instytut Badawczyi (MIR), Zakład Sortowania i Oznaczania Planktonu (ZSIOP). Their work as part of the Joint Fishery Ecology Studies Project has led toward a better understanding of responses in the world's Large Marine Ecosystems

(LMEs) related to: 1) climate change and variability, 2) ocean acidification, 3) biodiversity loss, and 4) the top-down effects on marine food chains from over-fishing. The information provided by MIR-ZSIOP and the U.S. – Poland Joint Fishery Ecology Studies Project is contributing to stock assessments, as well as the development of ecosystem-based approaches to fisheries management in the United States, Poland, and elsewhere around the globe. The Joint Studies Project is also contributing new information regarding the Arctic and contributing to NOAA's ongoing restoration efforts related to the Deepwater Horizon Incident in the Gulf of Mexico, both of which are important international contributions.

During the 2012-2013 period, the U.S. – Poland Joint Fishery Ecology Studies Project will support the fisheries ecology studies and assessment methodology studies in the LMEs of the U.S., and around the world, with a focus on providing scientific support to better understand the productivity, fish and fisheries, pollution and ecosystem health, socioeconomics and governance components of an ecosystem based approach to the management of the world's LMEs.

The Joint Studies Project

The Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service (DOC NOAA NMFS) has been joined in cooperative marine fisheries research with MIR since 1974 through the U.S. – Poland Joint Fishery Ecology Studies Project. Over its 38 years of operation, the joint project has cooperated in the support of the ZSIOP in Szczecin and Gdynia, which has evolved into a prominent institution in fisheries ecology, embracing a wide range of plankton studies directed to improving an understanding of the biological and physical processes controlling natural productivity of marine fisheries resources. The broad-scope of knowledge and experience on the role of ichthyoplankton and zooplankton in LMEs developed through the cooperative work is unparalleled in the international fisheries scientific community. Further, the taxonomic expertise of the staff is exceptional and contributes to long-term efforts to study marine plankton biodiversity. While

the specific research has focused on the LMEs of the U.S., the data and understanding are applicable to fisheries assessment and management in all 64 LMEs around the world, within which 80 percent of the annual global fishery yields are produced.

During the meeting, the U.S. and Polish representatives reviewed the language of the initial 1974 Grant Agreement and concurred that the nature of the effort during 2012-2013 was in conformance with the U.S. – Poland Joint Fishery Ecology Studies Project. The term Joint Studies Project has been used to describe the instrument beginning with the 1985-86 agreement as a continuation of the original long-term grant initiated in 1974. The present agreement is effective from 1 May 2012 through 30 April 2013.

The U.S. representatives underscored the importance of the agreement with MIR as the longest continuous international bilateral agreement for joint fisheries studies in the U.S. Department of Commerce. Both parties recognized that the Joint Studies Project serves as an important source of zooplankton and ichthyoplankton taxonomy, ecology, and biodiversity data in support of fish stock recovery and sustainability efforts as we move forward during the 21st century and the 38th year of Poland – U.S. cooperation in fisheries ecology. The staff of MIR is making a notable and unique contribution to the knowledge of marine plankton ecology and biodiversity during a period of global climate change. This record is of importance to studies of the changing states of LMEs and their goods and services, and is a fundamental building block for integrated ecosystem assessments.

Both MIR and NMFS attendees reiterated their interest in further developing collaborative research. Previous joint efforts were reviewed and joint projects for 2012 and 2013 were discussed. MIR also announced additional new staff at the ZSIOP, indicating the commitment to the long-term nature of the Joint Studies Project.

Special Recognition

The performance level of the staff of the ZSIOP was very good during the 2011-2012 period. Congratulations were extended to Mrs. Wanda Kalandyk, Director of the MIR-ZSIOP and Chief of the Zooplankton Ecology Group, to Mrs. Małgorzata Konieczna, Chief of the Fish Taxonomy Group, to Hanna Skólska, Chief of the Plankton Sorting Group, and to all the staff of the ZSIOP. Based on the high level of sustained performance over the 38 years of operations, it is clear that the MIR-ZSIOP has established a standard of performance that ranks it as the most effective global facility for marine plankton sample processing for purposes of assessing the changing states of large marine ecosystems. The expertise and effective operations of ZSIOP provide a significant contribution to an increased understanding of the structure, function, carrying capacity, and fishery yields for a number of large marine ecosystems, as well as the response of LMEs to our changing climate.

In commemoration of the 38th meeting, hosts from the AFSC presented the other participants with a certificate signed by Dr. Douglas DeMaster, Science and Research Director of the AFSC.

Large Marine Ecosystem Assessments Supported by the ZSIOP

Many projects important to the missions of NOAA and MIR are utilizing the ZSIOP expertise. Samples to be processed by MIR-ZSIOP during 2011-2012 period will support the core fisheries ecology programs in the following LMEs: Gulf of Alaska, Eastern Bering Sea, Gulf of Mexico, Northeast U.S. Shelf, Chukchi Sea, and Baltic Sea.

The amended Magnuson-Stevens Fisheries Conservation and Management Act of 2006 requires the U.S. Secretary of Commerce to provide advice to the U.S. Congress on ways to incorporate ecosystem principles in fisheries management and conservation activities. This milestone legislation resulted in expansion of

fisheries assessment programs in NOAA/NMFS to include more broadly-based studies of fisheries ecology encompassing LME's off the U.S. coasts. The incorporation of plankton data into stock assessments is expanding in the U.S. and in a large part this development is a result of the work done as part of the Joint Studies Project. In addition, the ecosystem-based approach to fisheries management will lead to increased needs for the expert capabilities of the MIR-ZSIOP over the next decade. In the development of ecosystem-based approaches to fisheries management, information on eggs and larval fish, and their prey and predators, is essential. The taxonomic expertise of MIR-ZSIOP is crucial to the application of plankton data in new management structures. Further, collaborative work with MIR provides an opportunity to develop ecosystem-based approaches to fisheries management in other LMEs throughout the world's oceans.

Alaska Fisheries Science Center (AFSC)

The Recruitment Processes Program at the AFSC is examining the interactions between climate and ecosystems of the Arctic Ocean, Bering Sea, and Gulf of Alaska LMEs. The immediate goal is to contribute to NOAA's ecosystem approach to management and the evolving integrated ecosystem assessments. The AFSC has observed changes at multiple trophic levels in the Bering Sea concomitant with short stanzas (4 - 6 yrs) of warm and cold conditions. We have also observed changes in the geographic distributions of eastern Bering Sea groundfish over extended (decadal) periods of warming. A recent success of the ecosystem approach to management occurred when the Science & Statistical Committee of the North Pacific Fisheries Management Council included declining zooplankton biomass in their decision to recommend a more conservative Total Allowable Catch for walleye pollock in the eastern Bering Sea. Thus lower trophic level and early life history studies are critical to understanding the latest population trends. Long-term goals for the Recruitment Processes Program are to increase our understanding of how changes in climate affect both the ecosystem and the recruitment of key commercial or ecological species (e.g. walleye pollock, cod, flatfishes, crabs, and forage fishes). Most of the research

conducted by the Recruitment Processes Program is supported with funding from NOAA (e.g. North Pacific Climate Regimes and Ecosystem Productivity (NPCREP), Ecosystems and Fishery Oceanography Coordinated Investigations (EcoFOCI). Some of the research however is supported with extra-mural funds. For example, the North Pacific Research Board (NPRB) is supporting integrated ecosystem research projects in the eastern Bering Sea with the target species: walleye pollock, Pacific cod, and arrowtooth flounder and a study of the recruitment of walleye Pollock, Pacific cod, arrowtooth flounder, sablefish, and rockfish (Sebastes spp.) in the southeastern Alaska as part of an integrated ecosystem research program. The U.S. Bureau of Ocean Energy Management Regulation and Enforcement (BOEMRE) is supporting climate and ecosystem studies in the Chukchi Sea near the sites of oil and natural gas lease sites. Data for all of these projects are being obtained in collaboration with the ZSIOP.

The AFSC's Ichthyoplankton Information System, includes data on the ecology, taxonomy, distribution and abundance of Northeast Pacific ichthyoplankton based on a 21-year time series and offers data and data products to users via the World Wide Web. It is a model for future data distribution to stakeholders. Within the last year, the website has averaged close to 1000 visitors per month, and is linked to the international web sites FishBase and LarvalBase. Most of the data included on the website (http://access.afsc.noaa.gov/ichthyo/index.cfm) were obtained in collaboration with the ZSIOP; Malgorzata Konieczna is a member of the Project Team responsible for updating the website with new information. Our ability to keep the website up to date is dependent on our continued successful collaboration with MIR.

Northeast Fisheries Science Center (NEFSC)

The Joint Studies Project supports ecosystem monitoring activities of the NEFSC. The NMFS, NEFSC Ecosystem Monitoring Program samples plankton populations throughout the northeast U.S. Continental Shelf Large Marine Ecosystem with the purpose of providing data on changing ecosystem structure and function and to contributing analyses of these data to the management of

fisheries and protected resources. This program conducts plankton surveys of the Northeast U.S. Continental Shelf ecosystem 6 times per year, and monthly Continuous Plankton Recorder (CPR) transects across the Gulf of Maine and Mid-Atlantic Bight. Recent analyses of MARMAP data found a shift in zooplankton assemblage structure coincident with decreases in salinity. Analyses of CPR data has found a coincident shift in phytoplankton species composition providing support for bottom-up control of lower-trophic level dynamics. Evaluations of temporal trends in Atlantic herring abundance have shown a dramatic decrease in abundance on Georges Bank. The cause of this decrease has been linked to haddock predation on herring eggs. Overall, MARMAP data are used by NOAA scientists, academic researchers, and a growing number of public and private interests, and provide vital information regarding planktonic processes in the ecosystem.

The NEFSC uses the plankton data collected by MARMAP to assess changing biophysical conditions in relation to recovery of depleted demersal fish stocks, sustainability of pelagic fish stocks, productivity levels of the ecosystem, and the response of the ecosystem to climate change. The zooplankton time-series is one of the key indicators of relative health, integrity, resilience, and stability of the Northeast Shelf ecosystem. As part of this effort, Ecosystem Advisories are produced semi-annually to help inform fishery and coastal managers of changing ecological conditions within the Northeast Shelf Ecosystem (http://www.nefsc.noaa.gov/omes/OMES/fall2010/advisory.html). In addition, an updated Ecosystem Status Report is almost complete. A procedure for calculating larval indices from the NEFSC ichthyoplankton data has been developed and indices have been provided to stock assessments for Atlantic herring, Atlantic mackerel, Pollock, and yellowtail flounder. The method was recently converted to a maximum likelihood approach, which allows for the variability in the larval indices to be quantified. A project underway as part of the Joint Studies Project will develop a larval index for sand lance, an important ecological species for which other sources of information are lacking. Overall, the use of ichthyoplankton data in stock and ecosystem assessments is increasing in

the NEFSC and this accomplishment is greatly facilitated by the work conducted as part of the U.S.-Poland Joint Studies Project.

Southeast Fisheries Science Center (SEFSC)

The Mississippi and Miami Laboratories of the SEFSC conduct plankton monitoring activities under the Federal-State Cooperative Program known as SEAMAP (Southeast Area Monitoring and Assessment Program) that has been in effect since 1982. The original goal of SEAMAP plankton surveys was to build and maintain a long term fishery-independent database on the occurrence, distribution and abundance of fish eggs and larvae for use in stock assessments and recruitment studies. The value of these data in resource damage assessment was universally recognized during the 2010 DWH oil spill when the SEAMAP plankton database provided immediate information on the potential harm to fish eggs and larvae in the path of the oil spill. It now provides the primary source of pre-spill, historical data for use in oil spill damage assessment models.

The ichthyoplankton data from this program provide estimates of larval abundance of bluefin tuna (*Thunnus thynnus*), king mackerel (*Scomberomorus cavalla*), vermillion snapper (*Rhomboplites aurorubens*), gray triggerfish (*Balistes capriscus*), and red snapper (*Lutjanus campechanus*) that support population assessments of these species in the Gulf of Mexico LME. The SEAMAP spring plankton survey for Atlantic bluefin tuna larvae was expanded again in 2011 to include the southern Gulf of Mexico and included the participation of Mexican fishery scientists. These samples, some of which will be analyzed at ZSIOP will provide new information on the spawning and early life history stage habitats of Atlantic bluefin tuna in the region of the Gulf rarely sampled. A recent study funded by the Southeast Regional Office of NMFS entitled, "Development of a genetic spawning stock diversity index for Western Atlantic bluefin tuna (*Thunnus thynnus*)" will analyze mtDNA diversity in bluefin tuna larvae and eggs across space and time from SEAMAP samples taken during spring surveys in 2010-

2011. It is anticipated that this investigation will provide a second, independent estimate of spawning population size of bluefin tuna in the Gulf of Mexico.

The SEFSC requested zooplankton analysis of bongo and neuston samples from selected SEAMAP cruises. The purpose of these analyses is to describe zooplankton assemblages across the Gulf of Mexico LME and the distribution and abundance of decapod crustacean planktonic life stages. This work builds upon valuable zooplankton analyses begun in the 2006 – 2007 Joint Studies Agreement period. It will provide valuable baseline data on zooplankton in the Gulf of Mexico LME from different seasons and will extend temporal coverage of this unique dataset. With the analysis of SEAMAP zooplankton samples MIR/ZSIOP has joined a partnership with the SEFSC / MS Laboratories and zooplankton ecologists at Louisiana State University, University of Southern Mississippi/Gulf Coast Research Lab, and Dauphin Island Sea Lab under the auspices of the OAR/NOAA Northern Gulf Institute.

Dauphin Island Sea Lab (DISL)

The Fisheries Oceanography of Coastal Alabama (FOCAL) program at the Dauphin Island Sea Lab (DISL) collects fisheries-independent data in support of ongoing DISL research and the management goals of the Alabama Marine Resources Division (AMRD). The primary components of the FOCAL program are monthly ichthyoplankton & zooplankton surveys and continuous physical oceanography observations (e.g., temperature, salinity, current velocity) from a permanent offshore mooring. Depth-discrete ichthyoplankton samples have been collected from 2004 to 2012 to determine larval fish abundances, distributions, and seasonality. These data are being used to develop larval and juvenile recruitment indices and assess relationships between fisheries recruitment and environmental variability.

The data acquired through the collaboration has generated one of the few ichthyoplankton baseline data sets in the Gulf of Mexico and this will be a

significant asset to state and federal agencies as they examine damage and restoration objectives as we pass the two year anniversary of the oil spill.

DISL will not participate in the Joint Studies Program during the 2012-2013 period.

ZSIOP Operations

The Committee reviewed the accomplishments of the ZSIOP during its 38-year history and took note of the important contributions by the ZSIOP to fisheries ecology and to studies in support of research conducted to improve the management and conservation of fisheries resources from an LME perspective, particularly during the present stress on Large Marine Ecosystems from climate change and global warming. ZSIOP operations were reviewed with regard to: funding, training, sorting priorities, quality control, protocol reviews, data exchange, status of joint research and reports, and new initiatives.

During the 2011-2012 period, ZSIOP was staffed by 29 people (Annex 2) including staff at Szczecin and Gdynia and Mrs. Kalandyk's leadership of the ZSIOP was highly praised. Ichthyoplankton and zooplankton were sorted, identified, and enumerated for samples taken from the Northeast U.S. Shelf, Southeast U.S. Shelf, Gulf of Mexico, Gulf of Alaska, Chukchi Sea and East Bering Sea LMEs. Specimens and appropriate log sheets were sent to the NMFS/NEFSC Narragansett Laboratory, NMFS/SEFSC Pascagoula Laboratory; Fish and Wildlife Research Institute SEAMAP Archiving Center, NMFS/AFSC Seattle Laboratory, and Dauphin Island Sea Laboratory. Established quality-control procedures were maintained through the aspects of sample processing.

Agreement was reached on activities to be supported during the joint study period from 1 May 2012 through 30 April 2013 in accordance with the U.S. – Poland Joint Fishery Ecology Studies Project. The principals of the Joint Studies Project were reviewed by the committee during the Advisory Committee Meeting

and detailed issues regarding sample processing and collaborative studies were discussed.

Sample Processing 2011-2012

During the 2011-2012 period of the joint research, 7138 samples were processed. A summary of samples processed is given in Annex 2. The number of samples processed each year varies somewhat owing to the number of samples collected by programs in the U.S. In some years due to bad weather and loss of ship days, the number of samples is lower. In other years, all planned sampling is completed resulting in more samples. The numbers of samples processed in 2011-2012 period was similar to previous years. The number of Continuous Plankton Recorder samples processed was a little below average, owing to logistical and operational issues on the U.S.-side.

Processing of Samples and Priorities 2012-2013

Samples scheduled for sorting and identification in 2012-2013 will include ichthyoplankton, zooplankton and Continuous Plankton Recorder (CPR) samples collected from the following LMEs: Gulf of Mexico, Northeast U.S. Shelf, Gulf of Alaska, East Bering Sea, Chukchi Sea, and Arctic Ocean. The schedule for processing ichthyoplankton, zooplankton, and phytoplankton samples for 2012-2013 (Annex 3) was adopted by the Advisory Committee. Requests for changes from the U.S. representatives regarding sorting priorities and analytical protocols will be made through Dr. Kenneth Sherman. It is agreed that the Polish side will do their best to process the total number of samples listed in Annex 3.

The issue of sample allocation was discussed. The schedule (Annex 3) includes samples that have yet to be collected. The Committee agreed that the specific samples included in the Joint Studies Project could be changed in the event that some of the agreed upon samples could not be collected. Such changes must involve similar samples and must be communicated to the ZSIOP in a timely manner.

The highest priority samples are from the SEFSC, and support Atlantic bluefin tuna (*Thunnus thynnus*) stock assessments. Processing of the tuna samples is to be completed prior to 1 February 2013. Priorities for samples from other Joint Studies Project participants are based on the shipping schedule. The priority list is designed to coordinate arrival of samples in Poland with processing priorities.

Processing Protocols

The Advisory Committee clarified protocols in place and accepted modifications to protocols for 2012-2013 period, based on needs for scientific information. Protocols are given in Annex 4. These discussions and changes are highlighted below.

AFSC – No changes were identified to ichthyoplankton protocols.

The AFSC continues to consider changes in their zooplankton protocols. These changes include both how zooplankton are counted and the addition of weighing zooplankton. The new counting protocol is similar to the one in use by the NEFSC and NOAA's BASIS program with some minor differences that were discussed during the advisory committee meeting. The proposed weighing protocol is new and thus, this protocol was discussed in detail. The scientific rationale is clear but the effort is labor intensive. After discussion, the Committee decided that for the current agreement, the new AFSC counting protocol will be implemented but there will be no weighing of zooplankton. Displacement volume measurements will continue. AFSC will test, evaluate and develop the weighing protocol in more detail during the agreement period and this protocol will be discussed at the 2013 Advisory Committee Meeting.

SEFSC – The previous SEFSC/SEAMAP ichthyoplankton, zooplankton and decapods protocols will remain in effect during 2012-2013. The zooplankton protocol remains unchanged. The decapod protocol was discussed and the level of identification of different taxa was clarified. The ichthyoplankton protocol was

discussed and one change was made: fewer scombrid and lutjanid larvae will be measured.

One point of clarification was made regarding the ichthyoplankton protocol. Cephalopods are removed from a sample and placed in one vial. Once the cruise is processed, the vials with cephalopods are to be returned to Dr. Joanne Lyczkowski-Shultz (SEFSC Pascagoula Laboratory)

The level of lutjanid identification in the ichthyoplankton protocol was also discussed. Because of continuing difficultly to make species-level identification, the SEFSC is considering whether to change the protocol to family level identification only. If a change is to be made, the SEFSC will communicate through Dr. Sherman and Dr. Linkowski to the Chief of the Fish Taxonomy Group.

For the SEFSC/TUNA samples, a copy of the data sheets and the tuna larvae, including the larvae of skipjack tuna (*Katsuwonus pelamis*), are to be sent via air mail directly to Dr. John Lamkin (SEFSC Miami Laboratory).

All other SEAMAP specimens are to be sent via surface mail to the SEAMAP Archiving Center (c/o Tammy Cullins), Fish and Wildlife Conservation Commission (formerly the Florida Marine Research Institute) in St. Petersburg, Florida. Print-outs of data sheets and sorting record sheets should also be sent to the Archiving Center, as soon as possible via airmail. ZSIOP will send all original data sheets to Dr. Joanne Lyczkowski-Shultz (SEFSC Pascagoula Laboratory) and also send copies of the computer generated tuna data sheets. Microsoft Excel files containing the data for each SEAMAP cruise are to be e-mailed to Dr. Lyczkowski-Shultz when identification is completed and samples are shipped either to her or to the SEAMAP Archive in Florida. In addition, all cephalopods should be returned to Dr. Joanne Lyczkowski-Shultz (SEFSC Pascagoula Laboratory)

NEFSC – The Northeast Fisheries Science Center discussed one protocol change and reiterated some important aspects of the current protocols. The change involves a request to have CPR data entered into excel spreadsheets in Poland. This request will be discussed with the Chief of the Plankton Sorting Group in Gdynia during the first part of May and an answer will be returned to Dr. Hare by 15 May.

The issues that were reiterated are:

1. The measurement of fish larvae. All larvae of each taxon should be measured when the number of individuals is less than 50. When counts exceed 50, a randomly selected sub-sample of 50 individuals should be measured. Random selection should involve randomly selecting 50 individuals from the whole sample.
2. It is crucial that both the Station Number and Haul Number be recorded on data sheets. The NEFSC has changed its at-sea operation data collection software making notation of haul number essential for tracking each sample.
3. All vials lids must be tightened before shipment to the US.
4. All cephalopods are to be removed and returned to the NEFSC with ichthyoplankton samples.
5. Identified zooplankton are to be returned to Narragansett, similar to ichthyoplankton samples.
6. Data from the CPR samples should be emailed to Chris Melrose and copied to Jon Hare.
7. Data from Ichthyoplankton and Zooplankton samples should be emailed to Harvey Walsh and copied to Jon Hare

Quality Control

The level of identification during 2010-2011 period was very good. The number of samples included in quality controlled was reviewed and was acceptable. This topic will be reviewed annually to make sure that the numbers of samples

included in quality control procedures do not exceed the capacity of the ZSIOP staff.

Ichthyoplankton Quality Control - For the SEFSC, DISL, and NEFSC, 10% of the samples are re-sorted for each cruise by a senior staff member. If >4% of total larvae or eggs are found, the entire sample is re-sorted. For the AFSC, a ~10% aliquot of each sample is resorted. If 2 or more larvae and/or eggs are found, the entire sample is re-sorted. The results of the quality control are used to ensure the highest quality data and to identify any training needs. For identification QC/QA, focus is given to taxa which are known to be more difficult (e.g., scombrids and lutjanids).

Zooplankton Quality Control - A percentage of samples from each cruise is re-examined for counts and identification by the Chief of the Zooplankton Group. The specific percentage re-examined varies with Center and protocol: 10% NEFSC Zooplankton; 20% AFSC Total Macrozooplankton; 10% AFSC Predators; 10% AFSC Adult Female Copepods; and 0% AFSC Microzooplankton. The results of the quality control are used to ensure the highest quality data and to identify any training needs.

CPR Quality Control - For the NEFSC, a minimum of one and a maximum of two processed substations of each cruise shall be re-examined for quality control.

Data Transcription and Entry Quality Control - Procedures are provided in Annex 4.

Computer Data Entry

The Advisory Committee is pleased to report that the accuracy of the data input continued at a high level. The ZSIOP will follow the computer data entry protocols specified in Annex 5 and will continue to make every effort to maintain quality control on data entry.

AFSC - Data entry of AFSC ichthyo- and zooplankton proceeded with few problems for the eleventh year in a row. There were no software issues The AFSC has started the process to update its databases from Access to Oracle. It is working with a contractor to effect this change. A new PPSI application may or may not be necessary. In the meantime, the AFSC will continue to use the current Access PPSI application.

The new AFSC zooplankton counting protocol is not yet supported by an updated data entry system. AFSC requests that MIR-ZSIOP hold the data forms until an updated application is provided.

NEFSC - Data entry for the NEFSC proceeded well. Excel templates for zooplankton identification worksheet (ZIW) and CPR data were used successfully during the year. The NEFSC is developing a data entry program like the AFSC system. A new IT person has been hired and will coordinate with the AFSC effort. In the meantime new excel forms will be provided to ZSIOP.

SEFSC - Data entry for the SEFSC and DISL with an Excel spreadsheet also proceeded without problems. ZSIOP should anticipate that SEFSC may develop data entry programs in place of Excel similar to the Alaska system. The ZSIOP will advise the Advisory Committee if this impacts operations.

Several errors related to data entry and labeling were noted during the year. Upon identifying errors, ZSIOP staff was contacted via email and the issues were resolved. The responsiveness enabled by communication was appreciated by the Advisory Committee.

Data Exchange

Summaries of ichthyoplankton and zooplankton data will be sent to Szczecin on request. Summaries of sample processing for monthly reports will be sent from ZSIOP to the addresses in Annex 6 via e-mail using the sorting priority list in Annex 3. The prioritized sample list and reporting forms will be made available

electronically to the ZSIOP before the distribution of this report. In addition, results and reprints from collaborative work will be shared between the U.S. and Poland scientists.

The AFSC Ichthyoplankton Information System was reviewed. Annual updates are generated and available to the staff of the ZSIOP through the internet. The AFSC IIS is of tremendous value to the collaborative effort between U.S. and Poland and to the global scientific community.

Communication

The Committee appreciated the increased level of communication. The increasing use of the Internet has made it possible for information and questions to move much more easily between and among U.S. and Polish scientists. The exchange of photographs was noted and the ability to discuss taxonomic questions as they come up has really improved the work under the Joint Studies Project. The Committee encouraged more communication among the principals involved, with regard to any technical issues affecting sample sorting and identification protocols.

Appreciation was expressed to Mrs. Kalandyk for the Progress Reports received during 2011-2012. These reports were very helpful for scheduling subsequent work on processed samples in the U.S. E-mail will be used to transmit reports from ZSIOP to the U.S. It was agreed that monthly status reports will be distributed by e-mail to the persons listed in Annex 6 on the working day closest to the 15th of each month. Reports were made monthly during 2011-2012 period and the timeliness of reports greatly facilitated communications.

To facilitate communication during the agreement year, the Committee also agreed to hold conference calls when needed.

Shipments to and from Poland

The Committee recognized the importance of shipments between the U.S. and Poland. U.S. samples need to arrive in Poland as described in the shipping schedule to ensure that the samples can be processed as described in this agreement. Additionally, samples need to be in Poland in time for the beginning of the 2012-2013 Agreement. The U.S. side understands and agrees to these needs. The Polish side agreed to let the U.S. know as soon as possible if there are problems with continuity of samples for processing.

Pro Forma Invoice - Shipments of samples and supplies from the U.S. to Poland (either by surface mail or air) must be accompanied by an original, signed Pro Forma invoice (Annex 7). Mrs. Kalandyk noted that the type of pallet must now be noted on the invoice. It is recommended that NOAA scientists first FAX a copy of the Pro Forma Invoice to Mrs. Kalandyk for review before sending the shipment. For items listed in the Pro Forma invoice, do not use trade names or words that would be difficult to translate into Polish (e.g., scintillation vial). An original, signed Pro Forma Invoice must accompany the shipment. In addition, immediately after pickup of samples and/or supplies by the transport company, NOAA scientists must send an original, signed Pro Forma Invoice directly to Mrs. Kalandyk. NOAA scientists should check with Mrs. Kalandyk to confirm that samples or shipment have arrived.

ZSIOP requests that all NOAA shipments be consistent regarding shipping procedures. A Pro Forma Invoice is included with each shipment and a copy sent to ZSIOP (Annex 7) along with a list of samples contained. In addition to inclusion with the shipment, this completed document will be emailed to ZSIOP and used as the basis for the Ichthyoplankton Sorting Record and Zooplankton Sorting Record.

In addition to the Pro Forma Invoice, all Centers will include an annotated priority list indicating the samples included in the shipment. This is necessary because of

changes in cruise names between the development of the priority list and the actual collection of samples.

Please note that all laboratories should now specify that the samples are sent DDU, not DDP. The AFSC and NEFSC should send their samples DDU/Szczecin. The SEFSC should send samples DDU/Gdynia where they will be analyzed for ichthyoplankton and then transported by ZSIOP staff to Szczecin for zooplankton analysis.

EU regulations require that all wood shipping materials be either heat treated or fumigated and shippers must include proof of this fact. As noted above, pallet material must be noted on the Pro Forma invoice as indicated in Annex 7

Carriers - Shipments of CPR samples to Gdynia will be made via FedEx.

Sample Box Labeling - The top and one or more sides of each case of sample jars should be color-coded with spray paint or similar method according to the following color key: NEFSC – black; SEFSC – purple; AFSC – green. The year of collection should be indicated next to the color code to facilitate disposal of samples at the appropriate time. Because each Fisheries Science Center has a different way of designating cruise, gear type, etc., it would be helpful to have the year visible along with the color code. The need to use sturdy material for outside labels and to use indelible ink to write information on the labels was emphasized.

Shipping Dates - Processing priorities were generally aligned with shipping dates to ensure that higher priority samples arrive in Poland before lower priority samples. However, the U.S. delegation requests that ZSIOP staff consult the sample priority list regularly since there may be delays in shipping that cause the arrival of samples in Poland in an order different from the processing priorities. To facilitate scheduling of sample processing at ZSIOP, an anticipated shipping date schedule and in the Sorting Priority List are provided in Annex 3.

It is imperative that the shipping schedule presented in Annex 3 be followed. There is some flexibility at ZSIOP, but the main issue is samples arriving later than scheduled in the agreement period. If samples are received late, they may not be able to be processed during the 2012-2013 Agreement.

Return Shipping of Samples – During the 2011-2012 period, the ZSIOP made changes to their shipping boxes; using more sturdy and robust packaging. This change eliminated problems with shipment damage. The U.S. representatives were very appreciative of these changes.

It was noted that during the year, several boxes of samples were delayed or lost during shipment from Poland to the U.S. The Committee discussed the importance of labeling of shipments from Poland to the U.S.. Three elements will be included in the labeling of boxes. 1) Carbon copy custom form, 2) packing list and Pro Forma invoice, and 3) a clearly printed address label with a U.S. zip code directly attached to the box (Annex 8).

During the 2011-2012 agreement period, the Polish side successfully returned whole plankton samples to AFSC and SEFSC. These returns may continue during the 2012-2013 period. For SEAMAP/SEFSC sample, logistics and arrangements for return shipping will be made by the SEFSC. These samples will be returned to replace samples lost from the SEAMAP archive during Hurricane Katrina. AFSC BASIS may be returned as in previous years and these needs will be communicated with ZSIOP-MIR during the year.

Provision of Equipment and Supplies

Supplies are requested from the Science Centers in 2012 - 2013, for which specific vendors are required. These include dot labels for vial lids, and vials for ichthyoplankton and zooplankton samples, etc. A list was provided by the director of the ZSIOP to FSC representatives (Annex 9).

Supplies can be sent with samples or separately. Estimates for the numbers of vials needed in 2012 - 2013 by Center/Laboratory are provided in Annex 9. The U.S. Fisheries Science Centers and cooperating Research Labs agreed to coordinate the vials and jars used to make it easier for ZSIOP staff. No lids with cardboard liners will be sent to ZSIOP from the U.S.

ZSIOP also requested that U.S. Fisheries Science Centers assist in purchasing hard to obtain equipment. All Centers agreed to try to find support for these items.

In addition, based on the increasing importance of CPR samples to a global understanding of marine ecosystem change, the U.S. will provide for the purchase of three new microscopes for the Plankton Sorting Group in Gdynia. The amount is based on information exchanged at the Advisory Committee meeting. These funds are a one-time addition to the ongoing Joint Studies Project.

Sample Archiving

The Committee's goal is to achieve a balance between the space available for archiving samples, the number of incoming samples, and the number of samples disposed of during an agreement period. MIR has satisfied this balance in providing a first-class archiving facility at MIR Gdynia.

The U.S. recognizes the need to keep the sample archive at a level consistent with the current space available at MIR. To achieve this, several actions will be taken:

- Samples older than 20 years will be discarded following protocols agreed to in previous years; samples collected in 1991 or before will be disposed.
- For the agreement period of 2012 to 2013, NO SEFSC/SEAMAP samples are to be discarded until all requests for samples returns are fulfilled

The Committee reviewed the recommendations regarding the sample archive made by Dr. Donald Hoss, which were included in the 2003-2004 Agreement Report. The Committee agreed that the recommendations were relevant and had been followed in organization of the archive facility. These recommendations can be found in the 36th Annual Report.

Joint Fishery Ecology Studies

Joint Research

Joint research takes two forms: scientific exchanges and scientific collaboration. The Advisory Committee gave its endorsement to the continued exchange of scientists between the two countries. Scientific exchange is essential to U.S. - Poland cooperation. Person-to-person time is needed in addition to the transfer of technical material. Further, the Committee agreed that exchange is most effective when there is a strong scientific rationale. Prior to approval and finalizing arrangements for scientific exchange, the specific purpose of and available funding for the exchange will be reviewed by Drs. Linkowski and Sherman.

During the Advisory Committee meeting, a Larval Identification Workshop was held with U.S. and Polish scientists. The workshop focused on larval taxa collected by the SEFSC and the ASFC. The exchange of information during the workshop was highly effective and will improve numerous efforts underway as part of the Joint Studies Project. In addition, some work on zooplankton identification was completed during the meeting period.

Staff of the ZSIOP continues to work with NMFS staff to publish larval fish identifications. A recent paper on larval grouper identification is a prime example of these continued collaborations.

Dr. Hare continues to work with Dr. Linkowski on efforts related to the EU-BASIN project. Dr. Hare recently obtained funding for NEFSC staff to participate in a EU BASIN cruise on the RV Meteror and planning in currently underway regarding joint U.S.-Poland research during the cruise.

Dr. Hare also discussed potential visit to MIR-ZSIOP during the agreement period. Dr. Hare is occasionally in Europe and if the opportunity arises, will contact Dr. Linkowski to arrange a visit to MIR-ZSIOP to discuss joint work. Also, Dr. Melrose (NEFSC), lead of the U.S. CPR program, plans to be in Europe in the fall of 2012. If possible he would like to visit the CPR sample processing laboratory in Gdynia and will discuss this possibility with Dr. Linkowski prior to his trip to Europe.

30th Anniversary Commemorative Volume

Special attention was paid to the completion of the 30th Anniversary Commemorative Volume during the Advisory Committee Meeting. Deborah Blood and Rebecca White of ASFC performed an excellent job preparing a near-camera ready version of the commemorative volume.

The production schedule planned at the 37th meeting is on target. The NEFSC will provide camera ready product to MIR by June 2012. Production details will be discussed between Dr. Linkowski and Dr. Sherman (e.g. number of copies, etc).

Other Scientific Contributions

A list of recent reports and publications resulting from the U.S. - Poland Agreement is provided in Annex 10.

Financial Support

In recognition of the expanding programs globally on studies of the changing states of Large Marine Ecosystems and on the growth and survival of early life stages of fish, the U.S. will continue to provide financial support to the operation

of the ZSIOP in accordance with the Joint Cooperative Studies Agreement between the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service (U.S.DOC/NOAA/NMFS) and Poland's Morski Instytut Rybacki (MIR), 1974.

Recommendations and Comments

1. Scientific exchange is essential to U.S. - Poland cooperation. Person-to-person time is needed in addition to the transfer of technical material.
2. The Committee recommends that the U.S. continue to provide difficult to obtain taxonomic papers, reagents, and laboratory equipment, including microscopes and computers.
3. The Committee is pleased to take note of the significant contributions made by the ZSIOP in fisheries oceanography, which will improve understanding of the dynamics of fish stocks in Large Marine Ecosystems.
4. The Committee, in reviewing the Progress Report of the 2011-2012 period, was impressed with the high quality of the analyses and the significant number of samples processed during the reporting period. This achievement is a tribute to the support provided by the MIR administration and to the Director of the ZSIOP, Mrs. Wanda Kalandyk and to the highly trained and competent staff of ZSIOP. A few quality control issues were identified during the 2011-2012 period. These were discussed and all participants are committed to resolving these issues during the 2012-2013 period.
5. The Committee recognized the need for increased participation of U.S. and Polish scientists in joint research projects. It was agreed to continue and extend the opportunities for cooperative research on biodiversity and global climate change between U.S. and Polish scientists.
6. The U. S. and Poland representatives agree that the ZSIOP can make a significant contribution to the growing numbers of new initiatives in marine science.
7. The Committee is pleased with the excellent quality of processing of CPR silks by the Branch of the ZSIOP in Gdynia.

8. The U.S. representatives were especially pleased by the new staff that were added to the ZSIOP.
9. The Advisory Committee will stay in contact via conference calls and emails
10. The next Advisory Committee meeting will be hosted by ZSIOP tentatively during the week 22-26 April 2013 in Kraków Poland.

U.S. – POLAND JOINT FISHERY ECOLOGY STUDIES PROJECT

Background

In the early 1970s, there was an expression of concern among those Nations harvesting fishery resources in the Northwest Atlantic Ocean. Fishing pressure exerted by those several Nations on the stocks of fish resident in this area, combined with environmental factors, threatened to severely depress the abundance of these very valuable species. Also, there was recognition by these fishing Nations that the dynamics of these fisheries were little understood. Pursuant to a recommendation of the International Commission for the Northwest Atlantic Fisheries, the management authority for the Northwest Atlantic, several nations expanded their fishery assessment survey operations in a joint investigation of the biological and oceanographic factors controlling survival of fish larvae.

Obtaining the relevant information for a particular stock of fish involves a concentrated study of the growth and mortality of the early stages of the year classes and concurrent observation of related environmental factors. Such a study requires a high frequency of sampling over a considerable area for several months of each year of the investigation. Considerable ship time with adequate laboratory support is essential to ensure adequate sampling results.

To meet this need, a Plankton Sorting and Identification Center was established jointly by Poland and the United States in 1974 at Gdynia in Poland. Funds contributed by the United States for the Center were provided in part under the authority of P.L. 83-480. The Polish Government contributed three million zlotys to its construction. To ensure that the Center would be utilized to the benefit of both Governments in understanding the vagaries of the fishery resources in which they had a shared interest, an Agreement was drawn up to specify the scientific and technical cooperation between both countries in the field of marine fisheries.

As an initial step, the Agreement envisioned an exchange of data and experience in areas related to marine fisheries. These areas included:

- influence of biotic and abiotic factors on stock fluctuations
- collection and processing of biological and catch data
- stock assessment methodology and resource analysis
- hydroacoustic survey methodology for determining the distribution and abundance of fish

This exchange would enable each party to become acquainted with the other's methods and would form the basis for the unification and standardization of the research methods and procedures necessary for the joint work contemplated by the Agreement.

Following the establishment of this data base, each party exchanged scientific personnel for the mutual training and research in marine science necessary to facilitate the objectives of the Agreement. Scientific personnel from both countries enjoyed the

facilities of not only the Center but the National Marine Fisheries Service's laboratory at Woods Hole, Massachusetts. As work under the Agreement progressed, survey cruises were planned for the research vessels ALBATROSS IV and WIECZNO. The operations of these vessels would provide not only the plankton samples to be processed by the Center but an opportunity to conduct studies in related areas such as gear technology.

Subsequent to the implementation of the Magnuson Act in 1977, the participation of Poland and other foreign Nations in the fisheries off the coast of the United States was dramatically curtailed. Fishermen from foreign Nations were able to harvest only those amounts of fish which domestic fishermen could not harvest of the optimum yield specified for an individual stock of fish. However, the continuing need for fisheries research was all too apparent. Some fish stocks such as haddock were approaching record low levels of abundance. While it was evident that fishing effort was a factor in the decline of the fisheries in the Northwest Atlantic, it was relatively unclear as to what constituted the hierarchy of factors affecting stock abundance. In light of the continuing need for such research, the framers of the Magnuson Act imposed a statutory burden on the Secretary of Commerce "to initiate and maintain a comprehensive program of fishery research to carry out and further the purposes, policy, and provisions of (the) Act."

Over its thirty-eight years of operation, the Center has evolved into a prominent institution in fisheries ecology, embracing a wide range of plankton studies directed to improving an understanding of the biological and physical processes controlling natural productivity of marine fisheries resources. The relationship between the Center and the NMFS continues as originally contemplated in the Agreement entered into in 1974. The level of knowledge and expertise developed pursuant to the original Agreement by both parties is unparalleled in the fisheries scientific community. The data collected and the studies performed over the years have lent greatly to the world's knowledge of marine science. While the specific research has focused on the EEZ of the U.S., the information gleaned is applicable to fisheries assessment and management in all 64 Large Marine Ecosystems (LMEs) around the world, within which 80 percent of the annual global fishery yields are produced. Without question, the United States/Polish Fishery Ecology Studies effort has been of great benefit. Improved research findings relating to fish stocks within the LMEs of the U.S. are of interest to NMFS and important to the regional Fishery Management Councils charged with the conservation and management of the various stocks of fish within their respective geographical jurisdictions. Wise management of these resources, founded upon improved scientific information, will endure to the benefit of the fishing industry and to the consumer as stock abundance improves. This will undoubtedly be of benefit to the Nation and fits squarely within the goals and objectives of the Magnuson Act.

Aside from offering unique capabilities for the sorting and identification of plankton, the Center provides an excellent facility for training and research for marine scientists of both the United States and Poland. Similarly, the opportunity for Polish marine scientists to visit NMFS facilities and universities enhances their knowledge and capabilities. Concomitantly, the operation of the Center is enhanced as new technology and difficult to obtain scientific literature is transferred back to the Center at the conclusion of the exchange programs. The reports generated as the result of work done, either at or throughout the Center, are not only of benefit to Poland's and the United States' marine scientists, but to the marine scientific community throughout the world.

One of the principal features of the joint research project was the dedication of the 270-foot Polish Research Vessel WIECZNO to 90 days of survey work on the continental shelf of the east coast on an annual recurring basis until 1987. This represented a cost savings to the U.S. Government of $2.7 million for a number of years. Given the budgetary constraints on NMFS in past years, it is reasonable to conclude that the Agency could not have met its statutory research obligation without the Polish effort. Without this project, the research program of NMFS would have suffered severely and failed to meet the needs of the Fishery Management Councils.

While the Polish research vessels have been deployed annually to collect thousands of plankton samples as part of our joint studies of larval fish recruitment and the biological and environmental processes controlling larval survival, this has not been their only function. The vessels have been a valuable research platform to many marine science disciplines. Early on, the vessels were involved in bottom and mid-water trawling studies. In 1977, the R/V WIECZNO participated in the biological damage assessment studies done following the grounding of the tanker ARGO MERCHANT which resulted in the spilling of some 7.7 million gallons of No. 6 crude oil over important fish spawning grounds on Nantucket Shoals.

The Apex Predators Investigation of the Northeast Fisheries Center conducted joint studies with Polish scientists from 1976 to 1987. This work involved biological research on the migration, distribution, and reproductive habits of tunas and swordfish, with emphasis on several species of large sharks. Over the years, joint cruises aboard the R/V WIECZNO resulted in the capture, examination, or tag and release of several thousand apex predators of the above species. Research aboard the vessel has, indeed, been joint in that thousands of blue sharks have been released in the eastern Atlantic (off Africa and Europe), solely by Polish scientists at the request of United States scientists. A study of wide-ranging forms, such as blue sharks, which migrate over the entire North Atlantic Basin would not have been possible without this cooperative effort. The species being studied are important to the recreational and commercial fishermen of the United States as well as associated industries, scientists, Fishery Management Councils, and international commissions. These joint tagging studies and longline gear development aided the Polish fleet to develop a high seas shark fishery.

An interesting sideline of this joint project is the spirit of cooperation exhibited by Poland in areas not embraced by the original Agreement. In addition to using the data generated by the joint research effort as a forecast of opportunities for available quotas and joint ventures in underutilized species within the Exclusive Economic Zone, Polish colleagues generously permitted a transfer of harvesting technology to domestic fishermen. Of particular note in this regard has been the cooperative research fishery for mackerel conducted by the NMFS, the Polish Sea Fisheries Institute, and the GRYFF Deep Sea Fishing Company. In addition to the joint scientific studies that have taken place aboard the vessels LUTJAN and ADMIRAL ARCISZEWSKI, opportunities have been provided to representatives of domestic fishermen to observe all operations connected with the locating, catching, and processing of large quantities of mackerel. This transfer of technology enabled U.S. fishermen to participate more profitably in joint ventures for species such as mackerel.

The data base developed jointly during the 35 years of joint study represents the most complete sampling coverage of the Continental Shelf off the northeast coast. The data provided are essential to a better understanding of the stock-recruitment relationship

among important fish species sought by U.S. fishermen (haddock, cod, flounder, mackerel, herring, hake, tunas, and others). It is important to keep this body of knowledge intact, and to extend it over the next several years. Loss of continuity in the operations of the Plankton Sorting Center would seriously jeopardize the U.S. fish and fisheries research effort. The responsibility assumed by the United States under the Magnuson Act over fisheries calls for increased research efforts to provide ". . best scientific information possible. . ." for the effective management and conservation of the fish resources within the management zone.

GENERAL PROVISIONS

1. GENERAL UNDERSTANDING

   a. Basic Intent. It is the intent of the parties to this Agreement to provide for the conduct and dissemination of the research and related activities set forth herein as being of mutual interest to both parties in the advancement of their respective scientific and oceanographic objectives.

   b. Maximum Cost and Purpose of Payment. The U.S. Government agrees to make payment in an amount not to exceed $800,000 annually for the performance of this research by the MIR to be paid as provided for hereinafter. The MIR agrees to utilize such funds solely for the purpose of carrying out the research activities set forth herein, in accordance with the terms and conditions specified, and to accept payment in U.S. Dollars.

2. DEFINITIONS

   a. Project Officer. The term Grants Officer means the person executing this Agreement on behalf of the U.S. Government, and any other officer or civilian employee of the U.S. Government who is properly authorized in writing to act in his absence.

   b. Principal Investigators. The Principal Investigators designated in this contract will be in active direction of the project and responsible for its administration. Changes or substitutions of Principal Investigators will be made only with written approval from the Grants Officer.

   c. Budget Plan. The Budget Plan is the cost budget for this Agreement submitted by the Morski Instytut Rybacki and approved by the U.S. Government, and as may have been modified and approved by the Grants Officer.

3. a. Objectives. To conduct joint plankton research and to support the NOAA/NMFS and NOAA/NOS programs that monitor the abundance, composition, and distribution of the principal biological communities in the waters of the U.S. continental shelves and selected international waters, and to provide specific objectives as outlined in the attached statement of the objectives of cooperative plankton research.

b. Changes in Respective Responsibilities of Research Plans. Since the course of any scientific investigation is not entirely predictable, a change in approach or techniques used within the overall objective and description of work to be performed as contained in this paragraph may be made after appropriate exchange of correspondence and mutual agreement between the Principal Investigator and the U.S. Government. However, any change in approach or techniques used which will result in a modification or change of the objectives and description of work to be performed on this project, requires an amendment to this Agreement and approval by the Grants Officer and the Authorizing Official of the Polish Government.

4. PERIOD OF PERFORMANCE. This Agreement shall take effect upon acceptance of the terms and conditions hereof by the Morski Instytut Rybacki beginning 1 May 2012 and shall remain in full force and effect until 30 April 2013.

5. COMPENSATION

a. Allowable Costs. In full consideration for the performance by the Morski Instytut Rybacki (MIR), the U.S. Government shall reimburse the MIR for its expenses actually incurred, allowable costs, as accepted by the Grants Officer, up to the maximum cost specified. Allowable costs shall include:

(1) Salaries and Wages. All salaries and wages of professional staff and other individuals directly engaged in the conduct of work under this research Agreement. In case the full time of such employee is not applied to work under this Agreement, his compensation shall be included in this item only in proportion to the actual time applied to the project.

(2) Materials and Supplies. Materials and supplies consumed or expended in the performance of the work under this Agreement.

(3) Travel. Travel expenses essential to the performance of the work of this Agreement. (All travel to countries other than the United States of America and Poland must be approved by the U.S. Government in advance.)

(4) Indirect Costs. An allowance for indirect costs and overhead attributable to the work of this Agreement, and not otherwise reimbursable as a direct cost under this Agreement, at a provisional rate of 30%.

b. Variations from Estimates. The MIR shall be permitted flexibility in the manner in which the funds are utilized PROVIDED THAT the maximum cost authorized under this Agreement is not exceeded and PROVIDED FURTHER THAT the funds utilized under any one of the major categories above does not vary more than 10 percent from the estimated cost for that category as shown in the Budget Plan. Any circumstances which, in the opinion of the Principal Investigator or the MIR will require a

modification of more than 10 percent from any one of the estimated items of costs will require the prior written approval of the Grants Officer.

6. METHOD OF PAYMENT

a. Four (4) payments in U.S. Dollars under the terms of Section 1.b. will be made contingent (1) on receipt of acceptable plan of work for the initial payment, (2) on receipt and acceptance of progress reports for subsequent payments, and (3) on receipt of invoice or vouchers for all amounts. The final payment (30 April 2013) is subject to conditions as outlined in the following subparagraph b.

b. Final Payment. Upon satisfactory performance by the MIR of all the provisions of this Agreement, and receipt and acceptance by the U.S. Government of the Final Report, the U.S. Government shall pay any balance within the total cooperative-agreement funding of allowable cost upon receipt and approval by the U.S. Government of the invoice or voucher designated by the MIR as the "final invoice" or "final voucher." The final invoice or voucher shall show the total allowable costs expended in the furtherance of the Agreement, and the total payments made by the U.S. Government, and any balance considered to be due either party. The final invoice or voucher shall be forwarded by MIR promptly following completion of the work under this agreement, but in no event later than one year (or such longer period as the Grants Officer may in his discretion approve in writing) from the date of such completion. Final settlement made by the U.S. Government in response to the final invoice or voucher submitted by the MIR shall constitute a release discharging the U.S. Government, its officers, agents, and employees from all liabilities, obligations, and any further claims arising out of, or under, this Agreement.

c. Unexpended Balance. The MIR agrees to return without delay any unexpended balance of funds made available for this project by the U.S. Government at the end of the Agreement period, or the termination of the Agreement, whichever comes first, to the U.S. Government without demand, subject to determination by the U.S. Government after consultation with the MIR the amount to be allowed.

7. LIMITATION OF COST AND TIME

a. Limitation of Cost. The U.S. Government shall not be obliged to reimburse the MIR for costs incurred in excess of the estimated maximum cost set forth in the approved Budget Plan, and the MIR shall not be obligated to continue performance under this Agreement which will incur costs in excess of such estimated cost, except that in any event the MIR shall be required to furnish the Final Report, which report shall cover work actually completed with funds expended.

b. Limitation of Time. The U.S. Government shall not be obligated to pay any costs incurred by the MIR subsequent to the expiration date contained in paragraph 4 of this Agreement except, in the event of

termination, those costs necessary for the preparation of the Final Report, unless and until this Agreement has been amended in writing and approved by both parties of this Agreement.

8. RECORDS AND REPORTS

a. Records. The MIR agrees to keep the records adequate to provide documentation showing the status of this project and progress made, and to enable preparation of reports on the scientific aspects of this program. The MIR further agrees to keep records of obligations and expenditures, together with receipts, vouchers, correspondence, and memoranda associated with funds received and expended in carrying out the research provided for in this Agreement.

b. Reports. The MIR agrees to prepare and furnish:

(1) Progress Report. A brief, but descriptive, narrative report on the form provided by the U.S. Government of the Scientific aspects of the research, clearly indicating significant factors with respect to the progress of the work, as outlined under 6a.

(2) Financial Report. A Financial Report on a form provided by the U.S. Government which will show: (a) the actual total allowable cost expected to be incurred by the MIR on behalf of this Agreement by the end of the current report period, as outlined under 6a. This total shall be subdivided, by category of allowable costs, with an indication for each category of both the amount incurred under the category during the current period, and the cumulative cost for that category; and (b) a statement of the estimated financial requirements for the following period, indicating any overage or shortage expected to be available from the current period, together with an explanation of anticipated significant (in excess of 10 percent) variations from the Budget Plan for specific categories of allowable cost for the succeeding period.

(3) Preliminary Final Report. Prior to completion of this Agreement, a Preliminary (draft) Final Report will be furnished with the Progress Report and Financial Report due on that date. The Preliminary Final Report will be complete with regard to results achieved through work already accomplished under the Agreement and will include a projection for the final period of this Agreement to indicate the contents expected to be contained in the Final Report.

(4) Final Report. At the conclusion of this Agreement, a Final Report shall be furnished in 20 copies plus a reproducible “master” copy. The Final Report shall include all pertinent technical data, summarize the work done, and set for the results accomplished, and the conclusions drawn.

(5) Special Reports. Such interim reports of information on the status or progress of research under this Agreement as may be necessary in connection with special events or problems arising during the course of the work, either on its own initiative or at the request of the U.S. Government.

(6) Informal Exchange. None of these arrangements for reports shall preclude full informal exchange of correspondence or other communication between the Principal Investigators and the U.S. Government. However, any interpretations, amendment, modifications, or change in any of the terms of this agreement will be recognized only by a formal exchange of correspondence between the MIR and the Grants Officer and formal agreement amendment as necessary.

c. Access to Facilities, Records, and Accounts. Accredited representatives of the U.S. Government shall have access at any reasonable time to the plant, laboratories, offices, or other facilities utilized in connection with the project, for the purposes of review and observation of the status and progress of the project, and to all data, information, records, and reports.

d. Examination of Records by Comptroller General.

(1) This clause is applicable if the amount of this Agreement exceeds $10,000 and was entered into by means of negotiation, including small business restricted advertising, but is not applicable if this contract was entered into by means of formal advertising.

(2) The MIR agrees that the Comptroller General of the United States, or any of his duly authorized representatives, shall until the expiration of 3 years after final payment under this Agreement, or such lesser time specified in either Appendix M of the Armed Services Procurement Regulation or the Federal Procurement Regulations Part 1-20, as appropriate, have access to and the right to examine any directly pertinent books, documents, papers, and records of the MIR involving transactions related to the Agreement.

(3) The MIR further agrees to include in all its subcontracts hereunder a provision to the effect that the subcontractor agrees that the Comptroller General of the United States, or any of his duly authorized representatives, shall, until the expiration of 3 years after final payment under the subcontract, or such lesser time specified in either Appendix M of the Armed Services Procurement Regulation or the Federal Procurement Regulations Part 1-20, as appropriate, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor, involving transactions related to the subcontract. The term “subcontract” as used in this clause excludes: (a) purchase orders not exceeding $10,000 and (b)

subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public.

(4) The periods of access and examination described in (2) and (3) above, for records which related to: (a) appeals under the "Disputes" clause of this Agreement, (b) litigation or the settlement of claims arising out of the performance of this Agreement, or (c) costs and expenses of this Agreement as to which exception has been taken by the Comptroller General or any of his duly authorized representatives, shall continue until such appeals, litigation, claims, or exceptions have been disposed of.

9. PUBLICATION OF RESULTS. Results of research or technical investigations performed pursuant to this Agreement shall be disseminated by the MIR in accordance with the terms of this Agreement. It is understood and agreed that manuscripts prepared by either party shall be sent to the other party for comment prior to publication or distribution. The party publishing or distributing the material shall include therein such credit or recognition of the contribution made by the other party as mutually agreed upon; and material prepared for publication by either party shall not indicate that conclusions drawn from the results of the research conducted pursuant to this Agreement are endorsed by the other party without the prior written consent of each other party. (In case of publication by the MIR, a supply of reprints shall be furnished to the U.S. Government upon request of the Grants Officer.)

10. RESEARCH ASSISTANCE. Contracts or other arrangements will not be made by the MIR with any other party for performing all or any portion of the specific project identified in this Agreement without the advanced written approval of the Grants Officer.

11. TERMINATION OF AGREEMENT. This Agreement may be terminated at any time by mutual agreement of the MIR and the Grants Officer, or by the Grants Officer alone. In the event of termination, the MIR shall furnish a final report as described and required by subparagraph 8.b(4), except that such report shall be furnished to the U.S. Government within sixty (60) days of the effective date of termination. The Grants Officer shall have payment made, upon presentation of proper claim, for the cost of the work performed by the MIR at the time of such termination, less any funds previously paid, and shall not be liable for any further claims, provided the claim made by the MIR shall not exceed the maximum cost of this Agreement. For this purpose, cost will include such costs as are considered chargeable to this Agreement at the time of its negotiation, or as subsequently amended. In the event of termination, any payments made to the MIR for which services have not been rendered shall be returned to the Grants Officer as an unexpended balance in accordance with the provisions of subparagraph 6.c.

12. APPLICABLE LAW. The provisions of this Agreement shall be interpreted on the basis of the laws of the United States of America.

ADDITIONAL INFORMATION SHEET

1. Authorizing Legislation:
   P.L. 94-948 Fisheries Conservation and Management Act of 1976: P.L. 98-210 The Fish & Wildlife Act of 1956, 16 USC 742a (et seq)

2. Name and Telephone Number of proposed award recipient or contact person for award: Dr. Tomasz Linkowski 011 +48 587-3 56-232

3. Type of Award: Continuation

4. Type of Funding Instrument: Joint Studies

5. Project Period: 5/1/12 – 4/30/13

6. Continuation Period: 5/1/12 – 4/30/13

7. Total Dollar Amount: $668,100 for the period 5/1/12 – 4/30/13.

8. If proposed action is a part of a larger grant project, indicate total dollar amount awarded to date on the part being sent forward for review: $668,100

9. Description of Past Performance: Fully Satisfactory

10. Audit Problems: (Financial or Non-Financial): None

11. Review Procedures for Award: Director, Narragansett Laboratory/Office of Marine Ecosystem Studies (NEFSC), Budget & Financial Officer (NEFSC), and Science and Research Director of the Northeast Region (NEFSC)

12. Projected Total Funding: $6,934,700

13. Abbreviated Scope of Work: (Include how this task relates to the Strategic Planning Objectives)

As an amendment to the current Agreement, the Morski Instytut Rybacki (Sea Fisheries Institute) Szczecin, Poland, proposes the following: with substantial assistance from the Northeast Fisheries Science Center (NEFSC), a laboratory for the processing of ichthyoplankton (fish eggs and larvae), and zooplankton (animal plankton prey of larvae) samples from the Northwest Atlantic, Gulf of Mexico, East Bering Sea, and Gulf of Alaska has been established at the Polish Fisheries College in Szczecin and is known as the Zaklad Sortowania I Oznaczania Planktonu. This laboratory, in operation for 37 years, has the capability of processing ichthyoplankton and zooplankton from at-sea collections made by NMFS scientists. To date NMFS's financial contributions have partially supported operation of the laboratory, including the training of the scientific staff and the preparation of joint research publications. Tangible products of research include scientific reports that provide estimates of the spawning biomass of important fish stocks, including walleye pollock, haddock, hake, herring, mackerel, sand eel, tuna, snapper, and yellowtail flounder.

During the joint project period, the Polish side will:

a. Provide the plankton information needed to understand the relationship between larval fish survival and the density distribution of their food and,
b. Provide information on the composition, distribution, abundance, and condition of zooplankton and ichthyoplankton constituents of no less than 6,000 samples per year that will be used to improve forecasts of fish stocks in the Northwest Atlantic, Gulf of Mexico, the Northeast Pacific, and the Arctic.

14. Funds are available for the period as provided in paragraph 7 above. All other funding is contingent upon the availability of funds.

William Karp
SIGNATURE, FMC DIRECTOR

6/6/12
DATE

Schedule of Payment

Payment of $162,025 U.S. dollars upon receipt of an acceptable Plan of Work.
Payment of $20,000 U.S. dollars to improve the capacity for processing Continuous Plankton Recorder samples.

Payment of $162,025 U.S. dollars upon receipt of a Progress Report to be received by 15 October 2012

Payment of $162,025 U.S. dollars upon receipt of a Progress Report to be received by 15 February 2013

Payment of $162,025 U.S. dollars upon receipt and acceptance of a Final Report for the entire Agreement period

Budget

Total $668,100

Acceptance of Financial Terms for Poland and the United States

U.S. Project Manager

Dr. Kenneth Sherman, Director
Narragansett Laboratory
US DOC/NOAA/NMFS/NEFSC
Narragansett, RI, USA

15 May 2012
Date

Polish Project Manager

Dr. Tomasz Linkowski, Director
Sea Fisheries Institute
Gdynia, Poland

21. May 2012
Date

ANNEX 1 Agenda for the Meeting

AGENDA

38th Annual Advisory Committee Meeting
U.S. – Poland Cooperative Research in Fishery Ecology
Seattle, Washington
23-27 April, 2012

DAY 1	MONDAY, APRIL 23	
9:00 am	Greetings from AFSC Welcome Greetings from U.S.A. Greetings from Poland	S. Ignell K. Sherman D. Fey
	Review of NOAA-NMFS-DISL-MIR Operations 2011 – 2012 • AFSC Report • SEFSC /DISL Report • NEFSC Report • MIR Report Joint Studies on Fisheries Ecology Status of U.S. – Poland Agreement	 J. Napp, A. Matarese J. Lyczkowski-Shultz J. Hare D. Fey , W. Kalandyk D. Fey, K. Sherman D. Fey, K. Sherman
12:00 –1:30 pm	**Lunch (Marlai Thai)**	
2:00 pm	Review of the Joint Studies Agreement	All
	Sorting & Identification Priorities for 2012-2013	All
	Processing Capacity of the Center for 2012-2013	D. Fey , W. Kalandyk
4:30 pm	**ADJOURN**	
6:30	**Paella DINNER@Ann's**	
DAY 2	**TUESDAY, APRIL 24**	
9:00 am	• Sorting and Identification Discussion • Protocol Reviews ○ AFSC Zooplankton • Quality Control • Data Processing & Computer Use • Shipping • Archival Concerns • Sample Disposal	All Jeff
12:00 –1:30 pm	**Lunch PASEO sandwiches-In**	

2:00 pm	• Scientific Exchanges • Commemorative Volume • 39th Annual Advisory Committee Meeting • Start Draft Report-writing assignments	All K. Sherman, D. Fey All All
4:00 pm	**ADJOURN**	
6:30 pm	**Salmon DINNER@ Janet's**	
D A Y 3	**WEDNESDAY, APRIL 25**	
9:00	• Continue to draft Report	All
NOON		
12:00 –1:30 pm	**Mexican Lunch Potluck**	
2:00	• Finalization of Report	All
4:00 pm	**ADJOURN**	
6:30 pm	**DINNER@ Buca di Beppo**	

D A Y 4	**THURSDAY, APRIL 26**	
8:30	• Larval Fish and Zooplankton Identification	All
NOON	**ADJOURN**	
	Lunch out TBD	
1:00	Larval Fish and Zooplankton Identification	**All**
4:00 pm	**ADJOURN**	
6:30 pm	**DINNER@Debbie's**	

D A Y 5	**FRIDAY, APRIL 27**	
8:30	• Larval Fish and Zooplankton Identification	All
NOON	**ADJOURN**	
	Lunch Salads In	

ANNEX 2 ZSIOP Operations Report 2011-2012

To:
U.S. Department of Commerce
NOAA - NMFS
Northeast Fisheries Science Center
28 Tarzwell Drive
Narragansett, RI 02882 1199
The UNITED STATES of AMERICA

From:
Sea Fisheries Institute in Gdynia
Plankton Sorting and Identification Center
ul. Kazimierza Królewicza 4 - pawilon E
71-550 Szczecin, Poland

Subject:

Sorting and identification of MARMAP, EcoMon, OMES, SEAMAP, AOOS, NPCREP, EcoFOCI and other program's plankton samples at the U.S.-Polish Plankton Sorting and Identification Center, as outlined in Amendment to Joint Cooperative Studies Document.

Project title:

Operate U.S.-Polish Plankton Sorting and Identification Center in Szczecin (Poland) in accordance with work statement and general provisions to the extent encompassed in the Agreement.

Reported period:

From 1 May 2011 to 30 April 2012.

FINAL PROGRESS REPORT

FOR THE FISCAL YEAR 2011/2012

This Report covers activities of the U.S.-Polish Plankton Sorting and Identification Center in Szczecin, Poland during twelve (12) months of its operation. During the joint study period from 1 May 2011 to 30 April 2012, the Center (Zakład Sortowania i Oznaczania Planktonu) was staffed by 29 people (including staff both at Szczecin and Gdynia) as follows:

Laboratory Manager: Wanda Kalandyk

Deputy Laboratory Manager: Paweł Kaźmierczak

Administrative Section:

1. Ciupiński Mirosław, senior specialist, computer operator

Fish Taxonomy Group:

1. Adamus Małgorzata, senior specialist
2. Bartosiewicz Stanisława, senior specialist
3. Kałuża Małgorzata, senior specialist
4. Konieczna Małgorzata, senior specialist, chief of the Group
5. Kosiorowska Barbara, senior specialist
6. Kuzawińska Grażyna, senior specialist
7. Maszało-Dynowska Marlena, senior specialist
8. Ruminkiewicz Iwona, senior specialist
9. Zaborowska Ewa, senior specialist *(has been on her long sick leave since 19 April 2011)*

Zooplankton Ecology Group:

1. Daszkowska Maja, senior specialist
2. Kalandyk Wanda, senior specialist, chief of the Group
3. Kamińska Magdalena, senior specialist
4. Kamińska Urszula, senior specialist
5. Kasprzycka Halina, senior specialist
6. Kłopotowska Barbara, senior specialist
7. Koman Bogumiła, senior specialist
8. Kosińska Małgorzata, senior specialist
9. Maśko Krystyna, senior specialist
10. Nowak Halina, senior specialist
11. Płocka Maria, senior specialist
12. Sujak Dorota, senior specialist

Trainee Group:

1. Borkowska Urszula
2. Pieróg Alicja
3. Praduń Aleksandra

Plankton Sorting Group in Gdynia:

1. Kohnke Katarzyna, senior specialist
2. Łażycka Marlena, senior specialist
3. Skólska Hanna, senior specialist, chief of the Group

STATUS OF SORTING AND IDENTIFICATION

Samples scheduled for sorting and identification during the reported period included ichthyoplankton, zooplankton and CPR samples from the U.S. Northeast Shelf LME, Gulf of Mexico LME, Gulf of Alaska LME and East Bering Sea LME.

PROCESSED ICHTHYOPLANKTON SAMPLES

The following **ichthyoplankton** samples have been processed for the **ALASKA FISHERIES SCIENCE CENTER Seattle Laboratory:**

Cruise	Number of samples		Gear	Samples received	Sorting finish	Identification finish	Vial mailing date	Excel file transmittal date	Logsheets mailing date
	Agreed	Received							
1TT11	125	114	60Bon	23.08.11	21.11.11	17.12.11	06.02.12	26.01.12	06.02.12
1TT11	125	116	NEU	23.08.11	09.12.11	17.12.11	06.02.12	26.01.12	06.02.12
1TX11	8	46	60Bon	23.08.11	16.11.11	08.12.11	12.01.12	22.12.11	22.12.11
1TX11	8	47	NEU	23.08.11	09.11.11	12.12.11	12.01.12	22.12.11	22.12.11
2TX11	45	0	60Bon	-	-	-	-	-	-
2TX11	45	0	NEU	-	-	-	-	-	-
1DY11	70	36	60Bon	23.08.11	17.11.11	13.12.11	12.01.12	22.12.11	22.12.11
2DY11	125	72	60Bon	23.08.11	20.12.11	21.12.11	06.02.12	26.01.12	06.02.12
2DY11	50	20	NEU	23.08.11	25.11.11	23.12.11	12.01.12	03.01.12	03.01.12
1NW11	52	50	60Bon	22.12.11	17.01.12	25.01.12	17.02.12	13.02.12	13.02.12
1NW11	26	52	NEU	22.12.11	19.01.12	26.01.12	17.02.12	13.02.12	13.02.12
2NW11	61	53	60Bon	22.12.11	23.01.12	27.01.12	17.02.12	13.02.12	13.02.12
2NW11	30	55	NEU	22.12.11	24.01.12	27.01.12	17.02.12	13.02.12	13.02.12
1AK11	15	8	60Bon	22.12.11	13.01.12	02.02.12	17.02.12	14.02.12	14.02.12
2AK11	15	10	60Bon	22.12.11	16.01.12	01.02.12	17.02.12	14.02.12	14.02.12
3AK11	15	7	60Bon	22.12.11	17.01.12	01.02.12	17.02.12	14.02.12	14.02.12
1MB11	100	0	Tuck1	-	-	-	-	-	-
-	100	0	60Bon	-	-	-	-	-	-
3DY11	70	46	60Bon	22.12.11	17.01.12	02.02.12	17.02.12	14.02.12	14.02.12
4DY11	70	0	60Bon	-	-	-	-	-	-
4DY11	25	0	SLED	-	-	-	-	-	-
1TT11	0	29	MOC-1	23.08.11	10.11.11	12.12.11	12.01.12	03.01.12	03.01.12
1MB11	0	92	SLED	22.12.11	09.01.12	08.02.12	17.02.12	13.03.12	13.03.12
4DY10	0	92	60Bon	22.12.11	01.02.12	06.02.12	17.02.12	15.02.12	17.02.12
7DY11	0	9	60Bon	22.12.11	16.01.12	02.02.12	17.02.12	14.02.12	14.02.12
7DY11	0	9	SLED	22.12.11	25.01.12	30.01.12	17.02.12	14.02.12	14.02.12
1EE10	0	36	60Bon	22.12.11	11.01.12	03.02.12	17.02.12	14.02.12	14.02.12
	1180	**999**							

The following **ichthyoplankton** samples have been processed for the **NORTHEAST FISHERIES SCIENCE CENTER Narragansett Laboratory**:

Cruise	Number of samples		Gear	Samples received	Sorting finish	Identification finish	Vial mailing date	Excel file transmittal date	Logsheets mailing date
	Agreed	Received							
HB1005	117	105	60Bon	24.03.11	29.06.11	08.07.11	12.07.11	08.07.11	08.07.11
DE1012	131	121	60Bon	21.06.11	12.07.11	19.07.11	31.08.11	21.07.11	26.07.11
DE1012	35	35	60Bon	21.06.11	07.07.11	12.07.11	31.08.11	15.07.11	15.07.11
DE1012	35	36	IMI	21.06.11	30.06.11	14.07.11	31.08.11	15.07.11	15.07.11
DE1012	40	42	NEU	21.06.11	22.07.11	25.07.11	31.08.11	26.07.11	26.07.11
DE1102	138	138	60Bon	21.06.11	09.08.11	31.08.11	05.10.11	07.09.11	07.09.11
HB1102	123	90	60Bon	08.02.12	28.02.12	15.03.12	16.04.12	04.04.12	12.04.12
DE1105	120	126	60Bon	08.02.12	19.03.12	29.03.12	16.04.12	11.04.12	12.04.12
HB1105	120	104	60Bon	08.02.12	04.04.12	13.04.12	30.04.12	30.04.12	30.04.12
DE1109	54	112	60Bon	08.02.12	20.04.12	24.04.12	30.04.12	30.04.12	30.04.12
	913	**909**							

The following **ichthyoplankton** samples have been processed for the **SOUTHEAST FISHERIES SCIENCE CENTER Pascagoula Laboratory:**

Cruise	Number of samples		Gear	Samples received	Sorting finish	Identification finish	Vial mailing date	Excel file transmittal date	Logsheets mailing date
	Agreed	Received							
GU1101	49	49	Bon	27.07.11	08.09.11	26.09.11	08.12.11	01.12.11	01.12.11
GU1101	97	96	Neu	27.07.11	24.08.11	08.09.11	08.12.11	06.12.11	06.12.11
GU1101	97	121	SN	27.07.11	08.11.11	18.11.11	12.01.12	10.01.12	10.01.12
TM 073	6	6	Bon	27.07.11	12.12.11	12.01.12	15.03.12	29.02.12	29.02.12
TM 073	6	6	Neu	27.07.11	08.12.11	16.01.12	15.03.12	29.02.12	29.02.12
TM 074	2	2	Bon	27.07.11	28.02.12	16.03.12	20.04.12	05.04.12	20.04.12
TM 074	2	2	Neu	27.07.11	29.02.12	16.03.12	20.04.12	05.04.12	20.04.12
TM 081	6	0	Bon	-	-	-	-	-	-
TM 081	6	0	Neu	-	-	-	-	-	-
TM 082	2	2	Bon	27.07.11	09.12.11	16.01.12	15.03.12	29.02.12	29.02.12
TM 082	2	2	Neu	27.07.11	01.02.12	08.02.12	15.03.12	29.02.12	29.02.12
OII 0284	37	36	Bon	27.07.11	20.04.12	18.04.12	30.04.12	30.04.12	30.04.12
OII 0284	37	37	Neu	27.07.11	19.03.12	28.03.12	20.04.12	18.04.12	20.04.12
GU 0805	34	34	Bon	27.07.11	21.11.11	30.12.11	14.02.12	06.02.12	06.02.12
GU 0805	34	34	Neu	27.07.11	09.11.11	05.01.12	14.02.12	06.02.12	06.02.12
AL 082	9	9	Neu	27.07.11	bad alcohol				
Pel 081	7	7	Bon	27.07.11	15.12.11	19.01.12	15.03.12	29.02.12	29.02.12
Pel 081	7	7	Neu	27.07.11	19.12.11	19.01.12	15.03.12	29.02.12	29.02.12
Pel 091	4	4	Bon	27.07.11	20.12.11	17.01.12	15.03.12	29.02.12	29.02.12
Pel 091	4	4	Neu	27.07.11	20.11.11	18.01.12	15.03.12	29.02.12	29.02.12
OII 0289	38	37	Bon	27.07.11	15.12.11	16.01.12	14.02.12	06.02.12	06.02.12
OII 0289	38	38	Neu	27.07.11	15.12.11	10.01.12	14.02.12	06.02.12	06.02.12
GU 0905	25	25	Bon	27.07.11	18.04.12	19.04.12	30.04.12	30.04.12	30.04.12
GU 0905	25	25	Neu	27.07.11	19.04.12	20.04.12	30.04.12	30.04.12	30.04.12
GU 1103	143	146	Bon	17.11.11	27.04.12	under examiantion			
GU 1103	143	144	Neu	17.11.11	29.02.12	13.03.12	30.03.12	23.03.12	23.03.12
GU 1103	60	12	MOC 0	17.11.11	25.03.12	30.03.12	20.04.12	16.04.12	20.04.12
GU 1103	0	60	MOC 1-7	17.11.11	11.04.12	27.04.12	30.04.12	30.04.12	30.04.12
OII 0295	45	46	Bon	17.11.11	31.01.12	22.03.12	20.04.12	20.04.12	20.04.12
OII 0295	45	45	Neu	17.11.11	28.02.12	08.03.12	30.03.12	22.03.12	23.03.12
AD 1103	6	6	Bon	17.11.11	13.02.12	01.03.12	15.03.12	05.03.12	07.03.12
AD 1103	6	6	Neu	17.11.11	14.02.12	01.03.12	15.03.12	05.03.12	07.03.12
TM 1105	4	0	Bon	-	-	-	-	-	-
TM 1105	4	0	Neu	-	-	-	-	-	-
Pel 114	7	0	Bon	-	-	-	-	-	-
Pel 114	7	0	Neu	-	-	-	-	-	-
TM 093	2	2	Bon	17.11.11	13.02.12	24.02.12	15.03.12	29.02.12	29.02.12
TM 093	2	2	Neu	17.11.11	13.02.12	24.02.12	15.03.12	29.02.12	29.02.12
TM 096	2	2	Bon	17.11.11	13.02.12	24.02.12	15.03.12	29.02.12	29.02.12
TM 096	2	2	Neu	17.11.11	13.02.12	24.02.12	15.03.12	29.02.12	29.02.12
OII 0280	45	38	Neu	17.11.11	24.02.12	01.03.12	30.03.12	07.03.12	07.03.12
Pel 092	7	7	Bon	17.11.11	10.02.12	28.02.12	15.03.12	29.02.12	29.02.12
Pel 092	7	7	Neu	17.11.11	09.02.12	28.02.12	15.03.12	29.02.12	29.02.12
Pel 093	7	6	Bon	17.11.11	09.02.12	27.02.12	15.03.12	29.02.12	29.02.12
Pel 093	7	7	Neu	17.11.11	10.02.12	27.02.12	15.03.12	29.02.12	29.02.12
AL 003	3	0	Bon	-	-	-	-	-	-
AL 003	9	0	Neu	-	-	-	-	-	-
TM1102	0	2	Bon	17.11.11	15.02.12	29.02.12	15.03.12	05.03.12	07.03.12
TM1102	0	2	Neu	17.11.11	15.02.12	29.02.12	15.03.12	05.03.12	07.03.12
TM1104	0	7	Bon	17.11.11	14.02.12	28.02.12	15.03.12	05.03.12	07.03.12
TM1104	0	7	Neu	17.11.11	14.02.12	28.02.12	15.03.12	05.03.12	07.03.12
	1137	**1139**							

The cruise GU 1103 Bongo (146 samples) from the SEFSC Pascagoula Laboratory are currently under examination and will be completed by the half of May.

The following **ichthyoplankton** samples have been processed for the **Dauphin Island Sea Laboratory:**

Cruise	Number of samples		Gear	Samples received	Sorting finish	Identification finish	Vial mailing date	Excel file transmittal date	Logsheets mailing date
	Agreed	Received							
WI-10-04-L1	4	4	NEUSTON	28.08.11	08.09.11	23.11.11	30.12.11	13.12.11	13.12.11
WI-10-06-L1	9	0	MININESS	-	-	-	-	-	-
WI-10-06-L1	2	0	NEUSTON	-	-	-	-	-	-
WI-10-06-L2	9	0	MININESS	-	-	-	-	-	-
WI-10-06-L2	4	1	NEUSTON	28.08.11	08.09.11	22.11.11	30.12.11	16.12.11	16.12.11
WI-10-06-L4	27	6	MININESS	10.11.11	18.11.11	23.11.11	30.12.11	15.12.11	15.12.11
WI-10-06-L4	3	0	NEUSTON	-	-	-	-	-	-
WI-10-07-L1	9	0	MININESS	-	-	-	-	-	-
WI-10-07-L1	3	0	NEUSTON	-	-	-	-	-	-
WI-10-07-L5	9	0	MININESS	-	-	-	-	-	-
WI-10-07-L5	3	0	NEUSTON	-	-	-	-	-	-
WI-10-07-L6	21	6	MININESS	10.11.11	17.11.11	22.11.11	30.12.11	15.12.11	15.12.11
WI-10-08-L1	9	0	MININESS	-	-	-	-	-	-
WI-10-08-L1	3	0	NEUSTON	-	-	-	-	-	-
WI-10-08-L2	21	6	MININESS	10.11.11	16.11.11	21.11.11	30.12.11	15.12.11	15.12.11
WI-10-08-L2	1	0	NEUSTON	-	-	-	-	-	-
WI-10-08-L4	30	6	MININESS	10.11.11	15.11.11	21.11.11	30.12.11	16.12.11	16.12.11
WI-10-08-L4	4	0	NEUSTON	-	-	-	-	-	-
WI-10-09-L1	30	30	MININESS	28.08.11	30.09.11	27.10.11	30.12.11	13.12.11	13.12.11
WI-10-09-L1	6	6	NEUSTON	28.08.11	30.09.11	27.10.11	30.12.11	13.12.11	13.12.11
WI-10-09-L3	7	7	MININESS	28.08.11	26.09.11	17.11.11	30.12.11	16.12.11	16.12.11
WI-10-09-L3	6	6	NEUSTON	28.08.11	26.09.11	18.11.11	30.12.11	16.12.11	16.12.11
WI-10-10-L2	42	41	MININESS	28.08.11	03.09.11	25.10.11	30.12.11	13.12.11	13.12.11
WI-10-10-L2	6	6	NEUSTON	28.08.11	04.09.11	25.10.11	30.12.11	13.12.11	13.12.11
WI-10-10-L3	47	39	MININESS	28.08.11	18.10.11	16.11.11	30.12.11	16.12.11	16.12.11
PE-10-05-L8	0	2	NEUSTON	28.08.11	08.09.11	04.11.11	30.12.11	15.12.11	15.12.11
BL-10-06-L1	0	2	NEUSTON	28.08.11	09.09.11	04.11.11	30.12.11	13.12.11	13.12.11
PE-10-06-L4	0	2	NEUSTON	28.08.11	09.09.11	04.11.11	30.12.11	15.12.11	15.12.11
PE-10-07-L3	0	2	NEUSTON	28.08.11	09.09.11	04.11.11	30.12.11	16.12.11	16.12.11
PE-10-07-L4	0	2	NEUSTON	28.08.11	12.09.11	04.11.11	30.12.11	15.12.11	15.12.11
PE-10-09-L8	0	2	NEUSTON	28.08.11	14.09.11	04.11.11	30.12.11	13.12.11	13.12.11
PE-10-10-L2	0	2	NEUSTON	28.08.11	19.09.11	04.11.11	30.12.11	16.12.11	16.12.11
WI-10-10-L5	0	8	MININESS	28.08.11	19.10.11	04.11.11	30.12.11	16.12.11	16.12.11
PE-10-11-L5	0	2	NEUSTON	28.08.11	18.10.11	07.11.11	30.12.11	15.12.11	15.12.11
PE-10-11-L7	0	2	NEUSTON	28.08.11	03.10.11	07.11.11	30.12.11	13.12.11	13.12.11
PE-10-12-L1	0	2	NEUSTON	28.08.11	29.09.11	07.11.11	30.12.11	16.12.11	16.12.11
PE-11-01-L1	0	2	NEUSTON	28.08.11	30.09.11	07.11.11	30.12.11	13.12.11	13.12.11
WI-11-01-L1	0	3	NEUSTON	28.08.11	24.10.11	07.11.11	30.12.11	16.12.11	16.12.11
WI-11-02-L1	0	2	NEUSTON	28.08.11	26.10.11	07.11.11	30.12.11	15.12.11	15.12.11
WI-11-02-L1	0	8	MININESS	28.08.11	26.10.11	07.11.11	30.12.11	15.12.11	15.12.11
WI-10-09-L1	0	6	MININESS	10.11.11	23.12.11	23.02.12	07.03.12	27.02.12	27.02.12
WI-10-10-L5	0	3	MININESS	10.11.11	21.12.11	23.02.12	07.03.12	27.02.12	27.02.12
WI-11-02-L1	0	23	MININESS	10.11.11	23.12.11	22.02.12	07.03.12	27.02.12	27.02.12
WI-11-02-L1	0	3	NEUSTON	10.11.11	23.12.11	22.02.12	07.03.12	27.02.12	27.02.12
WI-11-03-L2	0	32	MININESS	10.11.11	29.12.11	21.02.12	07.03.12	23.02.12	23.02.12
WI-11-03-L2	0	6	NEUSTON	10.11.11	29.12.11	21.02.12	07.03.12	23.02.12	23.02.12
WI-11-04-L2	0	32	MININESS	10.11.11	12.01.12	20.02.12	07.03.12	23.02.12	23.02.12
WI-11-04-L2	0	4	NEUSTON	10.11.11	12.01.12	20.02.12	07.03.12	23.02.12	23.02.12
WI-11-05-L3	0	32	MININESS	10.11.11	19.01.12	17.02.12	07.03.12	23.02.12	23.02.12
WI-11-05-L3	0	5	NEUSTON	10.11.11	19.01.12	16.02.12	07.03.12	23.02.12	23.02.12
WI-11-08-L2	0	31	MININESS	10.11.11	30.01.12	20.02.12	07.03.12	27.02.12	27.02.12
WI-11-08-L2	0	5	NEUSTON	10.11.11	03.02.12	20.02.12	07.03.12	27.02.12	27.02.12

WI-10-10-L3	9	5	NEUSTON	10.11.11	21.12.11	23.02.12	07.03.12	27.02.12	27.02.12
WI-10-11-L1	51	48	MININESS	28.08.11	25.10.11	14.11.11	30.12.11	16.12.11	16.12.11
WI-10-11-L1	9	9	NEUSTON	28.08.11	25.10.11	14.11.11	30.12.11	16.12.11	16.12.11
WI-10-11-L4	39	39	MININESS	28.08.11	10.11.11	21.11.11	30.12.11	15.12.11	15.12.11
WI-10-11-L4	6	6	NEUSTON	28.08.11	10.11.11	21.11.11	30.12.11	15.12.11	15.12.11
WI-10-12-L1	39	39	MININESS	28.08.11	12.10.11	03.11.11	30.12.11	13.12.11	13.12.11
WI-11-03-L1	6	0	NEUSTON	-	-	-	-	-	-
WI-11-03-L1	39	0	MININESS	-	-	-	-	-	-
WI-11-04-L1	6	0	NEUSTON	-	-	-	-	-	-
WI-11-04-L1	39	0	MININESS	-	-	-	-	-	-
WI-11-05-L1	6	1	NEUSTON	10.11.11	23.12.11	23.02.12	07.03.12	27.02.12	27.02.12
WI-11-05-L1	39	0	MININESS	-	-	-	-	-	-
WI-11-06-L1	6	5	NEUSTON	10.11.11	24.01.12	24.02.12	07.03.12	28.02.12	02.03.12
WI-11-06-L1	39	10	MININESS	10.11.11	24.01.12	24.02.12	07.03.12	28.02.12	02.03.12
WI-11-07-L1	6	5	NEUSTON	10.11.11	31.01.12	24.02.12	07.03.12	28.02.12	02.03.12
WI-11-07-L1	39	10	MININESS	10.11.11	31.01.12	24.02.12	07.03.12	28.02.12	02.03.12
WI-11-08-L1	6	0	NEUSTON	-	-	-	-	-	-
WI-11-08-L1	39	0	MININESS	-	-	-	-	-	-
WI-11-09-L1	6	5	NEUSTON	10.11.11	23.02.12	02.03.12	07.03.12	02.03.12	02.03.12
WI-11-09-L1	39	32	MININESS	10.11.11	23.02.12	02.03.12	07.03.12	02.03.12	02.03.12
WI-11-10-L1	6	3	NEUSTON	15.03.12	22.03.12	02.04.12	30.04.12	30.04.12	30.04.12
WI-11-10-L1	39	0	MININESS	-	-	-	-	-	-
WI-11-11-L1	6	1	NEUSTON	15.03.12	22.03.12	02.04.12	30.04.12	30.04.12	30.04.12
WI-11-11-L1	2	0	MININESS	-	-	-	-	-	-
WI-11-02-L1	0	9	MININESS	15.03.12	24.03.12	06.04.12	30.04.12	30.04.12	30.04.12
WI-11-03-L2	0	10	MININESS	15.03.12	27.03.12	05.04.12	30.04.12	30.04.12	30.04.12
WI-11-04-L2	0	10	MININESS	15.03.12	28.03.12	05.04.12	30.04.12	30.04.12	30.04.12
WI-11-05-L3	0	10	MININESS	15.03.12	29.03.12	05.04.12	30.04.12	30.04.12	30.04.12
WI-11-08-L2	0	11	MININESS	15.03.12	30.03.12	10.04.12	30.04.12	30.04.12	30.04.12
WI-11-09-L1	0	9	MININESS	15.03.12	13.04.12	13.04.12	30.04.12	30.04.12	30.04.12
WI-11-10-L2	0	5	NEUSTON	15.03.12	26.03.12	04.04.12	30.04.12	30.04.12	30.04.12
WI-11-10-L2	0	38	MININESS	15.03.12	26.03.12	04.04.12	30.04.12	30.04.12	30.04.12
WI-11-12-L1	0	3	NEUSTON	15.03.12	22.03.12	06.04.12	30.04.12	30.04.12	30.04.12
WI-11-12-L1	0	8	MININESS	15.03.12	22.03.12	06.04.12	30.04.12	30.04.12	30.04.12
WI-12-01-L1	0	3	NEUSTON	15.03.12	26.03.12	12.04.12	30.04.12	30.04.12	30.04.12
WI-12-01-L1	0	9	MININESS	15.03.12	26.03.12	12.04.12	30.04.12	30.04.12	30.04.12
WI-10-09-L1	0	6	MININESS	15.03.12	04.04.12	12.04.12	30.04.12	30.04.12	30.04.12
WI-10-10-L2	0	14	MININESS	15.03.12	04.04.12	12.04.12	30.04.12	30.04.12	30.04.12
WI-10-10-L3	0	1	NEUSTON	15.03.12	10.04.12	16.04.12	30.04.12	30.04.12	30.04.12
WI-10-10-L3	0	12	MININESS	15.03.12	10.04.12	16.04.12	30.04.12	30.04.12	30.04.12
WI-10-10-L5	0	6	MININESS	15.03.12	10.04.12	16.04.12	30.04.12	30.04.12	30.04.12
WI-10-11-L1	0	17	MININESS	15.03.12	13.04.12	18.04.12	30.04.12	30.04.12	30.04.12
WI-10-11-L4	0	12	MININESS	15.03.12	30.03.12	17.04.12	30.04.12	30.04.12	30.04.12
WI-10-12-L1	0	10	MININESS	15.03.12	04.04.12	17.04.12	30.04.12	30.04.12	30.04.12
PE-10-09-L12	0	12	NEUSTON	15.03.12	30.03.12	16.04.12	30.04.12	30.04.12	30.04.12
PE-10-10-L1	0	6	NEUSTON	15.03.12	04.04.12	13.04.12	30.04.12	30.04.12	30.04.12
PE-10-10-L3	0	3	NEUSTON	15.03.12	05.04.12	16.04.12	30.04.12	30.04.12	30.04.12
PE-10-10-L5	0	5	NEUSTON	15.03.12	06.04.12	16.04.12	30.04.12	30.04.12	30.04.12
	836	**836**							

PROCESSED ZOOPLANKTON SAMPLES

The following **zooplankton** samples have been processed for the **ALASKA FISHERIES SCIENCE CENTER Seattle Laboratory:**

Cruise	Number of samples		Gear	Samples received	Identification finish	Excel file transmittal date	Logsheets mailing date
	Agreed	Received					
1DY11	70	36	20Bon	23.08.11	10.11.11	03.12.11	05.12.11
1DY11	70	36	60Bon	23.08.11	17.11.11	30.11.11	30.11.11
1DY11	12	9	CalVET	23.08.11	18.11.11	05.12.11	05.12.11
2DY11	6	6	20Bon	23.08.11	14.10.11	04.11.11	09.11.11
2DY11	6	6	60Bon	23.08.11	14.10.11	04.11.11	09.11.11
2DY11	36	36	CTDB	23.08.11	14.11.11	03.12.11	05.12.11
1AK11	15	8	60Bon	22.12.11	17.02.12	28.02.12	28.02.12
1AK11	15	8	20Bon	22.12.11	17.02.12	12.03.12	12.03.12
2AK11	15	10	60Bon	22.12.11	21.02.12	28.02.12	28.02.12
2AK11	15	10	20Bon	22.12.11	07.03.12	12.03.12	12.03.12
3AK11	15	7	60Bon	22.12.11	22.02.12	28.02.12	28.02.12
3AK11	15	7	20Bon	22.12.11	08.03.12	12.03.12	12.03.12
1MB11	100	0	Tuck1	-	-	-	-
1MB11	50	54	LG-CB	22.12.11	30.03.12	13.04.12	13.04.12
3DY11	70	23	20Bon	22.12.11	20.03.12	05.04.12	13.04.12
3DY11	70	46	60Bon	22.12.11	08.03.12	13.03.12	13.03.12
4DY11	70	0	20Bon	-	-	-	-
4DY11	70	0	60Bon	-	-	-	-
4DY11	25	0	SLED	-	-	-	-
DY11-03	7	6	Methot	22.12.11	24.02.12	28.02.12	28.02.12
?	13	0	Methot	-	-	-	-
BASIS 2007	50	0	60Bon	-	-	-	-
1TT11	8	8	CalVET	23.08.11	24.11.11	05.12.11	05.12.11
1TT11	29	29	MOC-1	23.08.11	10.11.11	30.11.11	30.11.11
1MB11	0	84	SLED	22.12.11	22.02.12	15.03.12	15.03.12
7DY11	0	9	60Bon	22.12.11	23.02.12	28.02.12	28.02.12
7DY11	0	9	SLED	22.12.11	01.03.12	12.03.12	12.03.12
3DY11	0	9	CalVET	22.12.11	24.02.12	05.04.12	13.04.12
1SS07	0	50	60Bon	22.12.11	12.04.12	-	16.04.12
2DY07	0	28	60Bon	22.12.11	04.04.12	-	16.04.12
DY05-01	0	1	Methot	22.12.11	20.02.12	28.02.12	28.02.12
MF04-09	0	2	Methot	22.12.11	20.02.12	28.02.12	28.02.12
MF06-09	0	2	Methot	22.12.11	21.02.12	28.02.12	28.02.12
MF06-05	0	8	BON/Methot	22.12.11	23.02.12	28.02.12	28.02.12
	852	**547**					

The following **zooplankton** samples have been processed for the **NORTHEAST FISHERIES SCIENCE CENTER Narragansett Laboratory**:

Cruise	Number of samples		Gear	Samples received	Identification finish	Vial mailing date	Excel file transmittal date	Logsheets mailing date
	Agreed	Received						
DE1009	78	78	60Bon	24.06.11	03.06.11	08.07.11	10.06.11	10.06.11
DE1012	95	95	60Bon	24.06.11	28.06.11	08.07.11	05.07.11	05.07.11
DE1012	48	38	60Bon	24.06.11	23.07.11	31.08.11	28.07.11	28.07.11
DE1102	137	137	60Bon	24.06.11	26.08.11	05.10.11	05.09.11	05.09.11
DE1012	0	35	60Bon	24.06.11	27.07.11	31.08.11	28.07.11	28.07.11
HB1102	130	89	60Bon	08.02.12	18.04.12	30.04.12	27.04.12	30.04.12
DE1105	130	126	60Bon	08.02.12	25.04.12	30.04.12	30.04.12	30.04.12
HB1105	130	101	60Bon	08.02.12	19.04.12	30.04.12	27.04.12	30.04.12
HB1103	100	87	60Bon	08.02.12	26.03.12	05.04.12	30.03.12	30.03.12
DE1109	100	112	60Bon	08.02.12	20.03.12	05.04.12	28.03.12	30.03.12
DE1105	0	60	60Bon	08.02.12	29.02.12	05.04.12	09.03.12	12.03.12
DE1110	0	10	60Bon	08.02.12	02.03.12	05.04.12	09.03.12	12.03.12
	948	**968**						

The following **zooplankton** samples have been processed for the **SOUTHEAST FISHERIES SCIENCE CENTER Pascagoula Laboratory:**

Cruise	Number of samples		Gear	Samples received	Identification finish	Logsheets mailing date
	Agreed	Received				
OII 0290	37	37	Bon	-	14.09.11	29.11.11
OII 0290	36	36	Neu	-	28.09.11	29.11.11
OII 0295	45	45	Bon	17.11.11	31.01.12	18.04.12
OII 0295	45	45	Neu	17.11.11	29.02.12	23.03.12
GU 0802	101	102	Bon	-	28.09.11	18.01.12
GU 0802	157	156	Neu	-	28.10.11	18.01.12
GU 0902	135	148	Bon	-	03.01.12	18.04.12
GU 0902	180	180	Neu	-	24.01.12	23.03.12
	736	**749**				

PROCESSED CPR SAMPLES

The following **zooplankton** samples have been processed for the **NORTHEAST FISHERIES SCIENCE CENTER Narragansett Laboratory**:

Cruise	Number of samples		Gear	Samples received	Identification finish	Logsheets mailing date
	Agreed	Received				
OL1009	12	13	CPR	16.05.11	06.06.11	10.06.11
OL1010	12	5	CPR	16.05.11	09.06.11	27.06.11
OL1011	12	12	CPR	03.06.11	02.08.11	08.08.11
OL1012	12	7	CPR	16.09.11	28.11.11	29.11.11
RY1009	12	0	CPR			
RY1010	12	14	CPR	16.05.11	24.05.11	31.05.11
RY1011	12	12	CPR	03.06.11	25.07.11	01.08.11
RY1012	12	12	CPR	16.09.11	23.11.12	25.11.11
RY1101	12	13	CPR	27.10.11	29.12.11	23.12.11
RY1102	12	13	CPR	27.10.11	28.12.11	10.01.12
RY1103	12	11	CPR	27.10.11	11.01.12	18.01.12
OL1104	12	13	CPR	16.09.11	10.11.11	16.11.11
OL1105	12	15	CPR	09.01.12	20.01.12	24.01.12
OL1106	12	15	CPR	09.01.12	31.01.12	03.02.12
OL1107	12	17	CPR	03.02.12	18.04.12	23.04.12
OL1108	12	16	CPR-SB	01.04.12	27.04.12	30.04.12
OL1108	0	16	CPR-MB	04.04.12	27.04.12	30.04.12
OL1109	12	0	CPR			
OL1110	12	0	CPR			
OL1111	12	0	CPR			
OL1112	12	0	CPR			
OL1201	12	0	CPR			
OL1202	12	0	CPR			
OL1203	12	0	CPR			
RY1104	12	12	CPR	31.01.12	30.03.12	13.04.12
RY1105	12	0	CPR			
RY1106	12	0	CPR			
RY1107	12	14	CPR	20.02.12	19.04.12	30.04.12
RY1108	12	13	CPR	01.04.12	27.04.12	30.04.12
RY1109	12	0	CPR			
RY1110	12	0	CPR			
RY1111	12	0	CPR			
RY1112	12	0	CPR			
RY1201	12	12	CPR	03.04.12	27.04.12	30.04.12
RY1202	12	0	CPR			
RY1203	12	0	CPR			
OL1102	0	15	CPR	16.09.11	14.10.11	17.10.11
OL1103	0	13	CPR	16.09.11	24.10.11	28.10.11
OL1013	0	14	CPR	27.10.11	06.12.11	07.12.11
RY1013	0	14	CPR	27.10.11	13.12.11	16.12.11
OL1101	0	8	CPR	31.01.12	14.03.12	19.03.12
OL1106	0	15	CPR	03.02.12	06.04.12	13.04.12
OL1107	0	14	CPR	20.02.12	12.04.12	20.04.12
	420	**348**				

SUMMARY OF SAMPLES PROCESSED THROUGHOUT THE REPORTED PERIOD FROM 1 MAY 2011 TO 30 APRIL 2012

Agreed	Received	Processed	Q.C.	Total
7022	**6495**	**6433 +62MZ**	**643**	**7138**

ICHTHYOPLANKTON

CENTER	Agreed	Received	Processed	Unprocessed	Identifications Finish Date
SEFSC Pascagoula	1137	1139	1139	0	30.04.2012
AFSC Seattle	1180	999	999	0	08.02.2012
NEFSC Narragansett	913	909	909	0	24.04.2012
DISL	836	836	836	0	18.04.2012
	4066	**3883**	**3883**	**0**	

ZOOPLANKTON

CENTER	Agreed	Received	Processed	Unprocessed	Identifications Finish Date
SEFSC Pascagoula	736	749	749	0	31.01.2012
AFSC Seattle	852	547	547	0	12.04.2012
NEFSC Narragansett	948	968	968	0	25.04.2012
	2536	**2264**	**2264**	**0**	

CPR

CENTER	Agreed	Received	Processed	Unprocessed	Identifications Finish Date
NEFSC Narragansett	420	348	348	0	30.04.2011
	420	**348**	**348**	**0**	

The total number of samples processed (including 10% quality control, with the exception of microzooplankton for which Q.C. = 0) during 12 months period – from 1 May 2011 to 30 April 2012 – there were 7138 samples. Out of that number, 1546 samples were processed for the AFSC Seattle Laboratory; 2225 samples for the NEFSC Narragansett Laboratory; 1888 samples for the SEFSC Pascagoula Laboratory; and 836 samples for the Dauphin Island Sea Laboratory.

Ten percent (10%) of each of the ichthyoplankton samples were re-sorted by a senior staff member, and fifty percent (50%) of the ichthyoplankton taxonomic identifications were checked by the chief of the Fish Taxonomy Group. Ten percent (10%) of each of the zooplankton samples (excluding microzooplankton samples) from AFSC, NEFSC, and SEFSC Centers were reexamined for counts and identifications by the chief of the Zooplankton Ecology Group.

ANNEX 3 Sorting and Identification Protocols

A. SOUTHEAST FISHERIES SCIENCE CENTER

1. SEAMAP
SOUTHEAST FISHERIES SCIENCE CENTER
ICHTHYOPLANKTON PROTOCOLS

SUBMITTED BY: Joanne Lyczkowski-Shultz

REVISION DATE: April 2012

I. Procedures for processing SEAMAP plankton samples.

A. BONGO SAMPLES

1. Measure plankton displacement volume for all BONGO net samples.

2. When excessively large numbers of fish are present, sort **(in distilled water)** an aliquot of the sample that is sufficient to yield 1,000 fish larvae, juveniles and adults. Clearly note on the data sheet the size of the aliquot sorted for fish larvae.

REMEMBER:
ALL FISH LARVAE MUST BE REMOVED FROM THE ALIQUOT.
AND
MINIMIZE THE TIME SPECIMENS ARE HELD IN WATER DURING PRESORTING AND IDENTIFICATION.

3. In general, the sample should never be split more than 5 times with the Folsom Plankton Splitter.

4. Sort **(in distilled water)** an aliquot of the sample that is sufficient to yield about 200 fish eggs when excessively large numbers of fish eggs are present. Clearly note on the data sheet the size of the aliquot sorted for fish eggs. Bongo samples under the Ich/Sort Eggs/TUNA & Ich/TUNA Protocols may also be aliquoted for eggs but not for larvae.

REMEMBER:
ALL FISH LARVAE MUST BE REMOVED FROM THE ALIQUOT.
AND
MINIMIZE THE TIME SPECIMENS ARE HELD IN WATER DURING PRESORTING AND IDENTIFICATION.

Remember to check the performance of the plankton splitter frequently by allowing the sample splits to settle undisturbed for twenty minutes on a level surface then compare the amount of sample in each jar to ascertain if the amount of sample in each jar

is equal. If the amount of sample in each jar is not equal reposition and/or adjust the splitter, recombine the splits and aliquot the sample again.

5. Place all specimens (fish larvae <u>and</u> fish eggs) into <u>95% ethanol</u>.

B. **SEAMAP <u>and</u> Spanish** NEUSTON SAMPLES

1. Do not measure displacement volume for neuston net samples.

2. Sort **<u>(in distilled water)</u>** and remove only fish specimens (larvae, juveniles and adults) from the entire sample for those neuston samples denoted by "Ich" in the protocols column of the Prioritized Sorting List. Remove <u>both</u> fish <u>and</u> fish eggs from those neuston samples denoted by "Ich/Sort Eggs" in the protocols column.

3. When excessively large numbers of **fish and/ or eggs** are present, sort **<u>(in distilled water)</u>** an aliquot of the sample that is sufficient to yield 1,000 fish larvae, juveniles and adults. Clearly note on the data sheet the size of the aliquot sorted for fish larvae.

REMEMBER:
ALL FISH LARVAE MUST BE REMOVED FROM THE ALIQUOT.
AND
MINIMIZE THE TIME SPECIMENS ARE HELD IN WATER DURING PRESORTING AND IDENTIFICATION.

4. Place all specimens (fish larvae <u>and</u> eggs) into <u>95% ethanol</u>.

C. MOCNESS SAMPLES

1. Measure plankton displacement volume for all MOCNESS samples.

2. Sort **<u>(in distilled water)</u>** and remove all fish larvae, juveniles, adults, and fish eggs from MOCNESS samples. **Net 0 samples may be aliquoted. Nets 1-9 samples cannot be aliquoted regardless of the measured plankton displacement volume or the number of eggs and larvae present.**

REMEMBER:
ALL FISH LARVAE MUST BE REMOVED FROM THE ALIQUOT.
AND

MINIMIZE THE TIME SPECIMENS ARE HELD IN WATER DURING PRESORTING AND IDENTIFICATION.

3. Place all specimens (fish larvae <u>and</u> eggs) into <u>95% ethanol</u>.

II. Identification and measurement of ichthyoplankton in SEAMAP samples.

Use distilled water during identification and measurement of larvae. Please minimize the time specimens are held in water during identification and measurement.

A. Identification

1. Please follow the classification and higher level fish names listed in Table 1.

2. Identify specimens of only the following families to the lowest possible taxon (i.e. genus and species): CLUPEIDAE *, SCIAENIDAE, SERRANIDAE, SCOMBRIDAE, STROMATEIDAE, MUGILIDAE, LUTJANIDAE, and CARANGIDAE.

*** It is now permissible to use the combined name, '*Sardinella/Harengula*', for larvae that belong to one of those two genera but that cannot be reliably distinguished from each other. Write that name on the data sheet and enter that name in the computer.**

3. Identify larvae of all other families to the genus or species level only when such identification can be made easily with little additional time. Otherwise identify to the family level only.

4. Use question marks and general comments to denote or bring attention to an uncertain or "best guess" identification of a specimen. This practice should be used whenever necessary. Make sure that all question marks and comments are entered on the electronic copies of the data sheets. Such useful notes and comments will be appended to the SEAMAP Archiving Center's computerized Comments File, and will be supplied to researchers requesting SEAMAP archived material.

5. Those specimens which cannot be taken to at least the Order level, but which are in identifiable condition, will be classified as 'Unidentified'. It is permissible to use multiple categories of unidentified larvae such as 'Unidentified I' or 'Unidentified II' to

denote larvae that are morphologically similar to each other. Head and tail sections that cannot be identified but are in good condition are placed in vials labeled 'Unidentified'.

It is now permissible to use the name 'Disintegrated' to denote damaged or mangled larvae that are unidentifiable. Those larvae in such a poor state that they are impossible to identify are called 'Disintegrated'. Head and tail sections that are too damaged to be identified are also placed in vials labeled 'Disintegrated'.

6. All fish (regardless of size or stage of development) are to be removed from samples, identified, counted, and placed in labeled specimen vials or jars that match the size of the specimens. An exception to this would be when only a few specimens of the taxon would require a larger vial or jar, in that case place all the specimens in the larger jar. Please do not break spines off specimens or force large specimens into small vials. Use larger jars for these specimens (especially the Balistidae).

B. Specimen Counts

1. COUNT the number of specimens of ALL taxa **including** '**Unidentified', 'Disintegrated'**, Clupeiformes, Perciformes, Percoidei etc and record the count and the aliquot of the sample sorted (entire or the fraction) on the data sheet and inside vial label.

2. When samples contain many parts and pieces of larvae of **'Unidentified', 'Disintegrated',** Clupeiformes, Perciformes, Percoidei etc. count only the 'heads'.

Head and tail sections are sometimes present and may possibly be identified. Head sections that can be identified should be included as a number in the total count for whole specimens; if tail sections are recognizable to species, include them in the appropriate species vial, but counting tails is not necessary.

3. Count all fish eggs from bongo net and designated neuston net samples and record what portion (aliquot) of the sample was sorted (entire or the fraction).

4. Place eggs in labeled vials **containing 95% ethanol** and ship them to the SEAMAP Archiving Center in St. Petersburg, Florida as is done with fish specimens.

C. Measurement

REMEMBER:

Specimens to be measured must be chosen randomly from the dish so that the lengths are a random subset of all the larvae in the sample. (Follow instructions that were presented by Dr. Jon Hare at the 2011 Advisory Committee meeting in Szczecin.)

*** = change or revision of previous protocols**

1. Measure up to 10 larvae identified to species for <u>all taxa</u> except the Myctophidae. For myctophid larvae identified to species measure only the smallest and largest specimens.

***** 2. Measure up to **10** specimens of all taxa of snapper larvae including larvae identified as *Lutjanus* or Lutjanidae.

*** 3 a.** Measure body length of **up to 50** specimens identified to genus or family in the **suborder Scombroidei** (i.e. the tunas, mackerels, and related species) **in bongo, neuston and MOCNESS samples from all cruises.**

*** 3 b. Measure** body length of **up to 10** specimens identified to genus or family in the **suborder Scombroidei** (i.e. the tunas, mackerels, and related species) **in Spanish Neuston samples from all cruises.**

***** 4. Except as noted above, measure the smallest and largest specimens only for larvae identified to genus, family, **suborder or order level, e.g. Percoidei, Clupeiformes, Anguilliformes, and Perciformes. <u>Remember these specimens must be counted</u>.**

5. Do not measure specimens of 'Unidentified' or 'Disintegrated' larvae.

6. Use the appropriate measurement of body length, i.e. notochord or standard length, depending on the stage of development of the specimen.

III Data Sheet and Vial or Jar Labeling and Mailing

1. Send all original data sheets and the sorting record sheets to Dr. Joanne Lyczkowski-Shultz at the SEAMAP Laboratory in Pascagoula, Mississippi. **(Keep a copy of all original data sheets until it is confirmed that original data sheets have been received in the U.S.). Also send copies of the computer generated Tuna data sheets to Dr. Lyczkowski-Shultz.** Email

Microsoft Excel files containing the data for each SEAMAP cruise to (Joanne.Lyczkowski-Shultz@noaa.gov) when sample identification and data entry checks are completed.

2. Send computer-generated identification data sheets along with the specimens (fish larvae and eggs) to the SEAMAP Archiving Center in St. Petersburg, Florida.

3. Any cephalopods removed from SEAMAP samples are to be placed in individual labeled vials containing 95% ethanol and shipped to Dr. Joanne Lyczkowski-Shultz at the SEAMAP Laboratory in Pascagoula, Mississippi.

3. The TOTAL NUMBER of vials and/or jars in which a taxon has been placed must be recorded in the "vial number" column on the identification data sheet. The label inside a vial or jar containing specimens should specify which vial or jar of the total number of vials or jars it is, for example: 1 of 2, or 2 of 2, etc. This information can be placed on the back of the label.

4. Record whether the larvae or eggs were sorted from the entire sample, denoted by 1; or a 1/2 (or smaller for eggs) aliquot on both the identification data sheets and on inside vial labels.

5. Record the following information on inside vial and/or jar labels: SEAMAP sample number, vessel, cruise number, taxon, number of specimens, aliquot size, and vial number of total vials used for that taxon (to be placed on back of label). Please use preprinted labels provided.

6. Please note which samples have been resorted for quality control and record results of these resorts on the Ichthyoplankton Sorting Record data sheet(s).

IV Shipment of Vials and Jars

1. Packages containing boxes of specimens must be reinforced with shipping tape and plastic or metal banding.

2. Packages containing oversize jars of larger specimens must be packed securely with additional packing material inside the box. These packages should have added reinforcement with shipping tape and banding. Distribute the jars in multiple packages to reduce the weight of individual packages.

3. Packages must be labeled on the outside indicating which package of the total number of packages it represents, for example, 1 of 12 or 5 of 12 etc.

Table 1: This is the classification scheme and higher level names of fishes to be used when identifying larvae from SEFSC/SEAMAP and DISL collections.

Elopiformes
- Elopidae
- Megalopidae

Albuliformes
- Albulidae

Anguilliformes
- Synaphobranchidae
- Moringuidae
- Nettastomatidae
- Congridae
- Ophichthidae
- Anguillidae
- Muraenidae
- Derichthyidae
- Serrivomeridae
- Nemichthyidae
- Chlopsidae
- Heterenchelyidae
- Cyematidae

Saccopharyngiformes
- Saccopharyngidae
- Eurypharyngidae
- Monognathidae

Notacanthiformes
- Notacanthidae

Clupeiformes
- Clupeidae
- Engraulidae

Argentiniformes
- Argentinoidei
  - Argentinidae
  - Microstomatidae
    - Bathylaginae
    - Microstomatinae
  - Opisthoproctidae
- Alepocephaloidei
  - Leptochilichthyidae
  - Alepocephalidae
  - Platytroctidae

Stomiiformes
- Gonostomatidae
- Sternoptychidae
- Phosichthyidae
- Stomioidei
  - Chauliodontidae
  - Stomiidae
  - Astronesthidae
  - Melanostomiidae
  - Malacosteidae
  - Idiacanthidae

Ateleopodiformes
- Ateleopodidae

Aulopiformes
- Aulopoidei
  - Aulopidae
  - Synodontidae
- Chlorophthlamoidei
  - Chlorophthalmidae
  - Ipnopidae
  - Notosudidae
- Alepisauroidei
  - Alepisauridae
  - Evermannellidae
  - Paralepididae
  - Scopelarchidae
- Giganturoidei
  - Bathysauridae

- Giganturidae

Myctophiformes
- Neoscopelidae
- Myctophidae

Gadiformes
- Bregmacerotidae
- Bathygadidae
- Macrouridae
- Moridae
- Melanonidae
- Phycidae
- Merlucciidae
- Steindachneriidae

Ophidiiformes
- Bythitoidei
  - Aphyonidae
  - Bythitidae
- Ophidioidei
  - Ophidiidae
    - Brotulinae
    - Brotulotaeniinae
    - Ophidiinae
    - Neobythitinae
  - Carapidae

Batrachoidiformes
- Batrachoididae

Lophiiformes
- Lophioidei
  - Lophiidae
- Antennarioidei
  - Antennariidae
- Chaunacoidei
  - Chaunacidae
- Ogcocephaloidei
  - Ogcocephalidae
- Ceratioidei
  - Caulophrynidae
  - Centrophrynidae
  - Ceratiidae
  - Diceratiidae
  - Gigantactinidae
  - Himantolophidae
  - Linophrynidae
  - Melanocetidae
  - Neoceratiidae
  - Oneirodidae
  - Thaumatichthyidae

Atheriniformes
- Atherinidae
- Atherinopsidae

Mugiliformes
- Mugilidae

Cyprinodontiformes

Beloniformes
- Scomberesocidae
- Belonidae
- Hemiramphidae
- Exocoetidae

Lampridiformes
- Lampridiidae
- Lophotidae
- Radiicephalidae
- Trachipteridae
- Regalecidae
- Stylephoridae

Beryciformes
- Anomalopidae
- Anoplogasteridae
- Berycidae
- Diretmidae
- Holocentridae
  - Holocentrinae
  - Myripristinae
- Trachichthyidae

Stephanoberyciformes
- Stephanoberycidae
- Melamphaidae
- Gibberichthyidae
- Rondeletiidae
- Barbourisidae
- Cetomimidae

- Mirapinnidae
- Megalomycteridae

Polymixiiformes
- Polymixiidae

Zeiformes
- Parazenidae
- Zeidae
- Grammicolepidae
- Oreosomatidae
- Zeniontidae

Syngnathiformes
- Aulostomidae
- Centriscidae
- Fistulariidae
- Syngnathidae
  - Hippocampinae
  - Syngnathinae

Scorpaeniformes
- Scorpaenidae
- Triglidae
- Peristediidae
- Psychrolutidae

Perciformes
- Percoidei
  - Centropomidae
  - Acropomatidae
  - Polyprionidae
  - Howellidae
  - Serranidae
    - Anthiinae
    - Epinephelinae
      - Grammistini
      - Liopropomatini
    - Serraninae
  - Symphysanodontidae
  - Grammatidae
  - Priacanthidae
  - Caproidae
  - Apogonidae
  - Epigonidae
  - Malacanthidae
  - Dactylopteridae
  - Scombropidae
  - Pomatomidae
  - Rachycentridae
  - Echeneidae
  - Carangidae
  - Coryphaenidae
  - Bramidae
  - Caristiidae
  - Emmelichthyidae
  - Lutjanidae
    - Apsilinae
    - Etelinae
    - Lutjaninae
  - Lobotidae
  - Gerreidae
  - Haemulidae
  - Inermiidae
  - Sparidae
  - Sciaenidae
  - Polynemidae
  - Mullidae
  - Pempheridae
  - Bathyclupeidae
  - Kyphosidae
  - Ephippidae
  - Chaetodontidae
  - Pomacanthidae
  - Pomacentridae
  - Cichlidae
  - Cirrhitidae
  - Opistognathidae
- Labroidei
  - Labridae
  - Scaridae
- Zoarcoidei
  - Zoarcidae
- Trachinoidei
  - Chiasmodontidae
  - Ammodytidae
  - Uranoscopidae
  - Percophidae
- Blennioidei
  - Tripterygiidae
  - Chaenopsidae
  - Dactyloscopidae

Labrisomidae
Blenniidae
Gobiesocoidei
Gobiesocidae
Callionymoidei
Callionymidae
Draconettidae
Gobioidei
Eleotridae
Gobiidae
Microdesmidae
Ptereleotridae
Acanthuroidei
Luvaridae
Acanthuridae
Sphyraenoidei
Sphyraenidae
Scombroidei
Scombrolabracidae
Gempylidae
Trichiuridae
Scombridae
Xiphioidei
Istiophoridae
Xiphiidae
Stromateoidei
Centrolophidae
Nomeidae
Ariommidae
Tetragonuridae
Stromateidae

Pleuronectiformes
Scophthalmidae
Paralichthyidae
Bothidae
Pleuronectidae
Poecilopsettidae
Achiridae
Cynoglossidae

Tetraodontiformes
Triacanthodidae
Balistidae
Monacanthidae
Ostraciidae
Tetraodontidae
Diodontidae
Molidae

2. SEAMAP
SOUTHEAST FISHERIES SCIENCE CENTER
ZOOPLANKTON Sorting PROTOCOLS

SUBMITTED BY: Joanne Lyczkowski-Shultz

REVISION DATE: April 24, 2012

The primary objective of SEAMAP/SEFSC zooplankton analyses is to build a database on the abundance of commercially important decapod crustacean larvae in the Gulf of Mexico and to assemble a collection of specimens for further taxonomic analysis. This work was initiated by SEAMAP/SEFSC under the guidance of Dr. Ken Stuck of the Gulf Coast Research Laboratory in the late 1980's. A more recent, secondary objective is to identify and count the other major zooplankton components of SEAMAP samples and to assemble a collection of specimens that can be used as 'reference/training' specimens for use with ZOOSCAN to develop automated image recognition routines.

GENERAL INSTRUCTIONS:

Decapods (see list below) are to be sorted **(in distilled water)**, removed and placed in individual labeled vials with **95% ethanol** from every sample. **The aliquot to be sorted and the taxa to be removed will depend on the plankton gear/net used to collect the sample. Decapod Protocols A and B explain the separate requirements for each type of sample depending on gear.**

All 'Other Zooplankton' specimens are to be sorted **(in distilled water)**, removed and placed in a single labeled vial with **95% ethanol** from every sample. Individual taxa are no longer to be placed in separate vials.

Separate data sheets, one for the decapods and the other for the remaining zooplankton taxa are to be filled out. These data sheets are to be copied with one copy being sent to Dr. Joanne Lyczkowski-Shultz, Mississippi Labs, Pascagoula, MS. and the original to be kept at ZSIOP, Szczecin for future reference.

The vials containing all specimens are to be shipped to Dr. Joanne Lyczkowski-Shultz, Mississippi Labs, Pascagoula, MS.

When fish eggs and/or larvae are found in a sample during zooplankton analysis the entire sample must be resorted for fish eggs and larvae. Specimens of fish eggs and larvae must be removed and given to the Ichthyoplankton Chief for identification. ISR and IDRL data sheets for these fish eggs and larvae along with the vials containing the

specimens should be included with the shipment of zooplankton specimens to Dr. Joanne Lyczkowski-Shultz.

Protocol A: DECAPOD CRUSTACEAN - BONGO and MOCNESS SAMPLES:

Taxa to be sorted from BONGO and MOCNESS samples:

1. Lobster phyllosoma and **puerulus** (list separate counts on data sheet)
2. Penaeidae postlarvae
3. Portunidae megalopae
4. Sicyoniidae postlarvae
5. *Menippe* megalopae
6. Geryonidae megalopae

7. Penaeidae larvae
8. Portunidae zoeae
9. Sicyoniidae larvae
10. Geryonidae zoeae
11. *Menippe* zoeae
12. **Caridean shrimp larvae**
13. **Stenopodid shrimp larvae**
14. Solenoceridae and **other Penaeidae larvae**
15. **Anomuran crab larvae**
16. **Sergestidae**
17. **Luciferidae**

18. **Other and damaged Decapods (larvae)**

Sorting Procedure for BONGO and MOCNESS samples:

1. Measure displacement volume of the sample OR use the previous measurement of displacement volume when the sample was sorted for ichthyoplankton. This previous measurement can be found on the ISR sheet or data file. Record the required sample collection information and the displacement volume on SEAMAP/SEFSC Decapod Crustacean Larvae Data Sheet 1.

2. The sample should be split using a Folsom or comparable plankton splitter until an aliquot containing approximately 200 to 400 decapod larvae **(taxa 7 to 17)** is obtained. When splitting the sample each split should be placed in individual beakers. In most cases, samples should be split to obtain a final aliquot size of 1/64. If the total number of larvae of taxa **7-17** (from above list) removed from

the smallest aliquot (one of the final pair) is less than 200, the remaining aliquot from the final pair should also be sorted. If necessary, additional aliquots should be sorted until a minimum of 200 larvae of taxa **7-17** have been obtained.

3. When a minimum of 200 larvae have been obtained, remove specimens of **taxa 7-17** and place them in individual labeled vials. The number of specimens removed should be recorded on the data sheet together with the final aliquot sorted for each taxon. The final aliquot size sorted for each taxon should be calculated by the addition of all the sample fractions sorted. For example: if both 1/64 fractions and the 1/32 fraction were sorted to obtain the minimum of 200 larvae then the final aliquot recorded on the data sheet should be 1/16.

4. If displacement volume of the sample is 20 ml or less, the (entire) remainder of the sample should be sorted for **taxa 1-6 and 18** (from above list). If the displacement volume is greater than 20 ml, the portion of the sample to be sorted for **taxa 1-6 and 18** should be determined using the following schedule:

Displacement volume	Aliquot to be sorted
21-40 ml	1/2
41-80 ml	1/4
81 ml or greater	1/8

5. When the required portion of the sample is sorted for larvae of **taxa 1-6 and 18** the vials containing those taxa should be individually labeled and sealed. The number of specimens sorted should be recorded on the data sheet together with the final aliquot (portion) sorted for each taxon. All specimens are to be placed in labeled vials containing **95% ethanol** (use labels supplied by Pascagoula for ichthyoplankton).

Protocol B: DECAPOD CRUSTACEAN - NEUSTON SAMPLES

Taxa to be sorted from NEUSTON samples:

1. Lobster phyllosoma (all species).
2. Penaeidae postlarvae
3. Portunidae megalopae
4. Sicyoniidae postlarvae
5. *Menippe* megalopae
6. Geryonidae megalopae

18. Other and damaged Decapods (postlarvae and megalopae**).**

Sergestidae and Luciferidae are NOT to be removed or counted from neuston samples.

Sorting Procedure for NEUSTON samples:

1. Measure displacement volume of the sample after removing debris, *Sargassum* etc. Record the required sample collection information and the displacement volume on SEAMAP/SEFSC Decapod Crustacean Larvae Data Sheet 1.

2. If displacement volume of the neuston sample is 30 ml or less, the entire sample should be sorted for **taxa 1-6 and 18** (from above list) only. If displacement volume is greater than 30 ml, the portion of the sample to be sorted should be determined using the following schedule:

Displacement volume	Aliquot to be sorted
31-60 ml	1/2
61-120 ml	1/4
121-240 ml	1/8
241 ml or greater	1/16

   If a large portion of the sample consists of *Sargassum* or coelenterates, a larger aliquot should be sorted.

3. When the required portion of the sample is sorted for larvae of **taxa 1-6 and 18** the vials containing those taxa should be individually labeled and sealed. The number of specimens sorted should be recorded on the data sheet together with the final aliquot (portion) sorted for each taxon. All specimens are to be placed in labeled vials containing **95% ethanol** (use labels supplied by Pascagoula for ichthyoplankton).

Protocol C: OTHER ZOOPLANKTON - BONGO and NEUSTON samples

Taxa of zooplankton to be sorted are listed on SEAMAP/SEFSC Other Zooplankton Data Sheet 2.

Sorting Procedure for bongo and neuston samples:

1. The sample should be split using a Folsom or comparable plankton splitter until an aliquot containing approximately 400-500 zooplankters is obtained. Stir/ bubble the sample, and take an aliquot using a Stempel Pipette or Folsom plankton splitter. The ideal aliquot should be enough to count at least 200 copepods and 200 of everything else combined, but small enough to prevent going over 500 for either.

2. Identify the organisms to the taxonomic level indicated on SEAMAP/SEFSC Zooplankton Data Sheet 2.

3. **When heads and tails are present (most common for Larvaceans and Chaetognaths) count only the heads and add that number to the count of entire specimens. The total count for that taxon to be recorded on the data sheet is the number of entire specimens + the number of heads.**

4. When the required portion of the sample is sorted for the listed zooplankton the vials containing those taxa should be individually labeled and sealed. The number of specimens sorted should be recorded on the data sheet together with the final aliquot (portion) sorted for each taxon. All specimens are to be placed in labeled vials containing 70% ethanol (use labels supplied by Pascagoula for ichthyoplankton).

SEAMAP/SEFSC Decapod Crustacean Larvae: Data Sheet 1

SEAMAP Sample Number:_____ Pascagoula Station Number:_____

Vessel:_____ Cruise Number:_____ Date Collected:_____

Gear:_____Mesh:_____ Displacement Volume:_____ Split Method or Methods:_____

Identified by:_____ Date Identified:_____ Verified By: _____

TAXON	COUNT	Final ALIQUOT	REMARKS
1a. Lobster phyllosoma			
1b. Lobster puerulus			
2. Penaeid postlarvae			
3. Portunidae megalopae			
4. Sicyoniidae postlarvae			
5. *Menippe* megalopae			
6. Geryonidae megalopae			
7. Penaeidae larvae			
8. Portunidae zoeae			
9. Sicyoniidae larvae			
10. Geryonidae zoeae			
11. *Menippe* zoeae			
12. Caridean shrimp larvae			
13. Stenopodid shrimp larvae			
14. Solenoceridae			
15. Anomuran crab larvae			

16. Other Penaeidea larvae			
17. Sergestidae			
18. Luciferidae			
19. Other and Damaged Decapods			
Comments			

SEAMAP/SEFSC Other Zooplankton: Data Sheet 2

SEAMAP Sample Number:_____ Pascagoula Station Number:_____

Vessel:_____ Cruise Number:_____ Date Collected:_____

Gear:_____ Mesh:_____ Displacement Volume (from ISR sheet or measured):_____

Split Method or Methods:_____Identified by:_____ Date Identified:_____

TAXON	Vial No.	COUNT	Final ALIQUOT	TOTAL	Remarks
Calanoid copepods					
Cyclopoid copepods					
Harpacticoid copepods					
Ostracods					
Mysid shrimp					
Cladocerans					
Amphipods					
Euphausiids (all life stages)					
Isopods					

Barnacles (all life stages)					
Stomatopod larvae					
Chaetognaths					
Hydromedusae					
Siphonophores (Calycophora)					
Ctenophore larvae					

SEAMAP Sample Number:_____

Pascagoula Station Number:_____

TAXON	Vial No.	COUNT	Final ALIQUOT	TOTAL	Remarks
Polychaetes (all life stages)					
Pteropods					
Heteropods					
Gastropod larvae					
Bivalve larvae					
Cephalopods					

Salps					
Doliolids					
Larvaceans					
Lophophores					
Echinoderms (all life stages)					
Other zooplankton					
Unidentified zooplankton					
Total Zooplankton All Taxa					
Fish Eggs					
Fish Larvae					
General Remarks:					

B. ALASKA FISHERIES SCIENCE CENTER
1. ICHTHYOPLANKTON PROTOCOLS FOR ZSIOP
ANN MATARESE (ANN.MATARESE@NOAA.GOV)

SEPTEMBER 2012-AUGUST 2013

Updates to Ichthyoplankton Protocols September 2012-August 2013

We request that 2012-2013 samples be sorted for both eggs and larvae. All eggs and larvae should be identified. No egg staging is requested for 2012-2013. The protocol code for AFSC samples is **Ich/ ID eggs** (= both eggs and larvae sorted and identified). If egg staging is requested, the protocol code will be indicated as Ich/ID and STG eggs. Over-sized jars are provided for large samples. AFSC provides the following jars: 1 oz, 2 oz, 4 oz, and 8 oz. Only poly-seal caps provided by AFSC for oversized jars should be used. AFSC requests that no 11-dram vials be used for our samples. Do not send copies of the PPSI ID sheets; only the original ID sheets are needed.

Processing

Processing for an ichthyoplankton cruise is carried out in several steps: measuring the volume of the plankton in each sample, sorting out and counting all fish eggs and larvae, measuring fish larvae, identifying all fish eggs and larvae, staging (aging) some fish eggs, and putting fish eggs in 5% Formalin and larvae in 70% ethanol (mixed from 95 % ethanol with no additives). All data are recorded **in pencil** (changes should be erased and rewritten in pencil) on paper log sheets (Ichthyoplankton Data Record [IDR]: Appendix 1; Ichthyoplankton Sorting Record [ISR]: Appendix 2), and entered into the appropriate Polish Plankton Sorting and Identification (PPSI) database. The AFSC 3-digit taxonomic codes (Appendix 3) will be used for eggs and larvae. **All entries must be verified to ensure that PPSI data and data on the IDRs are the same.** The proof sheets from the PPSI should be used to verify that the PPSI data and the ISR are the same, but these proof sheets do not need to be sent to AFSC. Particular attention should be paid to using the correct 3-digit species code. After data are verified, the database for the cruise is sent to AFSC as an email attachment **(Kimberly.Bahl@noaa.gov)**. Data cannot be verified unless the samples and data sheets are both sent as soon as they are completed.

It is critical that samples, IDRs, and ISRs are sent via surface mail as soon as possible to:

Dr. Ann Matarese
Alaska Fisheries Science Center
Resource Assessment and Conservation Engineering
7600 Sand Point Way NE
Seattle, WA 98115
U. S. A.

After the eggs and larvae are sorted out, raw BASIS samples (quart jars) will be sent as soon as possible to:

Mr. Alex Andrews
NOAA/NMFS/ABL/AFSC
17109 Point Lena Loop Road
Juneau, AK 99801
U.S.A.
Telephone number (907-789-6655)

Volume Measurement

The plankton samples are removed from their boxes and readied for volume measurements by arranging them in the numerical order of stations. Excess liquid from each sample is removed and then the remaining contents are poured into a 500-ml graduated cylinder. Enough preservative is then added or subtracted to bring the level of the liquid to an even milliliter. A funnel is placed in another clean 500-ml graduated cylinder. A draining cone of 0.333 mm or smaller mesh is placed in the funnel. The plankton and formalin are poured into the draining cone. The plankton is retained in the cone while the liquid drains into the cylinder. The plankton is considered drained when the interval between drops from the bottom of the cone increases to 15 seconds. Draining times vary with the size and composition of the sample.

The volume of the drained liquid in the cylinder is subtracted from the initial volume of plankton plus liquid. The difference is the volume of the plankton. These data are recorded on the ISR and entered into the appropriate Polish Plankton Sorting and Identification (PPSI) database. The plankton is returned to the jar with preservative in preparation for sorting.

Sorting

Each sample delivered to the sorting laboratory is sorted for all fish eggs and larvae. It is recommended that only one biologist examine each sample. The samples are assigned by carton to prevent any one biologist from receiving more than her share of "difficult" or "easy" samples.

Although techniques may vary with individual sorters, the general method for sorting is as follows: the plankton is separated from its preservative by straining it through a nylon draining-cone. The cone containing the inside jar label and the plankton is rinsed gently and then suspended in a one-liter beaker filled over ½ the way up the cone with fresh water containing a few drops of concentrated formalin. Small amounts (~ 30 ml) of plankton are spooned into 50-mm petri dishes for sorting.

Each dish is examined under a dissecting microscope at about 7-10X magnification. All fish eggs and larvae are picked out with pipettes and/or fine quality (stainless steel) "soft touch" forceps and transferred to their appropriately-labeled dishes. When the fish eggs and larvae have been sorted and checked, the remaining contents of the dish are poured into a "sorted" 1.5-liter beaker containing fresh water with a few drops of concentrated formalin. This procedure is repeated until the entire sample has been examined.

When there are head and tail sections of larvae, the number of "larvae removed" includes only the head sections. Tail sections that can be identified are placed in the appropriate vials, but are not counted in the total number. Head and tail sections that cannot be identified but are in good condition are placed in vials labeled "Unidentified". Head and tail sections that are too damaged to be identified are placed in vials labeled "Disintegrated". The number of larvae should be recorded in all separated vials including "Unidentified" and"Disintegrated".

Quality Control

Approximately 10% of each sample is resorted by a senior staff member. If two or more fish larvae and/or eggs are found, the entire sample is resorted; the results of the quality control will be recorded on the ISR.

Ichthyoplankton Sorting Record (ISR)

The combined results from sorting and quality control are entered on the ISR (Appendix 2). Plankton volumes are also recorded on this form. It is important for this form to be sent with the IDR.

Vials and Vial Labels

Each group of larvae is placed in one or more 3-dram vials. Each group of eggs is placed in one or more 1.5-dram vials. Labels are placed in each vial, and on the cap of each vial, and the vial is capped. Only poly-seal caps provided by AFSC should be used. Over-sized jars are provided for large samples. AFSC provides the following jars: 1 oz, 2 oz, 4 oz, and 8 oz. Only poly-seal caps provided by AFSC for oversized jars should be used. AFSC requests that no 11-dram vials be used for our samples. Inside and vial cap labels are written with waterproof ink, not pencil. Paper for inside labels should be Byron "Resistall" paper, as supplied by AFSC. Preprinted inside labels will be supplied for all samples to be processed. Labels on the caps should be Shamrock ½-inch Specialty Dot labels, as supplied by AFSC. Figure 1 shows inside and outside labels for sorted and identified specimens. The vials of each station are placed in small cardboard boxes with

vial dividers for delivery to the identification group, and eventual shipment to Seattle when the cruise is completed.

Identification of Fish Eggs and Larvae

Taxonomic Codes 2011**-- The AFSC 3-digit taxonomic codes will be used for eggs and larvae (Appendix 3). Updated code lists are provided yearly. The identifier will assign each specimen to the lowest taxonomic level possible.**

Unidentified (Code 139): Those specimens which cannot be taken to at least the Order level, but which are in identifiable condition, will be classified as Unidentified (code 139). Total numbers are recorded.

Disintegrated (Code 145): **Those larvae in such a poor state that they are impossible to identify are called Disintegrated (code 145). Total numbers are recorded.**

Head and tail sections are sometimes present and may possibly be identified. Head sections that can be identified should be included as a number in the total count for whole specimens; if tail sections are recognizable to species, include them in the appropriate species vial, but counting tails is not necessary. If either heads or tails are unrecognizable, count heads and record as "Disintegrated". Identification data are recorded **in pencil** on the IDR. Identification sheets must be filled out for every sample, even if no fish eggs or larvae are found. Temporary worksheets are used as identification proceeds. The style and number of these is left to the individual investigator. If the use of a worksheet results in transposing of data to the IDR, great care must be exercised to avoid error introduction. The data are then entered into the appropriate PPSI database.

When the identifiers receive the vials and the ISR from the sorting laboratory, their procedures are generally as follows:

Fish Larvae

Trained sorters may have made identifications and measurements of fish larvae for certain commonly occurring species. After checks by senior staff members, these data will be combined with those from the full identification described below. Larvae are identified to the lowest taxonomic category possible. Identifications are made by

comparing morphological characters of the larvae (e.g., body shape, meristic, pigmentation, special larval characters) with published descriptions, especially the Laboratory Guide to Early Life History Stages of Northeast Pacific Fishes (Matarese et al., 1989; web version http://access.afsc.noaa.gov/ichthyo/index.cfm). Identification data are recorded **in pencil** on the IDR. If the use of a worksheet results in transposing of data to the IDR, great care must be exercised to avoid error introduction. AFSC 3-digit taxonomic codes will be used for all identified larvae. The data are then entered into the appropriate PPSI database.

Larvae are stored in 70% ethanol in 3-dram vials. Larger containers (1, 2, 4, and 8 ounce jars) provided by AFSC should be used for large numbers of larvae and juvenile fishes. Vials and jars should be less than ½ full of larvae and larger juveniles.

Enumeration and Measuring.-- All larvae are counted and, if intact, up to 50 are measured for standard length. All larvae of each taxon should be measured when the number of individuals is less than 50. When counts exceed 50, a randomly selected sub-sample of 50 individuals should be measured. Random selection should involve randomly selecting 50 individuals from the whole sample. **Do not measure larval pieces or larvae without heads or tails.** Individual specimens of a species are arranged in rows in a plain petri dish. The dish is moved under the microscope and each specimen is aligned, and then measured with a scale to the nearest 0.1 mm. Measurements are recorded in pencil on the IDR.

Do not include embryos in larval vials or count them as larvae. Embryos should be considered as eggs, counted as such, and placed in the appropriate station's egg vial.

Fish Eggs

Enumeration.--All fish eggs are sorted, counted, and results recorded on the ISR. In samples with more than 5,000 eggs, as estimated by eye, a volumetric procedure to estimate the number of eggs is performed as follows. (These samples usually contain a preponderance (>95%) of *Theragra chalcogramma* eggs, and in many cases are samples designated for egg staging.) First, 100 eggs are picked out randomly and placed in a separate vial for staging. Then 900 eggs are counted and their settled volume is determined in a 5 or 10 ml graduated cylinder.
The volume of the remainder of the eggs is determined. The total volume equals the sum of the volume of the 900 eggs plus the volume of the remaining eggs.

Total Eggs in Sample = ((Total Volume/Vol. of 900 eggs) 900) + 100

At times there have been very large numbers of eggs collected at a station, filling jars from ¼ to over ¾ full of eggs. In these instances it is suggested that after fish larvae have been removed from the sample, that the sample be split as many times as necessary to obtain an aliquot equal to the volume of a 1 oz. jar. Eggs in the 1 oz. aliquot should be enumerated volumetrically as described above and identified. The aliquot proportion to

the entire sample must be entered on the ISR in the "Aliquot" column next to the "Eggs removed" column (example: ½, ¼, ⅛, , etc.). In addition, the aliquot proportion must be written on the IDR near where the egg information is entered. The identified aliquot should be put into a 1 oz. jar. The cap on this jar should have two dot labels: one should have the usual information about cruise, station, gear, haul and net, and the second should have "Identified aliquot" written on it. The inside label should have the usual identifying information, number of eggs as determined by volume, and the aliquot proportion (example: ¼ aliquot) written on the back of the label. The remainder of the eggs in the sample should be put into 1 oz. jars. In addition to cruise, station, gear, haul, and net information, the labels in each jar should indicate the number of jars used for the sample and the proportion of the sample not counted and identified (example: jar 24 of 27, 7/8 of original sample).

Identification--Fish eggs will be identified to lowest taxonomic category possible in all samples and the data will be recorded **in pencil** on the IDR. AFSC 3-digit taxonomic codes will be used for all identified eggs. The manipulation of the specimens, their labeling, and the microscopic techniques are similar to those used for larvae. Fish eggs are identified by comparing their morphological characters (e.g., egg diameter, oil globule presence and size, chorion characters, pigment, embryonic characters) with descriptions in the lab guide. A chart of the egg diameters of the most commonly occurring species is provided (Appendix 4). **Identifiers are requested to NOT identify eggs that are 1.0 mm; these are pleuronectid eggs that are difficult to differentiate. Identifiers should separate these pleuronectid eggs into a vial, but do not identify to species.** Identified eggs are stored in 3% formalin in 1.5-dram vials with pre-printed "Fish Egg" labels similar to those for larvae. Vials should be less than ½ full of eggs. Unidentified eggs will be stored in similar, but separate, vials and labeled "Unidentified fish eggs". For those samples in which *Theragra chalcogramma* eggs will be staged, *T. chalcogramma* eggs will be stored in vials separate from other fish eggs.

Egg Staging-- For **selected** cruises, *Theragra chalcogramma* eggs are to be staged according to a 24-stage scheme (see Appendix 5). For these samples, all *T. chalcogramma* eggs are identified and counted (see above for procedures when >5,000 eggs). Then 100 eggs are selected randomly and staged (all eggs in samples with <100 eggs). These data are recorded on the Egg Staging Form (Appendix 6).

Figure 1: Samples of inside and outside vial labels.

Appendix 1: Ichthyoplankton Data Record (IDR).
Appendix 2: Ichthyoplankton Sorting Record (ISR).
Appendix 3: AFSC Taxonomic Codes: 2011 version.
Appendix 4: Egg Diameters of commonly occurring Northeast Pacific and Bering Sea Fishes (revised, April 2012).

Appendix 5: Stages of Development of Walleye Pollock Eggs.
Appendix 6: Egg Staging Form.

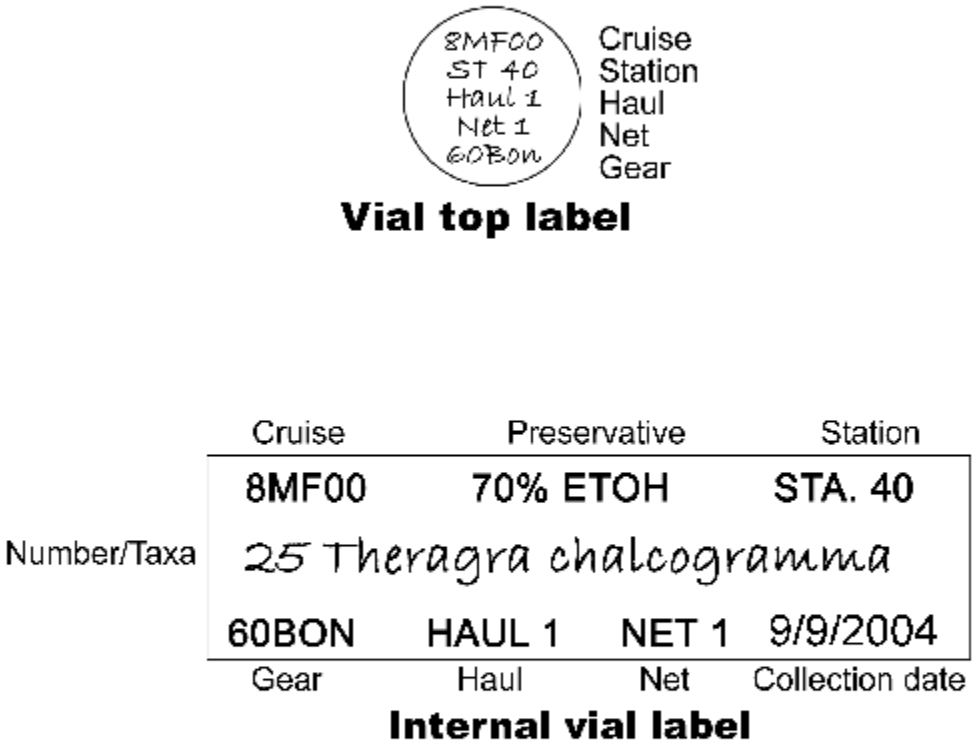


Figure 1. Examples of vial top and internal vial labels for AFSC ichthyoplankton samples.

APPENDIX 1

NOAA-NMFS **ICHTHYOPLANKTON DATA RECORD - LARVAE (IDR-L)** Page _____ of _____

Cruise:_____ Station: _____ Haul: _____ Gear Abrv.: _____ Net: _____ Mesh: _____

Sample Date: _____/_____/_____ Total Whole Larvae: _____ Identified by: _____ Sorting Date: _____/_____/_____

Code	Taxon	Stage	Total Number	Number Measured	Not Measured	Standard Length (in mm)										Vial	Heads	Tails

Comments:

version 5/2012

APPENDIX 2

NOAA/AFSC/RACE
7600 Sand Point Way NE
Seattle, WA 98115, USA

ICHTHYOPLANKTON SORTING RECORD (2012)

Vessel/Cruise:			1OM01			Gear/Mesh:		60BONGO			No. of samples:	9
STATION No.	Haul No.	NET No.	SAMPLE DATE D-M-Y	Eggs Removed	Aliquot	Larvae Removed	Aliquot	QUALITY CONTROL Eggs	Larvae	Checker	DISPLACEMENT VOLUME Orga. < 2.5 cm	Cephalo-poda

Record by: _____ Date: _____

Wanda Karadyk
MIRIZOOP Laboratory Manager

APPENDIX 3

	Gymnocanthus spp.	190
	Hemilepidotus spp.	193
	Hemitripterus spp.	196
	Hexagrammos spp.	173
	Hippoglossoides spp.	378
	Howella spp.	414
	Hygophum proximum	564
	Hygophum spp.	472
	Icelinus spp.	257
	Icelinus spp.-Icelus spp.	516
	Icelus spp.	253
	Ichthyococcus ovatus	470
	Idiacanthus spp.	341
	Lampadena spp.	566
	Lampanyctus fernae	568
	Lampanyctus spp.	277
	Lepidopsetta spp.	518
	Leptagonus spp.	513
	Lestidiops pacificum	570
	Limanda spp.	517
	Liparis spp.	380
	Lobianchia spp.	571
	Lumpenus spp.	352
	Lycodapus spp.	443
	Lycodes spp.	498
	Malacocottus spp.	494
	Malacocottus zonurus 1	201
	Malacocottus zonurus 2	315
	Maurolicus muelleri	407
	Maurolicus spp.	601
	Melamphaes simus	572
	Melamphaes spp.	310
	Myctophidae B	335
	Myctophiformes	452
	Myctophum asperum	467
	Myctophum obtusirostrum	573
	Myctophum phengodes	462
	Myctophum selenops	574
	Myctophum spp.	426
	Myoxocephalus B	203
	Myoxocephalus G	204
	Myoxocephalus spp.	202
	Nannobrachium niger	575
	Nautichthys spp.	363
	No ichthyoplankton present	138
	Notoscopelus elongatus	425
	Oncorhynchus spp.	599
	Paraliparis spp.	349
	Pholis spp.	230

	Pleuronectes spp.	264
	Podothecus spp.	611
	Protomyctophum spp.	432
	Psychrolutes spp.	493
	Psychrolutidae	524
	Radulinus spp.	205
	Salmonidae	600
	Salmoniformes	364
	Sample lost	2
	Scopeloberyx spp.	405
	Scopelosaurus spp.	297
	Selar spp.	580
	Stenobrachius spp.	159
	Sternoptyx spp.	451
	Stomioidea	595
	Stromateoidei	583
	Sudis spp.	412
	Symbolophorus spp.	311
	Syngnathus spp.	525
	Tarletonbeania spp.	585
	Teleost type B	141
	Teleost type C	142
	Teleost type D	143
	Teleost type E	144
	Teleost type F	325
	Teleost type G	322
	Teleost type H	346
	Teleost type M	261
	Teleost type P	339
	Teleost type Q	504
	Teleost type S	512
	Tetragonurus spp.	587
	Thunnus spp.	417
	Triglops spp.	208
	Unidentified	139
	Vinciguerria attenuata	404
	Vinciguerria spp.	400
	Xiphister spp.	488
Alaska plaice	quadrituberculatus	246
Alaskan ronquil	Bathymaster caeruleofasciatus	616
alligatorfish	Aspidophoroides monopterygius	375
anchovies	Engraulidae	433
antlered sculpin	Enophrys diceraus	508
Arctic alligatorfish	Ulcina olriki	528
Arctic cod	Boreogadus saida	500
Arctic flounder	Liopsetta glacialis	531
Arctic shanny	Stichaeus punctatus	228
Arctic staghorn sculpin	Gymnocanthus tricuspis	530
argentines	Argentinidae	300

armorhead sculpin	Gymnocanthus galeatus	519
arrow goby	Clevelandia ios	342
arrowtooth flounder	Atheresthes stomias	236
Atka mackerel	Pleurogrammus monopterygius	182
Atlantic fangjaw	Gonostoma atlanticum	448
barracudinas	Paralepidae	439
barreleye	Macropinna microstoma	155
bay goby	Lepidogobius lepidus	365
benttooth bristlemouth	Cyclothone acclinidens	548
Bering flounder	Hippoglossoides robustus	445
Bering wolffish	Anarhichas orientalis	265
bigeye cigarfish	Cubiceps pauciradiatus	547
bigeye poacher	Bathyagonus pentacanthus	393
bigeye squaretail	Tetragonurus atlanticus	586
bigeyes	Priacanthidae	474
bigmouth sculpin	Hemitripterus bolini	383
bigscales	Melamphaidae	272
black bristlemouth	Cyclothone atraria	549
black eelpout	Lycodes diapterus	348
black gemfish	Nesiarchus nasutus	413
black prickleback	Xiphister atropurpureus	490
blackeye goby	Coryphopterus nicholsi	478
blackfin poacher	Bathyagonus nigripinnis	392
blackmouth eelpout	Lycodapus fierasfer	610
blacktip poacher	Xeneretmus latifrons	370
blob sculpin	Psychrolutes phrictus	515
blue lanternfish	Tarletonbeania crenularis	162
bluebarred prickleback	Plectobranchus evides	343
bluethroat argentine	Nansenia candida	276
bocaccio	Sebastes paucispinis	284
bottlelight	Danaphos oculatus	316
bristlemouths	Cyclothone spp.	292
broadfin lampfish	Lampanyctus ritteri	275
brown Irish lord	Hemilepidotus spinosus	281
bubble-head snailfish	Paraliparis bullacephalus	618
buffalo sculpin	Enophrys bison	355
butter sole	Isopsetta isolepis	239
butterfishes	Stromateidae	479
Butterfly sculpin	Hemilepidotus papilio	612
cabezon	Scorpaenichthys marmoratus	273
calico sculpin	Clinocottus embryum	395
flashlightfish	Protomyctophum crockeri	163
California headlightfish	Diaphus theta	158
California lanternfish	Symbolophorus californiensis	291
California smoothtongue	Leuroglossus stilbius	304
California tonguefish	Symphurus atricauda	469
canary rockfish	Sebastes pinniger	356
capelin	Mallotus villosus	149
chub mackerel	Scomber japonicus	418

chubby flashlightfish	Electrona risso	457
chum salmon	Oncorhynchus keta	353
C-O sole	Pleuronichthys coenosus	298
cods	Gadidae	165
constellationfish	tripunctulatus	475
crescent gunnel	Pholis laeta	231
crested bigscale	Poromitra crassiceps	459
crested sculpin	Blepsias bilobus	254
curlfin sole	Pleuronichthys decurrens	299
cusk-eels	Ophidiidae	334
cutlassfishes	Trichiuridae	410
darkfin sculpin	Malacocottus zonurus	200
darter sculpin	Radulinus boleoides	333
daubed shanny	Lumpenus maculatus	227
decorated warbonnet	Chirolophis decoratus	224
deepsea smelts	Bathylagidae	150
deepsea sole	Embassichthys bathybius	262
Diogenes lanternfish	Diogenichthys lanternatus	552
dogtooth lampfish	Ceratoscopelus townsendi	309
Dover sole	Microstomus pacificus	243
dragonfishes	Stomias spp.	614
driftfishes	Nomeidae	576
duckbill barracudina	Magnisudis atlantica	455
dusky pencilsmelt	Microstoma sp.	321
dwarf lanternfish	Loweina rara	371
dwarf wrymouth	Cryptacanthodes aleutensis	229
Ebeling's fangjaw	Gonostoma ebelingi	560
ebony snailfish	Paraliparis holomelas	495
eelpouts	Zoarcidae	252
elongate fangjaw	Gonostoma elongatum	561
English sole	Parophrys vetulus	244
eulachon	Thaleichthys pacificus	301
Evermann's lanternfish	Symbolophorus evermanni	584
eyeshade sculpin	Nautichthys pribilovius	360
flabby sculpin	Zesticelus profundorum	602
flathead sole	Hippoglossoides elassodon	238
flyingfishes	Exocoetidae	557
fourhorn poacher	Hypsagonus quadricornis	376
fourline snakeblenny	Eumesogrammus praecisus	615
garnet lampfish	Stenobrachius nannochir	161
gelatinous seasnail	Liparis fabricii	532
giant cusk-eel	Spectrunculus grandis	581
giant lampfish	Parvilux ingens	367
giant wrymouth	Cryptacanthodes giganteus	267
gobies	Gobiidae	303
gray starsnout	Bathyagonus alascanus	390
great sculpin	polyacanthocephalus	388
Greenland halibut	Reinhardtius hippoglossoides	251
greenlings	Hexagrammidae	172

grenadiers	Macrouridae	169
grunt sculpin	Rhamphocottus richardsoni	207
gulper	Eurypharynx spp.	345
gunnels	Pholidae	258
hatchetfishes	Sternoptychidae	411
high cockscomb	Anoplarchus purpurescens	461
highfin dragonfish	Bathophilis flemingi	463
highseas lampfish	Triphoturus nigrescens	589
highseas lightfish	Vinciguerria poweriae	401
highsnout bigscale	Melamphaes lugubris	357
hornyhead turbot	Pleuronichthys verticalis	338
jack mackerel	Trachurus symmetricus	302
jacks	Carangidae	542
javelin spookfish	Bathylychnops exilis	447
Kamchatka flounder	Atheresthes evermanni	604
kelp greenling	Hexagrammos decagrammus	177
kelp pipefish	Syngnathus californiensis	323
kelp poacher	Hypsagonus mozinoi	386
kelp snailfish	Liparis tunicatus	533
king-of-the-salmon	Trachipterus altivelis	285
labrisomid kelpfishes	Labrisomidae	565
lancetfishes	Alepisauridae	416
lanternfishes	Myctophidae	157
lefteye flounders	Paralichthyidae	293
leister sculpin	Enophrys lucasi	505
lightfishes	Gonostomatidae	340
lingcod	Ophiodon elongatus	181
lobefin snailfish	Liparis greeni	510
longfin dragonfish	Tactostoma macropus	278
longfin Irish lord	Hemilepidotus zapus	249
longfin lanternfish	Diogenichthys atlanticus	369
longhead dab	Limanda proboscidea	597
longjaw bigscale	Scopeloberyx robustus	458
longneck eels	Derichthyidae	421
longnose lancetfish	Alepisaurus ferox	456
longnose poacher	Leptagonus leptorhynchus	492
longnose snailfish	Rhinoliparis barbulifer	379
longsnout prickleback	Lumpenella longirostris	225
longspine thornyhead	Sebastolobus altivelis	607
lowcrest hatchetfish	Argyropelecus sladeni	336
mackerels and tunas	Scombridae	578
manacled sculpin	Synchirus gilli	359
marbled snailfish	Liparis dennyi	496
masked greenling	Hexagrammos octogrammus	179
medusafish	Icichthys lockingtoni	274
midwater eelpout	Melanostigma pammelas	431
mosshead warbonnet	Chirolophis nugator	268
noble lampfish	Lampanyctus nobilis	569
northern anchovy	Engraulis mordax	290

northern flashlightfish	Protomyctophum thompsoni	164
northern lampfish	Stenobrachius leucopsarus	160
northern pearleye	Benthalbella dentata	308
northern rock sole	Lepidopsetta polyxystra	502
northern rockfish	Sebastes polyspinis	497
northern ronquil	Ronquilus jordani	220
northern sculpin	Icelinus borealis	198
northern smoothtongue	Leuroglossus schmidti	154
poacher	Agonopsis vulsa	314
nutcracker prickleback	Bryozoichthys lysimus	396
oceanic lightfish	Vinciguerria nimbaria	409
Pacifc saury	Cololabis saira	287
Pacific argentine	Argentina sialis	280
Pacific blacksmelt	Bathylagus pacificus	153
Pacific cod	Gadus macrocephalus	166
Pacific hake	Merluccius productus	260
Pacific halibut	Hippoglossus stenolepis	248
Pacific headlightfish	Diaphus pacificus	591
Pacific herring	Clupea pallasi	147
Pacific Ocean perch	Sebastes alutus	593
Pacific pomfret	Brama japonica	541
Pacific pompano	Peprilus simillimus	330
Pacific sand lance	Ammodytes hexapterus	233
Pacific sanddab	Citharichthys sordidus	279
Pacific sandfish	Trichodon trichodon	217
Pacific sardine	Sardinops sagax	446
Pacific spiny lumpsucker	Eumicrotremus orbis	215
Pacific staghorn sculpin	Leptocottus armatus	199
Pacific tomcod	Microgadus proximus	167
Pacific viperfish	Chauliodus macouni	156
padded sculpin	Artedius fenestralis	187
painted greenling	Oxylebius pictus	366
pallid eelpout	Lycodapus mandibularis	598
Panama lightfish	Vinciguerria lucetia	403
paperbones	Notosudidae	441
pearleyes	Scopelarchidae	438
pearly lanternfish	Myctophum nitidulum	468
pearly prickleback	Bryozoichthys marjorius	397
pelagic basslets	Howellidae	562
penpoint gunnnel	Apodichthys flavidus	485
petrale sole	Eopsetta jordani	286
pink salmon	Oncorhynchus gorbuscha	354
pinpoint lampfish	Nannobrachium regale	305
poachers	Agonidae	210
popeye blacksmelt	Bathylagus ochotensis	271
popeye lampfish	Bolinichthys longipes	539
pricklebacks	Stichaeidae	222
pricklebreast poacher	Stellerina xyosterna	374
prickly sculpin	Cottus asper	332

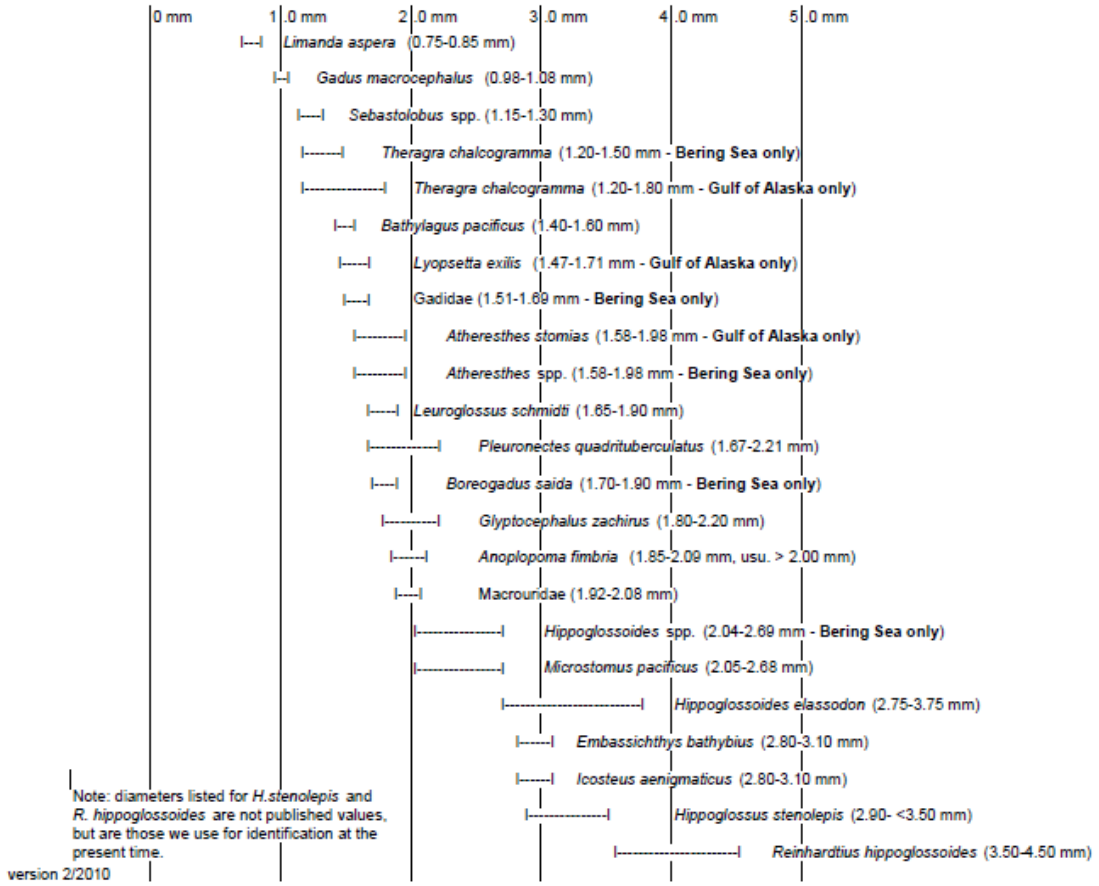
prowfish	Zaprora silenus	232
puffers	Tetraodontidae	588
Puget Sound sculpin	Ruscarius meanyi	306
pygmy poacher	Odontopyxis trispinosa	387
pygmy snailfish	Liparis cus nanus	613
quillfish	Ptilichthys goodei	221
ragfish	Icosteus aenigmaticus	283
rainbow smelt	Osmerus mordax	318
razorfish	Xyrichtys mundiceps	590
red brotula	Brosmophycis marginata	313
red Irish lord	Hemilepidotus hemilepidotus	194
rex sole	Glyptocephalus zachirus	237
ribbed sculpin	Triglops pingeli	209
ribbon barracudina	Notolepis rissoi	294
ribbon prickleback	Phytichthys chirus	486
ribbon snailfish	Liparis cyclopus	499
ribbon snake mackerel	Diplospinus multistriatus	415
ribbonfishes	Trachipteridae	324
righteye flounders	Pleuronectidae	235
ringtail snailfish	Liparis rutteri	606
robust blacksmelt	Bathylagus milleri	152
rock greenling	Hexagrammos lagocephalus	178
rock prickleback	Xiphister mucosus	489
rockfishes	Sebastes spp.	171
rockhead	Bothragonus swani	328
ronquils	Bathymasteridae	218
roughback sculpin	Chitonotus pugetensis	329
roughspine sculpin	Triglops macellus	337
sabertooth fishes	Evermanellidae	556
sablefish	Anoplopoma fimbria	183
saddleback gunnnel	Pholis ornata	487
saffron cod	Eleginus gracilis	529
sailfin sculpin	Nautichthys oculofasciatus	320
sand sole	Psettichthys melanostictus	247
sanddabs	Citharichthys spp.	263
sauries	Scomberesocidae	577
sawback poacher	Leptagonus frenatus	399
scaleless dragonfishes	Melanostomiidae	427
scaly paperbone	Scopelosaurus harryi	454
scalyhead sculpin	Artedius harringtoni	186
scissortail sculpin	Triglops forficatus	491
scorpionfishes	Scorpaenidae	270
sculpins	Cottidae	184
sea basses	Serranidae	473
searcher	Bathymaster signatus	361
sharpchin barracudina	Stemonosudis macrura	582
sharpnose sculpin	Clinocottus acuticeps	398
shining loosejaw	Aristomias scintillans	536
shiny loosejaw	Aristostomias scintillans	307

shortfin eelpout	Lycodes brevipes	442
shorthorn sculpin	Myoxocephalus scorpius	609
shortmast sculpin	Nautichthys robustus	385
shortspine thornyhead	Sebastolobus alascanus	460
showy bristlemouth	Cyclothone signata	550
showy snailfish	Liparis pulchellus	368
silverspotted sculpin	Blepsias cirrhosus	482
skipjack tuna	Katsuwonus pelamis	419
slender barracudina	Lestidiops ringens	288
slender bristlemouth	Cyclothone pseudopallida	608
slender cockscomb	Anoplarchus insignis	223
slender eelblenny	Lumpenus fabricii	534
slender hatchetfish	Argyropelecus affinis	450
slender lanternfish	Hygophum reinhardti	402
slender sole	Lyopsetta exilis	242
slim sculpin	Radulinus asprellus	206
slimy snailfish	Liparis mucosus	522
slipskin snailfish	Liparis fucensis	511
smalleye squaretail	Tetragonurus cuvieri	296
smelts	Osmeridae	148
smooth alligatorfish	Anoplagonus inermis	389
smooth lumpsucker	Aptocyclus ventricosus	214
smoothhead sculpin	Artedius lateralis	394
snaggletooths	Astronesthidae	592
snailfishes	Cyclopteridae	213
snailfishes	Liparidae	484
snake mackeral	Gempylus serpens	476
snake prickleback	Lumpenus sagitta	226
snubnose blacksmelt	Bathylagus wesethi	312
soft sculpin	Psychrolutes sigalutes	350
southern rock sole	Lepidopsetta bilineata	501
spatulate sculpin	Icelus spatula	509
speckled sanddab	Citharichthys stigmaeus	234
spectacled sculpin	Triglops scepticus	507
spiny flounder	Acanthopsetta nadeshnyi	605
spinycheek starsnout	Bathyagonus infraspinatus	391
spinyhead sculpin	Dasycottus setiger	189
spinytail lampfish	Lampanyctus acanthurus	567
spookfishes	Opisthoproctidae	440
Spotted snailfish	Liparis callyodon	514
stareye lightfish	Pollichthys mauli	424
stargazers	Uranoscopidae	423
staring pearleye	Scopelarchus guentheri	477
starry flounder	Platichthys stellatus	245
stout argentine	Nansenia crassa	331
stout eelblenny	Lumpenus medius	520
sturgeon poacher	Podothecus acipenserinus	212
sunbeam lampfish	Lampadena urophaos	429
surf smelt	Hypomesus pretiosus	483

swallowers	Chiasmodontidae	408
tadpole sculpin	Psychrolutes paradoxus	351
tadpole snailfish	Nectoliparis pelagicus	256
thickhead lanternfish	Hygophum atratum	563
thornback sculpin	Paricelinus hopliticus	327
thornyheads	Sebastolobus spp.	282
threaded sculpin	Gymnocanthus pistilliger	192
threespine stickleback	Gasterosteus aculeatus	170
tidepool sculpin	Oligocottus maculosus	481
tidepool snailfish	Liparis florae	216
topside lampfish	Notolychnus valdiviae	406
triplewart seadevil	Cryptopsaras couesii	545
tropical hatchetfish	Argyropelecus lychnus	295
tubenose poacher	Pallisina barbata	373
tube-snout	Aulorhynchus flavidus	480
twospine bigscale	Scopelogadus bispinosus	579
variegated snailfish	Liparis gibbus	521
variform eelpout	Lycodapus poecilus	603
veteran poacher	Podothecus veternus	526
walleye pollock	Theragra chalcogramma	168
whipnoses	Gigantactidae	558
whitebait smelt	Allosmerus elongatus	344
whitebarred prickleback	Poroclinus rothrocki	255
whitespotted greenling	Hexagrammos stelleri	180
wolf-eel	Anarrhichthys ocellatus	362
wrasses	Labridae	466
yellow Irish lord	Hemilepidotus jordani	195
yellowfin sole	Limanda aspera	241

APPENDIX 4

Diameters of fish eggs commonly occurring in the Northeast Pacific Ocean and Bering Sea



APPENDIX 5. Stages of Development of Walleye Pollock (*Theragra chalcogramma*) Eggs

Stage	Developmental Stage
1	Precell
2	2 cell
3	4 cell
4	8 cell
5	16 cell
6	32+ cell
7	Blastodermal cap
8	Early germ ring
9	Germ ring 1/4 down yolk
10	Germ ring 1/2 down yolk
11	Germ ring 3/4 down yolk
12	Late germ ring
13	Early middle (blastopore closure)
14	Middle middle (appearance of pigment)
15	Late middle (tail bud thickens)
16	Early late (tail bud lifts from yolk)
17	Tail 5/8 around yolk
18	Tail 3/4 around yolk
19	Tail 7/8 around yolk
20	Full circle around yolk
21	Tail 1 1/8 around
22	Disintegrated
23	Some cell stage
24	Some germ ring stage

APPENDIX 6

Alaska Fisheries Science Center

Egg Staging Form

Sheet ____ of ____

Cruise | Station | Haul | Gear | Net | Sample Date (M M D D Y Y Y Y)

Code | Taxonomic Group | Total Number | Number Staged

Stage 1		Stage 13	
Stage 2		Stage 14	
Stage 3		Stage 15	
Stage 4		Stage 16	
Stage 5		Stage 17	
Stage 6		Stage 18	
Stage 7		Stage 19	
Stage 8		Stage 20	
Stage 9		Stage 21	
Stage 10		Stage 22	
Stage 11		Stage 23	
Stage 12		Stage 24	

Comments: _____

PPSI Stager: _____

Date Staged: _____ (MM/DD/YYYY)

AFSC Checker: _____

ver. 18 Aug. 1995 (2012)
file:ppsipepr.xls, sheet 3
EXCEL ver. 5.0c

2. AFSC Zooplankton Sorting Protocols

ALASKA FISHERIES SCIENCE CENTER
ZOOPLANKTON SORTING PROTOCOLS
MAY 2012 TO APRIL 2013

For 2012 - 2013, we will have 3 procedures:

1) New Total Zooplankton	This Document
2) Microzooplankton	Document Attached
3) Ressler Protocol	Document Attached

Changes to Zooplankton Sorting Protocols

A New Total Zooplankton Protocol has been written to reflect the species diversity in the 3 LMEs sampled by the Alaska Center (Gulf of Alaska, eastern Bering Sea, Chukchi/Beaufort Sea). There are separate taxa lists for the eastern Bering Sea/Gulf of Alaska and Chukchi/Beaufort Sea. The sorting protocol is identical for each region, only the species lists are different. This new protocol is very similar to the old one with three exceptions:

- The new protocol has only one form from the large mesh net (505 or 333 µm; FORM F), but two forms from the fine mesh net (150 µm: FORMS G & H)
- All taxa are sorted and identified in the new protocol, not just the ones listed on the data sheet.
- The new protocol requires identification of ≥650 organisms; the old protocol required the identification of ≥ 700 organisms.

New computer entry forms will be necessary for the Total Zooplankton Protocol. We are in the process of developing a new PPSI to accompany the new paper forms. Until we can test and deliver the new program to the ZSIOP, the data will not be entered into the computer.

PLEASE DO NOT HESITATE TO ASK A QUESTION IF THE INSTRUCTIONS ARE UNCLEAR. USE EITHER E-MAIL (jeff.napp@NOAA.gov) OR FAX (206-526-6723).

ALASKA FISHERIES SCIENCE CENTER
NEW TOTAL ZOOPLANKTON SORTING PROTOCOL

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AFSC Total Zooplankton Sorting Protocol

Summary table of procedures to follow for different samplers and mesh sizes.

Type of Sampler		**Taxa Lists**	
	Large Taxa	Medium Taxa	Small Taxa
60 cm Bongo Samples (505 or 333 µm mesh)	FORM F		
20 cm Bongo Samples (153 µm mesh)		FORM G	FORM H
MOCNESS (505 or 333 µm mesh)	FORM F		
MOCNESS (153 µm)	FORM F	FORM G	FORM H
Tucker or Sled (505 or 333 µm mesh)	FORM F		
Large Clarke-Bumpus (153 µm mesh)		FORM G	FORM H
CalVET (153 µm mesh)		FORM G	FORM H

Note: At present there are separate Taxa Lists for the eastern Bering Sea/Gulf of Alaska (Table 1) and the Chukchi/Beaufort Seas (Table 2). If it is easier for the biologists at ZSIOP, then we can make these into a single list.

60 cm BONGO, MOCNESS, SLED AND TUCKER (333 or 505 µm mesh)

Step 1 Determine location of sample and find the Taxa List for that region (Table 1, eastern Bering Sea/Gulf of Alaska or Table 2, Chukchi/Beaufort Seas).

Step 2 Obtain the **FORM F** and make a note on the form of material removed that would interfere with splitting.

Step 3 Split the coarse mesh sample (333 or 505 µm) to obtain ≥ 200 large-sized individuals from column #3 of the Taxa List.

Step 3 Count all the large-sized organisms and write on FORM F.

Step 4. Repeat Step 3, if the split did not yield ≥ 200 organisms.

20 cm BONGO, CalVET, or Large Clarke-Bumpus (153 µm).

Step 1 Determine location of sample and find Taxa List for that region (Table 1, eastern Bering Sea/Gulf of Alaska or Table 2, Chukchi/Beaufort Seas).

Step 2 Obtain **FORM G** and make a note on the form of material removed that would interfere with splitting.

Step 3 Split the fine mesh sample (153 µm) to obtain ≥ 200 Medium-sized individuals from column #4 of the **Taxa List.**

Step 4 Count all the medium-sized organisms and write on FORM G.

Step 5 Repeat Step 4, if the split did not yield ≥ 200 organisms.

Step 6 Obtain **FORM H** and make a note on the form of material removed that would interfere with splitting.

Step 7 Choose a split that will yield ≥ 250 small-sized organisms from column #5 of the Taxa List

Step 8 Count all the small-sized organisms and write on FORM H.

Step 9 Repeat step 8, if the split did not yield ≥ 250 organisms.

MOCNESS (153 µm mesh)

Step 1 Determine location of sample and find the Taxa List for that region (Table 1, eastern Bering Sea/Gulf of Alaska or Table 2, Chukchi/Beaufort Seas).

Step 2 Obtain the **FORM F** and make a note on the form of material removed that would interfere with splitting.

Step 3 Split the coarse mesh sample (333 or 505 µm) to obtain ≥ 200 large-sized individuals from column #3 of the Taxa List.

Step 3 Count all the large-sized organisms and write on FORM F.

Step 4. Repeat Step 3, if the split did not yield ≥ 200 organisms.

Step 5 Obtain **FORM G** and make a note on the form of material removed that would interfere with splitting.

Step 6 Split the fine mesh sample (153 µm) to obtain ≥ 200 Medium-sized individuals from column #4 of the **Taxa List.**

Step 7 Count all the medium-sized organisms and write on FORM G.

Step 8 Repeat Step 4, if the split did not yield ≥ 200 organisms.

Step 9 Obtain **FORM H** and make a note on the form of material removed that would interfere with splitting.

Step 10 Choose a split that will yield ≥ 250 small-sized organisms from column #5 of the Taxa List

Step 11 Count all the small-sized organisms and write on FORM H.

Step 12 Repeat step 8, if the split did not yield ≥ 250 organisms.

Notes: Write the subsample factor on every data form.

EXPLANATION OF ZOOPLANKTON DATA FORMS

Paper Forms

Sample data are first recorded on paper forms and then entered into the computer using a special application developed at the Alaska Fisheries Science Center (AFSC). Please use the enclosed paper form until further notice (AFSC TOTAL ZOOPLANKTON DATA SHEETS) For all FORMS, there will be one page (double-sided) for each first split or subsample.

Information for the heading on the AFSC TOTAL ZOOPLANKTON DATA SHEETS is obtained from the label inside the original sample; write the Cruise, Station, Haul, Gear, Net and Mesh information on the paper form. Write these data on each and every data sheet (including subsamples). **If the Folsom splitter is used, then write the subsample factor with the DENOMINATOR of the aliquot (fraction of original) that is being examined**. For example, if the aliquot is 1/64th of the original sample, write "64" on the data form. **If the Stempel pipette is used, then record the Flask #, Pipette #, and the nominal volume (1, 2, 5, or 10 ml) of the pipette**. Our computer program will determine the subsample factor for subsamples obtained with the Stempel pipette. **If both the Folsum and Stempel must be used (usually MOCNESS w. 153 µm mesh or SLED), then use the Folsum first and then the Stempel. Record both sample fractions on the paper form, but do not try to enter the data into the computer. Use a staple to bind those data sheets together and send them to Seattle via FAX or email for data entry.**

When it is required to determine the sex of the specimens, write the number of males in the upper left hand cornter of the box and the number of females in the lower right hand corner of the box. For example, $\boxed{3/9}$ means that you found 3 males and 9 females.

As you examine the subsample, place taxonomic specimens, one at a time, into the appropriate vials (Table 3) in 5% buffered formalin. The vial label should be written in permanent ink on Resistall paper labels supplied by the AFSC.

Sign and date the form and make any necessary remarks concerning the sample or subsample.

Computer Forms

We are currently updating our database and do not yet have an updated version of PPSI for this new protocol. We hope to have it before the Agreement Period is complete. Once we supply ZSIOP with the program, all zooplankton data are to be entered into the computer at the ZSIOP using the program. Use the empty database files that are sent to you from Seattle to enter the data. After you have completed all samples from each cruise and gear type (for example all 20BON samples from 1MF99), then electronically send the files to Ms. Kimberly Bahl at the AFSC and airmail the paper forms to Dr. Jeffrey Napp. If any questions or problems arise with the computer entry program please e-mail your questions to Jeff Napp.

SPLITTING AND ARCHIVING PROTOCOL

FOR SAMPLES

Example #1 - A 60 cm Bongo Sample.

Figure 1 illustrates the splitting and archiving of a 60 cm Bongo sample. The 60 cm Bongo sample was split 3 times (1/8). Unfortunately the split only yielded 1/2 of the number of organisms needed (≥ 200) from the Taxa List (large organisms). Therefore the other 1/8th for this sample had to be sorted to achieve ≥ 200. The unsorted fraction was 3/4 (=1/2 + 1/4), and was placed in the original sample jar with an additional label stating that 3/4 of the original sample is in the jar. Large-medium sized organisms removed from the 1/8th splits were placed in the appropriate vials (Table 3). The sorted aliquots were combined into a separate jar or vial and labelled "1/4; of original sample; Sample List 1 organisms removed." This vial was placed in the original sample jar with the unsorted fraction.

Example #2 - A 20 cm Bongo Sample.

Figure 2 illustrates the splitting and archiving of a 20 cm Bongo sample. The sample was split 6 times. The sorter began by sorting the medium-sized organisms from the 1/16 aliquot, placing them in the appropriate vials (Table 3). She was able to find ≥ 250 organisms from this list, so only one aliquot was examined. The unsorted portion of the 1/16 split was placed in a vial and labeled "1/16 of original sample; Medium-sized organisms removed." Next she sorted and counted the 1/64th split for small-sized organisms. Unfortunately, the sorter was unable to find ≥250 of the small taxa in that subsample. Therefore she examined a second aliquot (1/64) to obtain enough organisms. All unsorted organisms from the two 1/64th splits were placed into a vial and labeled "1/32; of original sample; Small-sized organisms removed." Since the sorter examined 1/16 of the sample for medium-sized organsisms and 1/32 of the sample (1/64 + 1/64) for small-sized organsims, 29/32 of the sample remained unsorted and was placed in the original sample jar and labelled "29/32nd of original sample, not sorted." The two vials containing partially sorted aliquots were placed into the sample jar.

The archived sample must have an adequate volume of buffered formalin and internal and external labels must be added which show the fraction of the original sample which REMAINS.

Internal labels should be written in permanent ink (no pencil) on Resistall paper. Examples of internal labels:

1) 1/2 original sample -
no organisms removed

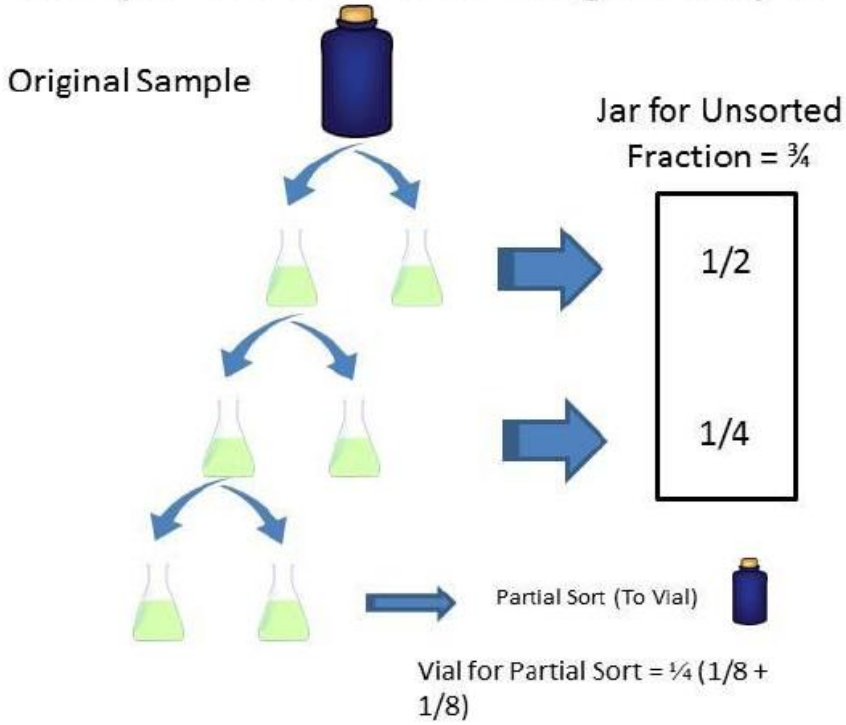
2) 1/2 original sample -
organisms ≥ 5 mm removed
See AFSC, Seattle data.

Example of an external label:

AFSC, Seattle	1/2 original Sample	Date: 3 May 85	
Cruise: 2MF85	Sta. 9 Haul: 2	Gear: 60BON	Net: 1 Mesh: 333 µm

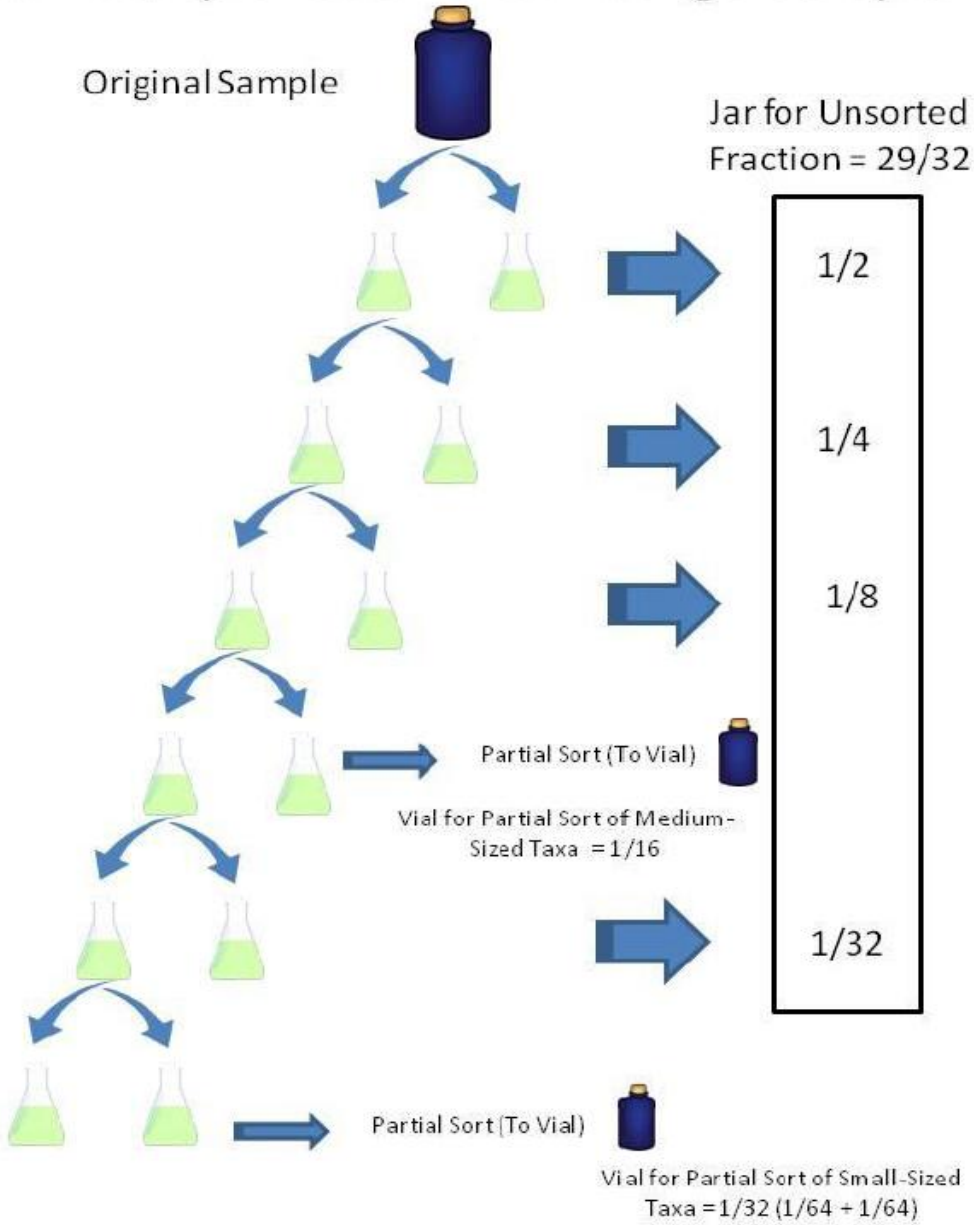
Splitting & Archiving Samples

An Example for a 60 cm Bongo Sample



Splitting & Archiving Samples

An Example for a 20 cm Bongo Sample



Subsample 1 or 2
(circle)

FORM F -- AFSC ZOOPLANKTON DATA SHEET FOR LARGE - SIZED ZOOPLANKTON
(500 or 333 µm mesh)

Samples Sorted September 2012 to May 2013

3DYLO	2	1	60BON	2	500
(Cruise)	(Station)	(Haul)	(Gear)	(Net)	(Mesh)

Folsom
(Split Method)
(Stempel or Folsom)

(Flask # Stempel ID Volume)
(e.g. F1 L2 10 ml)

8
(Subsample)
(Factor)

Phytoplankton Assessment (Check the one box that applies)

- ☐ Heavy contamination by phytoplankton; I am unable to see the zooplankton clearly
- ☐ Moderate contamination; I can see about ½ the zooplankton
- ☒ Slight contamination: I can see some phytoplankton in the jar and all of the zooplankton
- ☐ No visible phytoplankton in jar

COPEPODA

Code	Taxon	Counts for Each Stage							Sex	Sum of Counts
		00	24	23	22	21	20	999	1 or 2	
4189	*Neocalanus cristatus*			10						10
4187	*Eucalanus bungii*	5/4	5/6						10/10	20
4269	Euchaeta elongata	5							0/5	5
		b								

35

Notes:

Euphausiids

Code	Taxon	Counts for Each Stage							Sex	Sum of Counts
		00 (Adults)	65 juvenile	29 furcilia	60 calyptopis	13 nauplius	11 egg	999 (not identified)	1 or 2	
2001	*Thysanoessa inermis*		33							33
2005	*T. raschii*		20							20
2026	*T. longipes*									
2027	*T. spinifera*		3							3
2000	Euphausiacea									

Note: All juvenile euphausiids must be ≥ 5 mm.

56

Counts of Other Organisms (everything except copepods and euphausiids ≥ 5 mm)

Code	Taxon	Counts for Each Stage, Size, and Sex							Sum of Counts
		Stage	Size	Sex					
202	*Sagitta elegans* ≥ 20 mm		6						10
202	*Sagitta elegans* 5 – 19 mm		5						15
354	*Limacina helicina*		1						3
4606	*Themisto pacifica*		1						4
720	*Fritillaria* spp. ≥ 20 mm		6						
720	*Fritillaria* spp. 5 – 19 mm		5						7
701	*Oikopleura* spp. ≥ 20 mm		6						
701	*Oikopleura* spp. 5 – 19 mm		5						13

52

1
35
56
52
143

Identified By: JMN

Date: 15-V-2012

Subsample 1 of 2
(circle)

FORM F -- AFSC ZOOPLANKTON DATA SHEET FOR LARGE - SIZED ZOOPLANKTON
(500 or 333 µm mesh)

Samples Sorted September 2012 to May 2013

3DY10	2	1	60Bom	2	500
(Cruise)	(Station)	(Haul)	(Gear)	(Net)	(Mesh)

Folsom
(Split Method)
(Stempel or Folsom)

___ ___ ___
(Flask # Stempel ID Volume)
(e.g. F1 L2 10 ml)

8
(Subsample)
(Factor)

Phytoplankton Assessment (Check the one box that applies)

- ☐ Heavy contamination by phytoplankton; I am unable to see the zooplankton clearly
- ☐ Moderate contamination; I can see about ½ the zooplankton
- ☒ Slight contamination: I can see some phytoplankton in the jar and all of the zooplankton
- ☐ No visible phytoplankton in jar

COPEPODA

Code	Taxon	Counts for Each Stage							Sex	Sum of Counts
		00	24	23	22	21	20	999	1 or 2	
4189	*Neocalanus cristatus*			8						8
4187	*Eucalanus bungii*	3/2	3/4						6/6	12
4269	Eucheata elongata	3								3

23

Notes:

Euphausiids

Code	Taxon	Counts for Each Stage							Sex	Sum of Counts
		00 (Adults)	65 juvenile	29 furcilid	60 calyptopis	13 nauplius	11 egg	999 (not determined)	1 or 2	
2001	*Thysanoessa inermis*		30							30
2003	*T. raschii*		22							22
2026	*T. longipes*									
2027	*T. spinifera*		5							5
2000	Euphausiacea									

5

Note: All juvenile euphausiids must be ≥ 5 mm.

Counts of Other Organisms (everything except copepods and euphausiids ≥ 5 mm)

Code	Taxon	Counts for Each Stage, Size, and Sex							Sum of Counts
		Stage	Size	Sex					
202	*Sagitta elegans* ≥ 20 mm		6						8
202	*Sagitta elegans* 5 – 19 mm		5						15
354	*Limacina helicina*		1						2
4606	*Themisto pacifica*		1						2
720	*Fritillaria* spp. ≥ 20 mm		6						1
720	*Fritillaria* spp. 5 – 19 mm		5						5
701	*Oikopleura* spp. ≥ 20 mm		6						3
701	*Oikopleura* spp. 5 – 19 mm		5						7

42

1
23
57
42
122

Identified By: JMN

Date: 15-V-2012

Subsample 1 or 2
(circle)

FORM G -- AFSC ZOOPLANKTON DATA SHEET FOR MEDIUM - SIZED ZOOPLANKTON
(150 µm mesh)

Samples Sorted September 2012 to May 2013

3DYLO	2	1	20BON	1	150
(Cruise)	(Station)	(Haul)	(Gear)	(Net)	(Mesh)

Folsom
(Split Method)
(Stempel or Folsom)

(Flask # Stempel ID Volume)
(e.g. F1 L2 10 ml)

16
(Subsample)
(Factor)

Phytoplankton Assessment (Check the one box that applies)

- ☐ Heavy contamination by phytoplankton; I am unable to see the zooplankton clearly
- ☐ Moderate contamination; I can see about ½ the zooplankton
- ☐ Slight contamination: I can see some phytoplankton in the jar and all of the zooplankton
- ☐ No visible phytoplankton in jar

COPEPODA

Code	Taxon	Counts for Each Stage							Sex	Sum of Counts
		00	24	23	22	21	20	999	1 or 2	
4189	*Neocalanus cristatus*				10					10
4255	*Neocalanus flemingeri*		35	20						55
4190	*Neocalanus plumchrus*		5	3						8
4108	*Neocalanus* spp.				20					20
4185	*Calanus marshallae/glacialis*		31	12	10					53
4183	Unidentified Calanids				10					10
4188	*Metridia pacifica lucens*	30	23							53
4187	*Eucalanus bungii*									
4273	*Metridia echotensis*									
4267	Candacia columbae	10	13							23
4268	Centropages abdominalis	6							~~2~~ 4	6
4275	Racovitzanus antarcticus		7							7

245

Euphausiids

Code	Taxon	Counts for Each Stage							Sex	Sum of Counts
		00 (Adults)	65 juvenile	29 furcilia	00 calyptopis	13 nauplius	11 egg	999 (not determined)	1 or 2	
2001	*Thysanoessa inermis*									
2003	*T. raschii*		15							15
2026	*T. longipes*									
2027	*T. spinifera*									
2000	Euphausiacea			30						30

Count only juveniles euphausiids < 5 mm.

Notes:

45

245
45
290

Identified By: JLN

Date: 15-V-2012

Subsample 1 or 2
(circle)

FORM H -- AFSC ZOOPLANKTON DATA SHEET FOR SMALL - SIZED ZOOPLANKTON
(150 µm mesh)

Samples Sorted September 2012 to May 2013

3DY10	2	1	20BON	1	150
(Cruise)	(Station)	(Haul)	(Gear)	(Net)	(Mesh)

Folsom		64
(Split Method) (Stempel or Folsom)	(Flask # Stempel ID Volume) (e.g. F1 L2 10 ml)	(Subsample) (Factor)

Phytoplankton Assessment (Check the one box that applies)

- ☐ Heavy contamination by phytoplankton; I am unable to see the zooplankton clearly
- ☐ Moderate contamination; I can see about ½ the zooplankton
- ☐ Slight contamination: I can see some phytoplankton in the jar and all of the zooplankton
- ☐ No visible phytoplankton in jar

COPEPODA

Code	Taxon	Counts for Each Stage 00	24	23	22	21	20	999	Sex 1 or 2	Sum of Counts
4189	*Neocalanus cristatus*									
4108	*Neocalanus* spp.									
4185	*Calanus marshallae/glacialis*					8				8
4183	Unidentified Calanids									
4188	*Metridia pacifica lucens*			3	2					5
4187	*Eucalanus bungii*									
4128	*Pseudocalanus* spp.	10	11	9						30
4184	*Pseudocalanus* spp.				5	9	8			22
106	*Oithona similis*	8	4	3						15
110	*Eurytemora herdmanni*	3	3							6
4268	*Centropages abdominalis*		3							3
191	*Oncea* spp.	6	6							12

101

Notes:

Euphausiids

Code	Taxon	Counts for Each Stage							Sex	Sum of Counts
		00 (Adults)	65 juvenile	29 furcilia	60 calyptopis	13 nauplius	11 egg	999 (not determined)	1 or 2	
2000	Euphausiacea				7	2				9

9

Counts of Other Organisms (everything except copepods and euphausiids < 5 mm)

Code	Taxon	Counts for Each Stage, Size, and Sex							Sum of Counts
		Stage	Size	Sex					
202	*Sagitta elegens* < 5 mm		2						21
354	*Limacina helicina* < 5 mm		2						3
4606	*Themisto pacifica*		2						4
720	*Fritilaria* spp < 5 mm		2						
701	*Oikopleura* spp. < 5 mm		2						13
445	Hyperia medusarum	80	2						7
3107	Oregonidae	70	2						11
3205	Lithodidae	75	2						7
211	Euchaeta hemata		2						7

73

101
9
73
183

Identified By: JMN

Date: 15-V-2012

Subsample 1 or 2
(circle)

FORM H -- AFSC ZOOPLANKTON DATA SHEET FOR SMALL - SIZED ZOOPLANKTON
(150 µm mesh)

Samples Sorted September 2012 to May 2013

3DY10	2	1	20BON	1	150
(Cruise)	(Station)	(Haul)	(Gear)	(Net)	(Mesh)

Folsom				64
(Split Method) (Stempel or Folsom)	(Flask # Stempel ID Volume) (e.g. F1 L2 10 ml)			(Subsample) (Factor)

Phytoplankton Assessment (Check the one box that applies)

- ☐ Heavy contamination by phytoplankton; I am unable to see the zooplankton clearly
- ☐ Moderate contamination; I can see about ½ the zooplankton
- ☐ Slight contamination: I can see some phytoplankton in the jar and all of the zooplankton
- ☐ No visible phytoplankton in jar

COPEPODA

Code	Taxon	Counts for each Stage 00	24	23	22	21	20	999	Sex 1 or 2	Sum of Counts
4189	*Neocalanus cristatus*									
4108	*Neocalanus* spp.									
4185	*Calanus marshallae/glacialis*					7				7
4183	Unidentified Calanids									
4188	*Metridia pacifica lucens*			2	3					5
4187	*Eucalanus bungii*									
4128	*Pseudocalanus* spp.	9	12	9						30
4184	*Pseudocalanus* spp.				7	5	3			15
106	*Oithona similis*	7	5	3						15
110	*Eurytemora herdmanni*	1	4							5
4268	*Centropages abdominalis*		2							2
191	*Oncea* spp.	6	6							12

Notes:

Euphausiids

Code	Taxon	Counts for Each Stage							Sex	Sum of Counts
		00 (Adults)	65 juvenile	29 furcilia	60 calyptopis	13 nauplius	11 egg	999 (not determined)	1 or 2	
2000	Euphausiacea				13	1				14

Counts of Other Organisms (everything except copepods and euphausiids < 5 mm)

Code	Taxon	Counts for Each Stage, Size, and Sex							Sum of Counts
		Stage	Size	Sex					
202	*Sagitta elegans* < 5 mm		2						19
354	*Limacina helicina* < 5 mm		2						2
4606	*Themisto pacifica*		2						5
720	*Fritillaria* spp < 5 mm		2						
701	*Oikopleura* spp. < 5 mm		2						8
445	Hydrozoa medusae	80							10
3107	Oceanidae	70							6
3205	Lithodidae	75							6
211	Eukrohnia hamata	—							9

Identified By: JMN

Date: 15-II-2012

Table 1. Eastern Bering Sea / Gulf of Alaska Taxa List

Code	Species	Size of Organism			Stage	Sex	Size
		Large	Medium	Small			
		FORM F	FORM	FORM H			
	Subclass Copepoda		G				
	Order Calanoida						
107	ACARTIA LONGIREMIS			X	VI	F/M	
4027	ACARTIA SPP.			X	I - VI		
4245	ACARTIA TUMIDA			X	VI	F/M	
4245	ACARTIA TUMIDA			X	V		
4061	AETIDEIDAE			X	I - V		
4266	AETIDEUS PACIFICUS		X		VI	F/M	
142	CALANOIDA NAUPLII			X			
4185	CALANUS MARSHALLAE		X		VI	F/M	
4185	CALANUS MARSHALLAE		X		III - V		
4185	CALANUS MARSHALLAE			X	I - II		
4131	CALANUS GLACIALIS		X		VI	F/M	
4131	CALANUS GLACIALIS		X		III - V		
4131	CALANUS GLACIALIS			X	I - II		
4186	CALANUS PACIFICUS		X		VI	F/M	
4186	CALANUS PACIFICUS			X	III - V		
4267	CANDACIA COLUMBIAE		X		VI	F/M	
4267	CANDACIA COLUMBIAE		X		V		
4042	CANDACIA SPP.			X	I - IV		
4268	CENTROPAGES ABDOMINALIS		X		VI	F/M	
4268	CENTROPAGES ABDOMINALIS			X	V		
4268	CENTROPAGES ABDOMINALIS			X	I - IV		
4187	EUCALANUS BUNGII Adult	X			VI	F/M	
4187	EUCALANUS BUNGII	X			V	F/M	
4187	EUCALANUS BUNGII		X		IV	F/M	
4187	EUCALANUS BUNGII		X		III		
4187	EUCALANUS BUNGII			X	I - II		
4269	EUCHAETA ELONGATA Adult	X			VI	F/M	
4269	EUCHAETA ELONGATA		X		III - V		
4269	EUCHAETA ELONGATA			X	I - II		
110	EURYTEMORA HERDMANI Adult			X	VI	F/M	
110	EURYTEMORA HERDMANI			X	I - V		
4270	GAETANUS MINUTUS Adult		X		VI	F/M	
4271	GAETANUS SIMPLEX Adult		X		VI	F/M	
4072	GAETANUS SP.		X		V		
4072	GAETANUS SP.			X	I - IV		
4272	HETERORHABDUS TANNERI Adult		X		VI	F/M	
4272	HETERORHABDUS TANNERI		X		V		
4272	HETERORHABDUS TANNERI		X		IV		
158	HETERORHABDUS SPP.			X	I - III		
4273	METRIDIA OCHOTENSIS Adult		X		VI	F/M	
4273	METRIDIA OCHOTENSIS		X		V	F/M	
4273	METRIDIA OCHOTENSIS		X		IV		
4188	METRIDIA PACIFICA/LUCENS Adult		X		VI	F/M	
4188	METRIDIA PACIFICA/LUCENS		X		V	F/M	
4188	METRIDIA PACIFICA/LUCENS			X	IV		
4188	METRIDIA PACIFICA/LUCENS			X	III		
149	METRIDIA SPP.			X	I - III		
4090	MESOCALANUS TENUICORNIS Adult		X		VI	F/M	
4090	MESOCALANUS TENUICORNIS			X	I - V		
4125	MICROCALANUS SPP. Adult			X	VI	F/M	
4125	MICROCALANUS SPP.			X	I - V		
4189	NEOCALANUS CRISTATUS Adult	X			VI	F/M	
4189	NEOCALANUS CRISTATUS	X			IV-V		
4189	NEOCALANUS CRISTATUS		X		III		
4189	NEOCALANUS CRISTATUS			X	I - II		
4255	NEOCALANUS FLEMINGERI Adult		X		VI	F/M	
4255	NEOCALANUS FLEMINGERI		X		IV - V		
4190	NEOCALANUS PLUMCHRUS Adult		X		VI	F/M	
4190	NEOCALANUS PLUMCHRUS		X		IV - V		
4108	NEOCALANUS SPP.		X		IV-V		
4108	NEOCALANUS SPP.		X		III		
4108	NEOCALANUS SPP.			X	I - II		
4128	PSEUDOCALANUS SPP. Adult			X	VI	F/M	
4128	PSEUDOCALANUS SPP.			X	V	F/M	
4128	PSEUDOCALANUS SPP.			X	IV		
4184	PSEUDOCALANUS SPP.			X	I - III		
4274	PSEUDOAMALLOTHRIX OVATA Adult			X	VI	F/M	
4275	PLEUROMAMMA SCUTULLATA Adult		X		VI	F/M	
4275	PLEUROMAMMA SCUTULLATA		X		IV - V		
4275	PLEUROMAMMA SCUTULLATA			X	I - III		

Table 1. Eastern Bering Sea / Gulf of Alaska Taxa List

Code	Species	Size of Organism			Stage	Sex	Size
		Large	Medium	Small			
		FORM F	FORM	FORM H			
4276	RACOVITZANUS ANTARCTICUS Adult		X		VI	F/M	
4276	RACOVITZANUS ANTARCTICUS		X		V		
4276	RACOVITZANUS ANTARCTICUS			X	I - IV		
173	SCAPHOCALANUS SPP. Adult		X		VI	F/M	
173	SCAPHOCALANUS SPP.			X	V		
173	SCAPHOCALANUS SPP.			X	I - IV		
126	SCOLECITHRICELLA MINOR Adult			X	VI	F/M	
126	SCOLECITHRICELLA MINOR			X	I - V		
	TORTANUS DISCAUDATUS		X		VI	F/M	
	TORTANUS DISCAUDATUS			X	I - V		
	Order Cyclopoida						
106	OITHONA SIMILIS Adult			X	VI	F/M	
114	OITHONA SPINIROSTRIS Adult			X	VI	F/M	
114	OITHONA SPINIROSTRIS			X	V		
138	OITHONA SP. COPEPODIDS			X	I - V		
	Order Harpacticoida						
131	HARPACTICOIDA			X	I - VI		
170	MICROSETELLA SP.			X	I - VI		
	Order Monstrilloida						
4277	MONSTRILLA SP.			X	I - VI		
	Order Poecilostomatoida						
191	ONCAEA SP.			X	I - VI		
	Class Branchiopoda						
605	EVADNE SPP.			X			
601	PODON SPP.			X			
	Class Ostracoda						
3605	CONCHOECIA SP.	X			≥ 5 mm		
3605	CONCHOECIA SP.			X	< 5 mm		
	Class Malacostraca						
	Order Mysida						
2813	ACANTHOMYSIS DYBOWSKII	X					≥ 5 mm
2813	ACANTHOMYSIS DYBOWSKII			X			< 5 mm
2814	ACANTHOMYSIS NEPHROPHTHALMA	X					≥ 5 mm
2814	ACANTHOMYSIS NEPHROPHTHALMA			X			< 5 mm
2815	ACANTHOMYSIS PSEUDOMACROPSIS	X					≥ 5 mm
2815	ACANTHOMYSIS PSEUDOMACROPSIS			X			< 5 mm
2816	ACANTHOMYSIS SPP.	X					≥ 5 mm
2816	ACANTHOMYSIS SPP.			X			< 5 mm
2817	EXACANTHOMYSIS ALASKENSIS	X					≥ 5 mm
2817	EXACANTHOMYSIS ALASKENSIS			X			< 5 mm
2818	EXACANTHOMYSIS ARCTOPACIFICA	X					≥ 5 mm
2818	EXACANTHOMYSIS ARCTOPACIFICA			X			< 5 mm
2809	METERYTHROPS ROBUSTA	X					≥ 5 mm
2809	METERYTHROPS ROBUSTA			X			< 5 mm
2800	Unidentified MYSIDA JUVENILES	X					≥ 5 mm
2800	Unidentified MYSIDA JUVENILES			X			< 5 mm
2819	NEOMYSIS RAYII	X					≥ 5 mm
2819	NEOMYSIS RAYII			X			< 5 mm
2820	PSEUDOMMA TRUNCATUM	X					≥ 5 mm
2820	PSEUDOMMA TRUNCATUM			X			< 5 mm
2821	STILOMYSIS GRANDIS	X					≥ 5 mm
2821	STILOMYSIS GRANDIS			X			< 5 mm
	Order Euphausiacea						
2000	EUPHAUSIACEA			X	EGGS		
2000	EUPHAUSIACEA			X	NAUPLII		
2000	EUPHAUSIACEA			X	CALYPTOPIS		
2000	EUPHAUSIACEA		X		FURCILIA		
2000	EUPHAUSIACEA	X			Juvenile		≥ 5 mm
2000	EUPHAUSIACEA		X		Juvenile		< 5 mm
2000	EUPHAUSIACEA (damaged)	X			A or J		
2025	EUPHAUSIA PACIFICA AF W SPERMATOPHORES	X			A	F	

Table 1. Eastern Bering Sea / Gulf of Alaska Taxa List

Code	Species	Size of Organism			Stage	Sex	Size
		Large	Medium	Small			
		FORM F	FORM	FORM H			
2025	EUPHAUSIA PACIFICA AF WO SPERMATOPHORES	X			A	F	
2025	EUPHAUSIA PACIFICA AM	X			A	M	
2025	EUPHAUSIA PACIFICA JUVENILES	X	X		J		
2049	TESSARABRACHION OCULATUM AF W SPERMATOPHORES	X			A	F	
2049	TESSARABRACHION OCULATUM AF W/O SPERMATOPHORES	X			A	F	
2049	TESSARABRACHION OCULATUM AM	X			A	M	
2049	TESSARABRACHION OCULATUM	X	X		J		
2001	THYSANOESSA INERMIS AF W SPERMATOPHORES	X			A	F	
2001	THYSANOESSA INERMIS AF WO SPERMATOPHORES	X			A	F	
2001	THYSANOESSA INERMIS MALES	X			A	M	
2001	THYSANOESSA INERMIS JUVENILES	X	X		J		
2028	THYSANOESSA INSPINATA AF W SPERMATOPHORE	X			A	F	
2028	THYSANOESSA INSPINATA AF WO SPERMATOPHORES	X			A	F	
2028	THYSANOESSA INSPINATA AM	X			A	M	
2028	THYSANOESSA INSPINATA JUVENILES	X	X		J		
2026	THYSANOESSA LONGIPES AF W SPERMATOPHORES	X			A	F	
2026	THYSANOESSA LONGIPES AF WO SPERMATOPHORES	X			A	F	
2026	THYSANOESSA LONGIPES MALES	X			A	M	
2026	THYSANOESSA LONGIPES JUVENILES	X	X		J		
2003	THYSANOESSA RASCHII AF W SPERMATOPHORES	X			A	F	
2003	THYSANOESSA RASCHII AF WO SPERMATOPHORES	X			A	F	
2003	THYSANOESSA RASCHII MALES	X			A	M	
2003	THYSANOESSA RASCHII JUVENILES	X	X		J		
2027	THYSANOESSA SPINIFERA AF W SPERMATOPHORES	X			A	F	
2027	THYSANOESSA SPINIFERA AF WO SPERMATOPHORES	X			A	F	
2027	THYSANOESSA SPINIFERA JUVENILES	X	X		J		
2027	THYSANOESSA SPINIFERA MALES	X			A	M	
	Order Amphipoda						
	Suborder Gammaridea						
895	GAMMARIDAE (unidentifiable)	X					≥ 5 mm
895	GAMMARIDAE (unidentifiable)			X			< 5 mm
891	MONOCULODES SPP.	X					≥ 5 mm
891	MONOCULODES SPP.			X			< 5 mm
4408	RHACHOTROPIS SPP.	X					≥ 5 mm
4408	RHACHOTROPIS SPP.			X			< 5 mm
	Suborder Hyperiidea						
445	HYPERIA MEDUSARUM	X					≥ 5 mm
445	HYPERIA MEDUSARUM			X			< 5 mm
439	HYPERIA SPP.	X					≥ 5 mm
439	HYPERIA SPP.			X			< 5 mm
4605	HYPEROCHE MEDUSARUM	X					≥ 5 mm
4605	HYPEROCHE MEDUSARUM			X			< 5 mm
4602	HYPEROCHE SPP.	X					≥ 5 mm
4602	HYPEROCHE SPP.			X			< 5 mm
477	PRIMNO MACROPA	X					≥ 5 mm
477	PRIMNO MACROPA			X			< 5 mm
412	SCINA SPP.	X					≥ 5 mm
412	SCINA SPP.			X			< 5 mm
4600	THEMISTO LIBELLULA	X					≥ 5 mm
4600	THEMISTO LIBELLULA			X			< 5 mm
4606	THEMISTO PACIFICA	X					≥ 5 mm
4606	THEMISTO PACIFICA			X			< 5 mm
4607	THEMISTO SPP.	X					≥ 5 mm
4607	THEMISTO SPP.			X			< 5 mm
	Order Decapoda						
3102	CRANGON COMMUNIS	X			A or J		
3103	CRANGON DALLI	X			A or J		
552	CRANGON SP.	X			A or J		
567	CRANGONIDAE	X			Zoea		
500	DECAPODA	X			A or J		
3104	EUALUS PUSIOLUS	X			A or J		
3105	GALATHEIDAE (Anomura)		X		Zoea or Megalopae		
3106	HIPPOLYTIDAE (Anomura)		X		Zoea or Megalopae		
3205	LITHODIDAE (Anomura)		X		Zoea or Megalopae		
3107	OREGONIIDAE (Brachyura)		X		Zoea or Megalopae		
3201	PAGURIDAE (Anomura)		X		Zoea or Megalopae		
558	PANDALIDAE		X		Zoea		
566	PANDALUS BOREALIS	X			A or J		
3108	PANDALUS GONIURUS	X			A or J		

Table 1. Eastern Bering Sea / Gulf of Alaska Taxa List

Code	Species	Size of Organism			Stage	Sex	Size
		Large	Medium	Small			
		FORM F	FORM	FORM H			
3109	PANDALUS JORDANI	X			A or J		
3110	PANDALUS SP.	X			A or J		
570	SERGESTIDAE		X		Zoea		
	Order Cumacea						
1700	CUMACEA	X			A or J		
1707	DIASTYLIS ALASKENSIS	X			A or J		
1705	DIASTYLIS SPP.	X			A or J		
1708	EUDORELLOPSIS DEFORMIS	X			A or J		
1709	EUDORELLOPSIS SPP.	X			A or J		
1710	LAMPROPS SPP.	X			A or J		
1711	LEPTOSTYLIS SPP.	X			A or J		
1712	LEUCON SPP.	X			A or J		
	Phylum Cnidaria						
2300	HYDROMEDUSAE	X					≥ 5 mm
2300	HYDROMEDUSAE			X			< 5 mm
1200	SCYPHOZOA	X					≥ 5 mm
1200	SCYPHOZOA			X			< 5 mm
1200	SCYPHOZOA (EPHYRAE)			X			< 5 mm
	Order Anthoathecata						
2312	BOUGAINVILLIA SUPERCILIARIS	X					≥ 5 mm
2312	BOUGAINVILLIA SUPERCILIARIS			X			< 5 mm
2313	CALYCOPSIS NEMATOPHORA	X					≥ 5 mm
2313	CALYCOPSIS NEMATOPHORA			X			< 5 mm
2314	EUPHYSA FLAMMEA	X					≥ 5 mm
2314	EUPHYSA FLAMMEA			X			< 5 mm
2315	SARSIA PRINCIPES	X					≥ 5 mm
2315	SARSIA PRINCIPES			X			< 5 mm
2320	SARSIA TUBULOSA	X					≥ 5 mm
2320	SARSIA TUBULOSA			X			< 5 mm
2316	SARSIA SPP.	X					≥ 5 mm
2316	SARSIA SPP.			X			< 5 mm
2317	PERIGONIMUS SPP.	X					≥ 5 mm
2317	PERIGONIMUS SPP.			X			< 5 mm
2318	PROBOSCIDACTYLA FLAVICIRRATA	X					≥ 5 mm
2318	PROBOSCIDACTYLA FLAVICIRRATA			X			< 5 mm
2319	RATHKEA OCTOPUNCTATA	X					≥ 5 mm
2319	RATHKEA OCTOPUNCTATA			X			< 5 mm
	Class Hydrozoa						
	Order Narcomedusae						
2310	AEGINA ROSEA	X					≥ 5 mm
2310	AEGINA ROSEA			X			< 5 mm
2311	AEGINA SPP.	X					≥ 5 mm
2311	AEGINA SPP.			X			< 5 mm
	Order Trachymedusae						
1809	AGLANTHA DIGITALE	X					≥ 5 mm
1809	AGLANTHA DIGITALE			X			< 5 mm
	Order Leptothecata						
2302	CUSPIDELLA MERTENSI	X					≥ 5 mm
2302	CUSPIDELLA MERTENSI			X			< 5 mm
2303	EIRENE INDICANS	X					≥ 5 mm
2303	EIRENE INDICANS			X			< 5 mm
2304	OBELIA LONGISSIMA	X					≥ 5 mm
2304	OBELIA LONGISSIMA			X			< 5 mm
2305	PHIALIDIUM GREGARIUM	X					≥ 5 mm
2305	PHIALIDIUM GREGARIUM			X			< 5 mm
2306	PTYCHOGENA LACTEA	X					≥ 5 mm
2306	PTYCHOGENA LACTEA			X			< 5 mm
2307	TIAROPSIDIUM KELSEYI	X					≥ 5 mm
2307	TIAROPSIDIUM KELSEYI			X			< 5 mm
2308	TIAROPSIDIUM SP.	X					≥ 5 mm
2308	TIAROPSIDIUM SP.			X			< 5 mm
2309	TIAROPSIS MULTICIRRATA	X					≥ 5 mm
2309	TIAROPSIS MULTICIRRATA			X			< 5 mm

Table 1. Eastern Bering Sea / Gulf of Alaska Taxa List

Code	Species	Size of Organism			Stage	Sex	Size
		Large	Medium	Small			
		FORM F	FORM	FORM H			
	Class Scyphozoa						
1201	CHRYSAORA MELANASTER	X					≥ 5 mm
1201	CHRYSAORA MELANASTER			X			< 5 mm
1202	CHRYSAORA SPP.	X					≥ 5 mm
1202	CHRYSAORA SPP.			X			< 5 mm
	SIPHONOPHORA BRACTS						
	Phylum Mollusca						
1300	BIVALVIA			X	larvae		
2100	CIRRIPEDIA			X	cyprid		
2100	CIRRIPEDIA			X	nauplii		
354	CLIONE LIMACINA	X					≥ 5 mm
354	CLIONE LIMACINA			X			< 5 mm
302	LIMACINA HELICINA	X					≥ 5 mm
302	LIMACINA HELICINA			X			< 5 mm
3050	OCTOPUS LARVAE	X					≥ 5 mm
3050	OCTOPUS LARVAE			X			< 5 mm
3051	SQUID LARVAE	X					≥ 5 mm
3051	SQUID LARVAE			X			< 5 mm
300	THECOSOMATA (Unidentifiable)	X					≥ 5 mm
300	THECOSOMATA (Unidentifiable)			X			< 5 mm
	Phylum Ctenophora						
2700	CTENOPHORA	X					≥ 5 mm
2700	CTENOPHORA			X			< 5 mm
	Phylum Echinodermata						
1500	ECHINODERMATA			X	larvae		
	Phylum Chaetognatha						
211	EUKROHNIA HAMATA	X					≥ 20 mm
211	EUKROHNIA HAMATA	X					5 - 19 mm
211	EUKROHNIA HAMATA			X			< 5 mm
202	SAGITTA ELEGANS	X					≥ 20 mm
202	SAGITTA ELEGANS	X					5 - 19 mm
202	SAGITTA ELEGANS			X			< 5 mm
	Phylum Annelida						
2500	POLYCHAETA	X					≥ 20 mm
2500	POLYCHAETA	X					5 - 19 mm
2500	POLYCHAETA	X					< 5 mm
2501	TOMOPTERIS SPP.	X					≥ 20 mm
2501	TOMOPTERIS SPP.	X					5 - 19 mm
2501	TOMOPTERIS SPP.	X					< 5 mm
2500	POLYCHAETA LARVAE			X	larvae		
	Phylum Cordata						
	Class Larvacea						
720	FRITILLARIA SPP.	X					≥ 20 mm
720	FRITILLARIA SPP.	X					5 - 19 mm
720	FRITILLARIA SPP.			X			< 5 mm
701	OIKOPLEURA SPP.	X					≥ 20 mm
701	OIKOPLEURA SPP.	X					5 - 19 mm
701	OIKOPLEURA SPP.			X			< 5 mm
	Class Vertabrata						
3500	FISH EGGS	X					
3500	FISH LARVAE	X					
3500	FISH JUVENILE	X					
3501	MYCTOPHIDAE	X					

Table 2. Chukchi / Beaufort Seas Taxa List
To be completed

Table 3. -- List of taxa to be returned to Seattle, AFSC in individual vials. Each vial should contain a specimen label (permanent ink on Resistall paper) with the cruise, station, haul, gear, net, vial number, and type of organisms. The cap must have a label with at least the cruise, station, haul, gear, and vial numbers written on it.

Vial Number[1]	Specimens
1	*Neocalanus* spp. (C6-C3 unidentified & C2)
1a	*Neocalanus plumchrus* (C6–C3)
1b	Neocalanus flemingerii (C6–C3)
2	*N. cristatus*: C6 - C2
3a	*Calanus marshallae/glacialis*: C6 - C2
3b	*Calanus hyperboreus*: C6 – C2
4	*C. pacificus*: C6 - C2
5	All unknown calanid[2] C3 - C1 that fit size ranges specified on Species List 2
6	*Eucalanus bungii*: C6 - C1
7	*Pseudocalanus* spp.: all stages
8a	*Metridia pacifica/lucens*: C6 - C4 and Metriididae C3 - C1
8b	*Metridia* spp. C6 - C4
9	*Acartia* and *Oithona* spp.
10	All other Copepoda
11	Euphausiids
12	Decapoda (Crustacea)
13	Amphipoda: Hyperiidae and Gammaridae
14	All gelatinous zooplankton (except Chaeotognatha)
15a	Chaeotgnatha
15b	Appendicularia
15c	Thecosomata
15d	All other zooplankton

[1]to be written on top of the vial
[2]Calanid refers to genera in the family Calanidae (Neocalanus and Calanus)

Table 4 Stage, Size, Sex, and Gear Codes

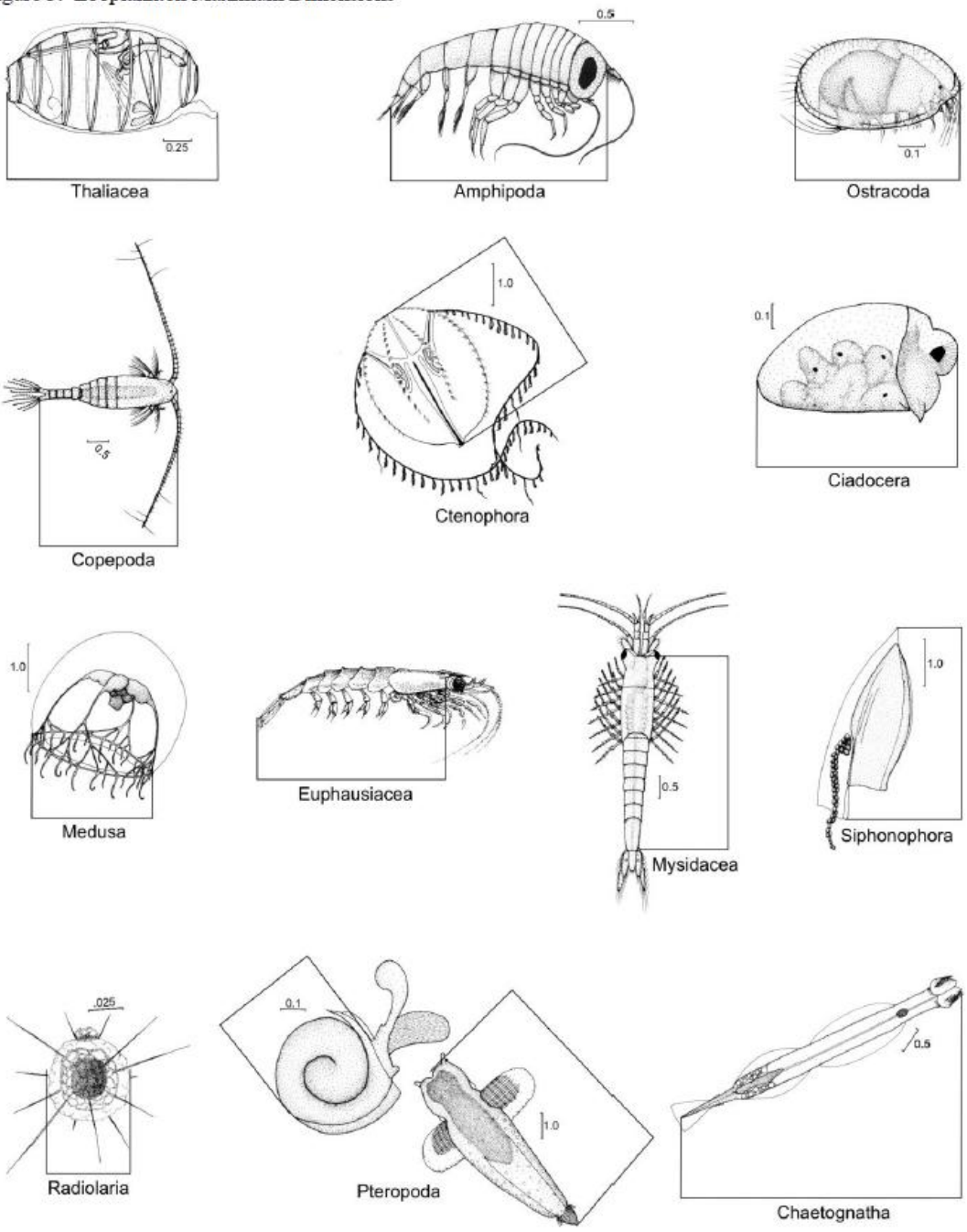
Stage Codes	Stage
0	adult
3	medusa
11	(not used)
13	nauplius
20	C - 1 (copepodite I)
21	C -2 (copepodite II)
22	C - 3 (copepodite III)
23	C - 4 (copepodite IV)
24	C - 5 (copepodite V)
25	cypris
29	furcilia
50	(not used)
51	larva
60	calyptopis (stage not determined)
61	calyptopis 1
62	calyptopis 2
63	calyptopis 3
64	A & J (adult and juvenile)
70	zoea
75	megalopae
80	juvenile
240	C6 + C5
999	stage not determined (blank line)

Size Codes	Size
1	$\geq$ 5 mm
2	< 5 mm
3	$\geq$ 2 and < 5 mm
4	< 2 mm
5	$\geq$ 5 and < 20 mm
6	$\geq$ 20 mm
7	damaged
blank	not determined

Sex Codes	Sex
1	male
2	female
blank	not determined

Gear Codes	Gear
20BON	20 cm Bongo
60BON	60 cm Bongo
LGCB	Large Clarke-Bumpus
METH	Methot
MOC1	1 m^2 MOCNESS
SLED	Epi-benthic Sled
TUCK1	1m^2 Tucker

Figure 3. Zooplankton Maximum Dimensions



Subsample 1 or 2
(circle)

FORM F -- AFSC ZOOPLANKTON DATA SHEET FOR LARGE - SIZED ZOOPLANKTON
(500 or 333 µm mesh)

Samples Sorted September 2012 to May 2013

_____ (Cruise) _____ (Station) _____ (Haul) _____ (Gear) ____ (Net) _____ (Mesh)

_____ (Split Method) (Stempel or Folsom)

____ ____ _____ (Flask # Stempel ID Volume) (e.g. F1 L2 10 ml)

_____ (Subsample) (Factor)

Phytoplankton Assessment (Check the one box that applies)

- ☐ Heavy contamination by phytoplankton; I am unable to see the zooplankton clearly
- ☐ Moderate contamination; I can see about ½ the zooplankton
- ☐ Slight contamination: I can see some phytoplankton in the jar and all of the zooplankton
- ☐ No visible phytoplankton in jar

COPEPODA

Code	Taxon	Counts for Each Stage							Sex	Sum of Counts
		00	24	23	22	21	20	999	1 or 2	
4189	*Neocalanus cristatus*									
4187	*Eucalanus bungii*									

Notes:

Euphausiids

Code	Taxon	Counts for Each Stage							Sex	Sum of Counts
		00 (Adults)	65 juvenile	29 furcilid	60 calyptopis	13 nauplius	11 egg	999 (not determined	1 or 2	
2001	*Thysanoessa inermis*									
2003	*T. raschii*									
2026	*T. longipes*									
2027	*T. spinifera*									
2000	Euphausiacea									

Note: All juvenile euphausiids must be ≥ 5 mm.

Counts of Other Organisms (everything except copepods and euphausiids ≥ 5 mm)

Code	Taxon	Counts for Each Stage, Size, and Sex							Sum of Counts
		Stage	Size	Sex					
202	*Sagitta elegans* ≥ 20 mm		6						
202	*Sagitta elegans* 5 – 19 mm		5						
354	*Limacina helicina*		1						
4606	*Themisto pacifica*		1						
720	*Fritillaria* spp. ≥ 20 mm		6						
720	*Fritillaria* spp. 5 – 19 mm		5						
701	*Oikopleura* spp. ≥ 20 mm		6						
701	*Oikopleura* spp. 5 – 19 mm		5						

Identified By: _____

Date: _____

Subsample 1 or 2
(circle)

FORM G -- AFSC ZOOPLANKTON DATA SHEET FOR MEDIUM - SIZED ZOOPLANKTON
(150 µm mesh)

Samples Sorted September 2012 to May 2013

_____ (Cruise) _____ (Station) _____ (Haul) _____ (Gear) _____ (Net) _____ (Mesh)

_____ (Split Method) (Stempel or Folsom)

____ ____ _____ (Flask # Stempel ID Volume) (e.g. F1 L2 10 ml)

_____ (Subsample) (Factor)

Phytoplankton Assessment (Check the one box that applies)

- ☐ Heavy contamination by phytoplankton; I am unable to see the zooplankton clearly
- ☐ Moderate contamination; I can see about ½ the zooplankton
- ☐ Slight contamination: I can see some phytoplankton in the jar and all of the zooplankton
- ☐ No visible phytoplankton in jar

COPEPODA

Code	Taxon	Counts for Each Stage							Sex	Sum of Counts
		00	24	23	22	21	20	999	1 or 2	
4189	*Neocalanus cristatus*									
4255	*Neocalanus flemingeri*									
4190	*Neocalanus plumchrus*									
4108	*Neocalanus* spp.									
4185	*Calanus marshallae/glacialis*									
4183	Unidentified Calanids									
4188	*Metridia pacifica lucens*									
4187	*Eucalanus bungii*									
4273	*Metridia ochotensis*									

Euphausiids

Code	Taxon	Counts for Each Stage							Sex	Sum of Counts
		00 (Adults)	65 juvenile	29 furcilid	60 calyptopis	13 nauplius	11 egg	999 (not determined	1 or 2	
2001	*Thysanoessa inermis*									
2003	*T. raschii*									
2026	*T. longipes*									
2027	*T. spinifera*									
2000	Euphausiacea									

Count only juveniles euphausiids < 5 mm.

Notes:

Identified By: _____

Date: _____

Subsample 1 or 2
(circle)

FORM H -- AFSC ZOOPLANKTON DATA SHEET FOR SMALL - SIZED ZOOPLANKTON
(150 µm mesh)

Samples Sorted September 2012 to May 2013

_____ (Cruise) _____ (Station) _____ (Haul) _____ (Gear) _____ (Net) _____ (Mesh)

_____ (Split Method) (Stempel or Folsom)

____ ____ _____ (Flask # Stempel ID Volume) (e.g. F1 L2 10 ml)

_____ (Subsample) (Factor)

Phytoplankton Assessment (Check the one box that applies)

- ☐ Heavy contamination by phytoplankton; I am unable to see the zooplankton clearly
- ☐ Moderate contamination; I can see about ½ the zooplankton
- ☐ Slight contamination: I can see some phytoplankton in the jar and all of the zooplankton
- ☐ No visible phytoplankton in jar

COPEPODA

Code	Taxon	Counts for Each Stage							Sex	Sum of Counts
		00	24	23	22	21	20	999	1 or 2	
4189	*Neocalanus cristatus*									
4108	*Neocalanus* spp.									
4185	*Calanus marshallae/glacialis*									
4183	Unidentified Calanids									
4188	*Metridia pacifica lucens*									
4187	*Eucalanus bungii*									
4128	*Pseudocalanus* spp.									
4184	*Pseudocalanus* spp.									
106	*Oithona similis*									
110	*Eurytemora herdmanni*									
4268	*Centropages abdominalis*									
191	*Oncea* spp.									

Notes:

Euphausiids

Code	Taxon	Counts for Each Stage							Sex	Sum of Counts
		00 (Adults)	65 juvenile	29 furcilid	60 calyptopis	13 nauplius	11 egg	999 (not determined	1 or 2	
2000	Euphausiacea									

Counts of Other Organisms (everything except copepods and euphausiids < 5 mm)

Code	Taxon	Counts for Each Stage, Size, and Sex							Sum of Counts
		Stage	Size	Sex					
202	*Sagitta elegans* < 5 mm		2						
354	*Limacina helicina* < 5 mm		2						
4606	*Themisto pacifica*		2						
720	*Fritillaria* spp < *5 mm*		2						
701	*Oikopleura* spp. < *5* mm		2						

Identified By: _____

Date: _____

3. ALASKA FISHERIES SCIENCE CENTER *PSEUDOCALANUS* spp. FEMALE SORTING PROTOCOL

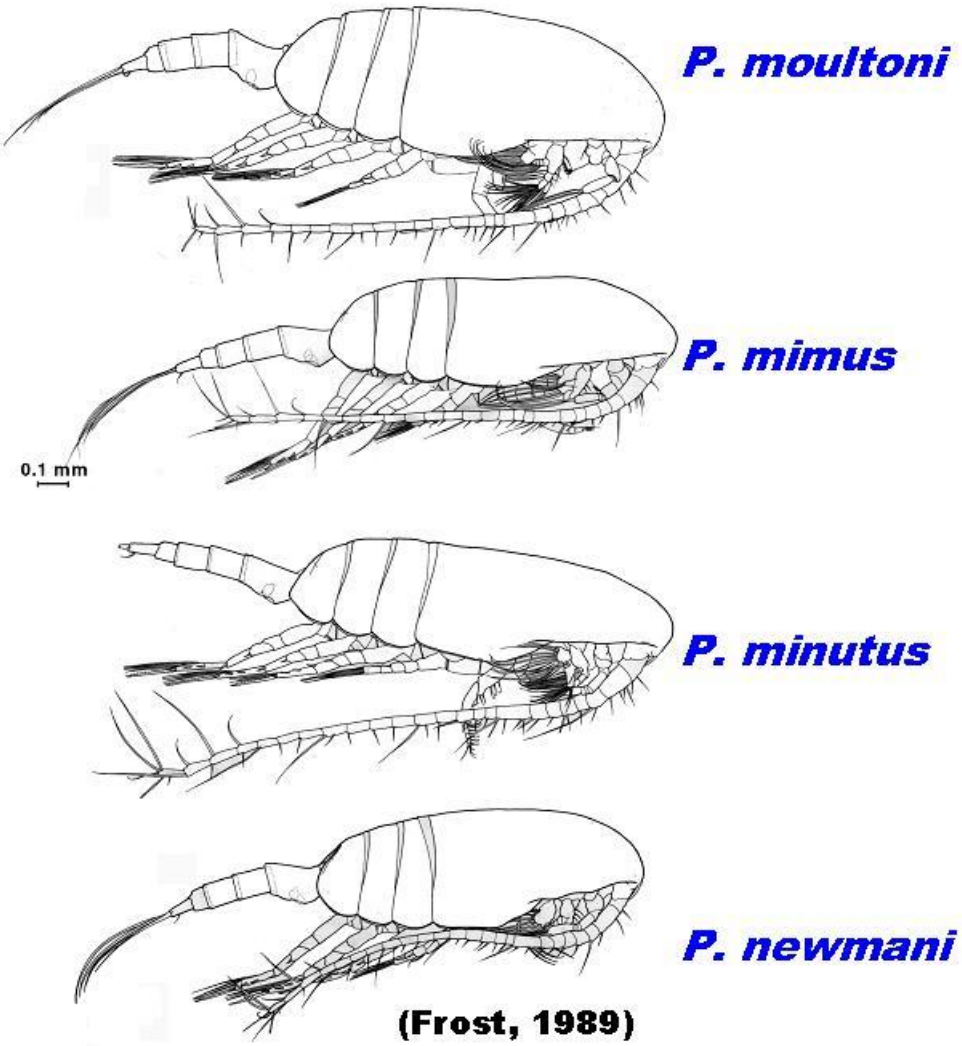
Introduction

There are five species routinely found in the North Pacific and Bering Sea: *P. minutus, P. mimus, P. moultoni, P. acuspes* and *P. newmani*. Figure 1 contains the lateral view of four of the species found in our study areas. Please refer to Frost (1989) for the key to species, additional drawings and explanation. Ten to fifteen copies of this reference were received by the Polish Plankton Sorting and Identification Center in the summer of 1999. AFSC sent new voucher specimens during the summer of 2004.

Procedure

Select the portion of the original sample that has not been examined for *Pseudocalanus* spp. (i.e. the portion not used for FORM C). Split this unexamined portion until you have a subsample that will yield 100 female *Pseudocalanus* spp. Record the sample information, subsample factor and counts on the attached form. At this time we do not have a computer form for *Pseudocalanus* female data; it is only necessary to complete the paper form. Identify and sort the females into separate vials (one for each species in a sample) using the standard AFSC labeling convention to identify the vials (these vials will not be numbered as is done for the Total Zooplankton Protocol). Place the vials in a separate box and airmail the samples each time a new box is filled. Archive the subsample and unexamined portion, appropriately labeling the bottle with the subsample factor and what was removed from each (see Total Zooplankton Protocol).

Pseudocalanus spp. of the North Pacific



Sheet ___ of ____

***Pseudocalanus* spp. females; Subsample 1, 2, or 3** (circle one)

A F S C Z O O P L A N K T O N D A T A S H E E T

Samples Sorted September 2007 to August 2008

CRUISE | STATION | HAUL | GEAR | NET

MESH | Split Method (Stempel or Folsom) | Flask #, Stempel ID, Volume (e.g. F1 L2 10ml) | SUBSAMPLE FACTOR

TAXON	CODE				STAGE	SEX	SIZE	COUNT
Pseudocalanus minutus		1	0	2		0	2	
Pseudocalanus mimus	4	2	5	3		0	2	
Pseudocalanus acuspes	4	2	4	9		0	2	
Pseudocalanus moultoni	4	2	5	1		0	2	
Pseudocalanus newmani	4	2	5	2		0	2	

R E M A R K S :

IDENTIFIED BY:_____

DATE:_____
(DD/MMM/YYYY)

VERSION 7/4/07

4. ALASKA FISHERIES SCIENCE CENTER MICROZOOPLANKTON PROTOCOL

Sample Preparation

1. Samples from CTD Niskin Bottles: Dilute the sample to 500 ml and then split in half using a Folsom plankton splitter. Sieve one half using a 40 µm sieve to reduce the volume to 30 - 40 milliliters. Pour this subsample into your counting tray.
2. Samples from CalVET: First attempt to use the Folsom plankton splitter. If a 1/64th split contains too many nauplii, then recombine the splits and use the Stempel pipette to obtain a subsample. See Appendix 1 for Stempel instructions.

Counting the Samples

Using a plankton sorting tray with dividers, count, BUT DO NOT SORT, the organisms using the categories on the data sheet. Check the tops and edges of the tray partitions as well as the surface of the water for floating organisms. If you count more than 100 total copepod nauplii in your subsample, then you are finished. If you count less than 100 total copepod nauplii, then count the other half of the sample (or another subsample for the CalVET).

See the attached pages for illustrations of microzooplankton that may be found in these samples.

- Do not count the dinoflagellates or ciliates less than 70 µm.
- Count only ciliate or rotifer lorica, not bodies without lorica.

Sample Storage

1. CTD Niskin Bottle Sample -- After counting the subsample, rinse the contents of the counting tray onto a 40 µm sieve; rinse the contents of the sieve into a 20 ml glass vial with 5 % buffered formalin. If you counted only 1/2 of the sample, then place the two subsamples in separate vials; combine the subsamples if both were counted. Label both the top and the side of the vials using the provided labels and note which subsample was counted if only 1/2 of the sample was counted. Wrap parafilm around the top of the vial. Return vials containing samples and the data sheets to Seattle.
2. CalVET Sample – Attempt to archive the sample in a 20 ml glass vial as instructed above. If there is too much plankton, then archive the uncounted fraction in the original sample jar, and ship the counted fraction to Seattle in labeled 20 ml glass vials, as above.

Data Forms and Entry

Use the attached paper form to record sample counts. Enter sample data into the computer using the PPSI data entry application from the AFSC.

Note: We will supply the 20 ml vials, sample labels, and parafilm.

FORM E; Subsample 1, 2, or 3 (circle one) Sheet ___ of ____

A F S C M I C R O Z O O P L A N K T O N
D A T A S H E E T

Samples Sorted September 2007 to August 2008

CRUISE | STATION | HAUL | GEAR | NET | DEPTH

MESH | SAMPLE VOLUME | Split Method (Stempel or Folsom) | Flask #, Stempel ID, Volume (e.g. F1 L2 10ml) | SUBSAMPLE FACTOR

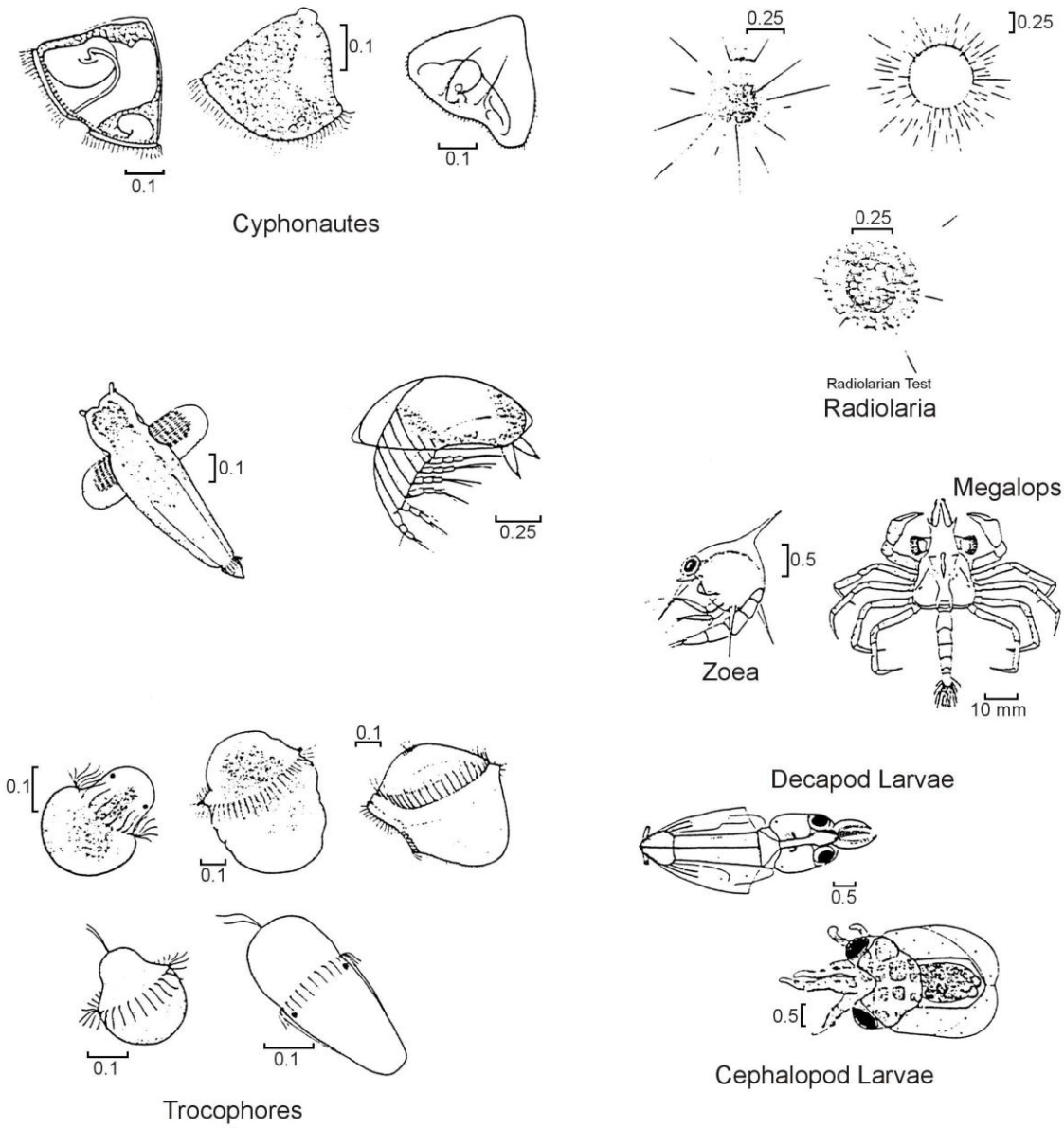
TAXON	CODE					COUNT				
Copepod nauplii < 150 µm			2	0						
Copepod nauplii >= 150 µm			2	5						
Euphausiid nauplii			3	0						
Other nauplii				2						
Solitary Eggs				3						
Egg sacs				4						
Copepodites (CI - CVI)				5						
Calyptopae & Furcilia				6						
Ciliates > 70 µm				7						
Larvacae (appendicularia)				8						
Veligers				9						
Polychaete larvae			1	0						
Echinoderm larvae			1	1						
Foraminifera			1	2						
Rotifers			1	3						
Trochophores			1	4						
Other microzooplankton (including cyprids and megalopae)			1	5						
Unknown			1	6						

Please note other abundant items:

IDENTIFIED BY:_____

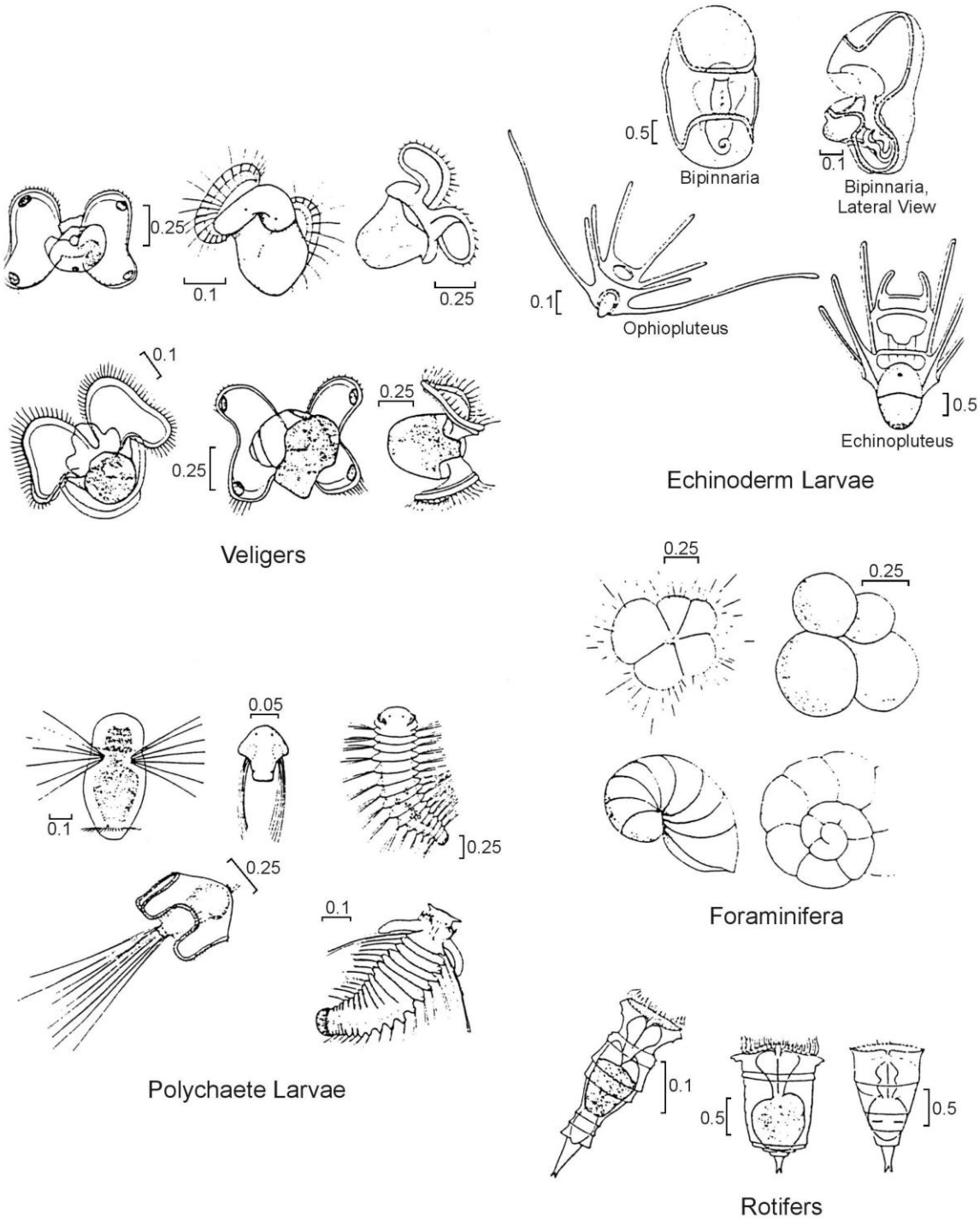
DATE:_____
(DD/MMM/YYYY)

VERSION 7/4/07

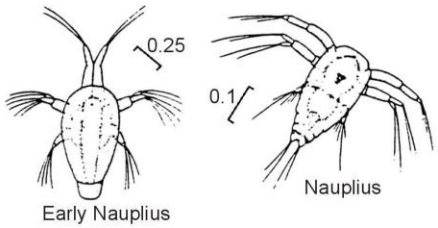


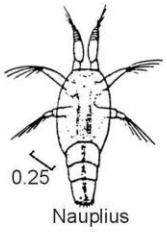
All organisms on this page are Code = 15

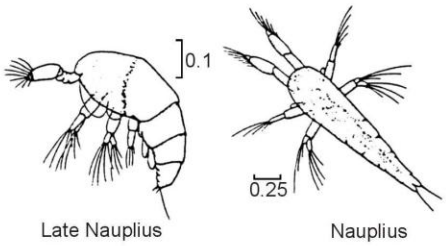
Scale = mm


0.25
0.1
0.25
0.1
0.25
0.25
Veligers
0.5
Bipinnaria
0.1
Bipinnaria,
Lateral View
0.1
Ophiopluteus
0.5
Echinopluteus
Echinoderm Larvae
0.25
0.25
Foraminifera
0.05
0.1
0.25
0.25
0.1
Polychaete Larvae
0.1
0.5
0.5
Rotifers

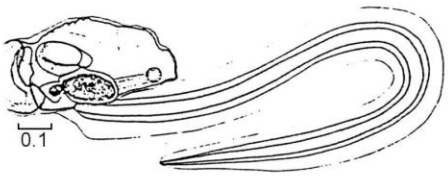
Scale = mm

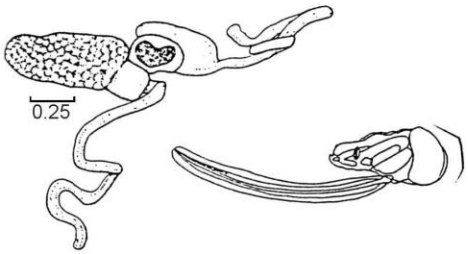






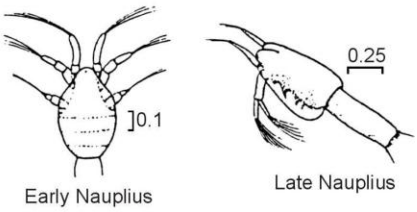
1.1 & 1.2 Copepod Nauplii



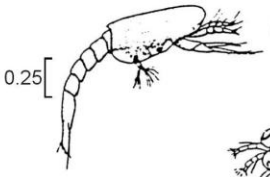


8. Larvacea

Scale = mm
(Unless otherwise noted)

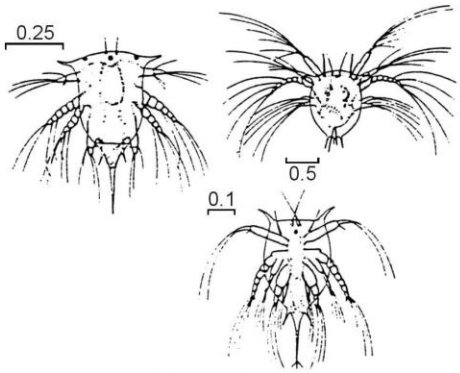


1.3 Euphausiid Nauplii

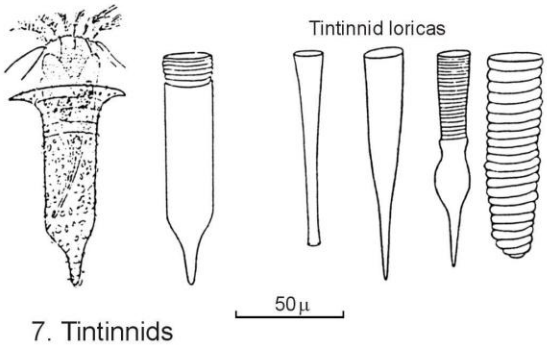


6. Calyptopae

6.Furciliaea



2. Other Nauplii (e.g. Barnacles)



7. Tintinnids

PROCEDURE FOR SUBSAMPLING MICROZOOPLANKTON USING A 1000 ML PLASTIC FLASK AND STEMPEL PIPETTE

Materials:

- stempel pipette; small or large diameter (depending on subsampling needs) inserted into a rubber stopper,
- calibrated subsampling chambers (nominally 1, 2, 5, & 10 ml),
- calibrated plastic flask (nominally 1000 ml),
- large tray (cuvette) to catch spills,
- large funnel,
- squirt (rinse) bottle with clean fresh water,
- microzooplankton counting tray,
- 500 ml beaker.

Important Note

Each chamber has been calibrated for use with a particular pipette. **Do not switch or mix chambers and pipettes! You must use S-1 chambers (1 & 2 ml) with the S-1 pipette or the S-2 chambers with the S-2 pipette. The same is true for the larger volume pipettes – use only the matched sets.**

Selecting the Correct Subsample Chamber and Stempel Pipette

Conduct a trial using the small diameter stempel pipette and a 2 ml subsampling chamber to determine which pipette and subsample chamber to use for routine analysis of a series of samples from the same cruise. How many nauplii were found in the 2 ml subsample? If the protocol says to count 100 copepod nauplii, then select a subsample chamber and pipette that samples between 75 and 150 nauplii. If the first subsample has less than 100 nauplii, then count a second subsample.

OTHER IMPORTANT NOTES

Stempel pipettes sometimes leak when inverted (turned upside down) resulting in loss of part of the subsample. To minimize leakage do the following:

- Periodically apply a small amount of Dow Corning *high vacuum grease* to all of the O-rings. This helps to make a better seal between the pipette cylinder and the O-rings (Figure 1a).
- Change the O-rings if they appear damaged or worn. Be sure to apply fresh grease to new O-rings
- Do not extend the inner-most O-ring of the subsampling chamber beyond the end of the pipette cylinder (Figure 1b). In most cases, leaking occurs when the inner-most O-ring of the collecting chamber is pushed too far.
- Do not invert the flask for more than 3 seconds while the subsampling chamber is extended. If you do, then the sample liquid will leak into the pipette behind the subsample chamber and a new subsample must be taken.
- Practice the subsampling technique using fresh water without organisms.

Subsampling Procedure

1) Record the station data on a data sheet (i.e., cruise, station, haul, gear, net....etc.). Record the Flask Number, Stempel ID, and Nominal Volume of the Pipette.

Note: Volumes marked on the plastic flasks and subsampling chambers are not accurate. Subsampling chambers were calibrated using fresh water . Each pipette has its own set of subsample chambers. Make certain that you are using the correct pair of stempel pipette and subsample chamber. We calibrated the flasks assuming that they will be filled to the 1000 ml mark. Return the flasks and pipettes to AFSC in August of each year for calibration.

2) Sieve entire sample through a 40 µm mesh. Rinse the sample jar with a squirt bottle (filled with deionized or distilled water) and pour the rinse onto the sieve. Use a funnel and squirt bottle to wash microzooplankton from the sieve into a calibrated 1000 ml plastic flask. Be sure to work over a large tray (cuvette) in case of a spill.

3) Fill the flask to the 1000 ml line with fresh water. Do not overfill. If you overfill, then resieve the sample and start again. To avoid overfilling you might try using a pipette to add the last 50 ml of fresh water.

4) Insert the stempel pipette with rubber stopper into the mouth of the flask making certain that the fit is tight (Figure 2).

5) Wrap your index and middle finger around the stempel pipette. Push the pipette handle with your thumb until the inner-most O-ring of the subsampling chamber is right at the edge of the pipette cylinder, but not beyond (Figure 1b). Hold the neck of the flask with your other hand. The pipette/flask assembly should now look like Figure 2. Invert the flask 10 - 15 times to thoroughly mix the sample. When ready to sample, release the pipette handle (your thumb) while holding onto the pipette (index and middle fingers) and inverted flask. Once the subsample chamber is closed, quickly turn the flask rightside up and set on the counter. **Inspect the sample chamber. Are there bubbles in the chamber? If so, then repeat Step 5 until you have a subsample without bubbles.** Air bubbles reduce the sample volume in the subsampling chamber, which introduces error into the analysis.

Remember:

- ***Be sure that the rubber stopper fits tightly in the flask.***
- ***HOLD THE FLASK TIGHTLY! An entire sample can be lost if the stopper comes out of the flask while inverted.***
- ***Do not keep the flask inverted (upside down) for more than 3 seconds.***
- ***Make sure the O-ring stays at the inside edge of the pipette cylinder***
- ***There should not be air bubbles in the subsampling chamber.***

6) Wash the outside of the stempel pipette into a separate beaker. This is to make sure that microzooplankton sticking to the outside of the subsample chamber are not counted. Do not put this back into the flask! This would change the liquid volume inside the flask.

7) Place the pipette over the microzooplankton counting tray and push the stempel pipette handle. Rinse the insides of the subsample chamber into the counting try with a squirt bottle.

8) Count the microzooplankton under a dissecting scope. Repeat steps 4-8 if another aliquot is needed. **Do not add more freshwater to the flask to bring the water level back to the 1000 ml line.**

9) After all subsamples have been counted, combine the subsamples with the original sample and the wash water (from outside the pipette) and archive together according to instructions in the Microzooplankton Protocol.

Figure 1. Stempel pipette A)subsampling chamber is retracted, B) subsampling chamber is extended. Note the proper position of the O-ring when the chamber is extended.

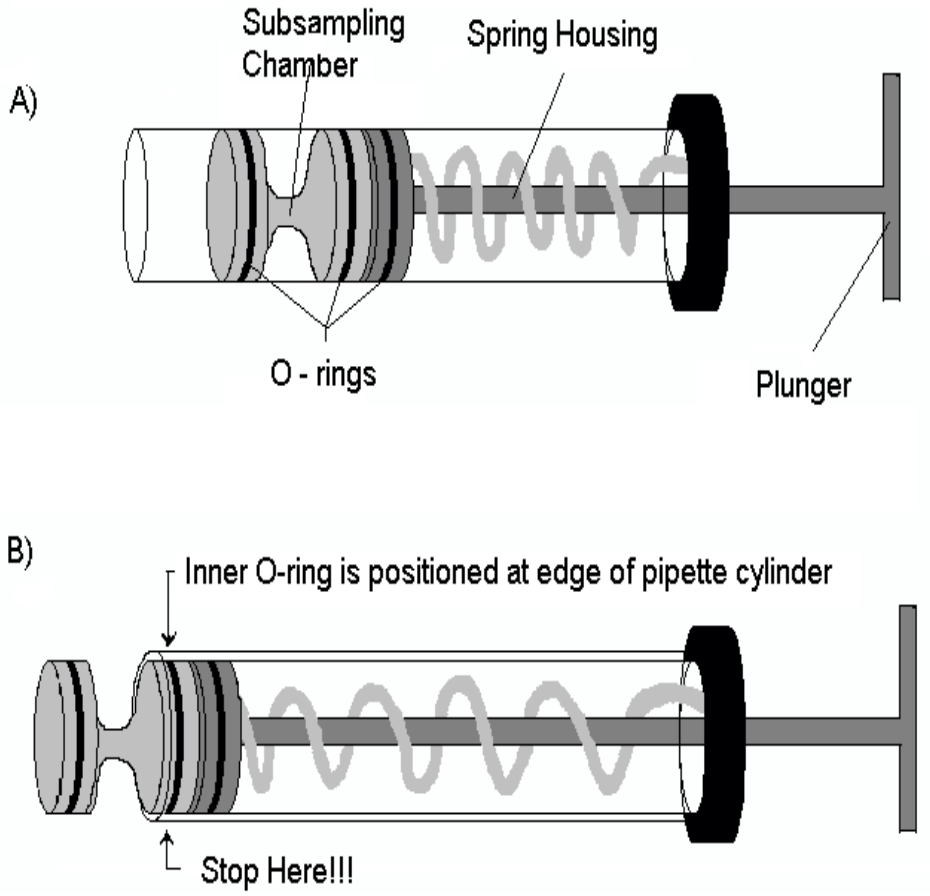
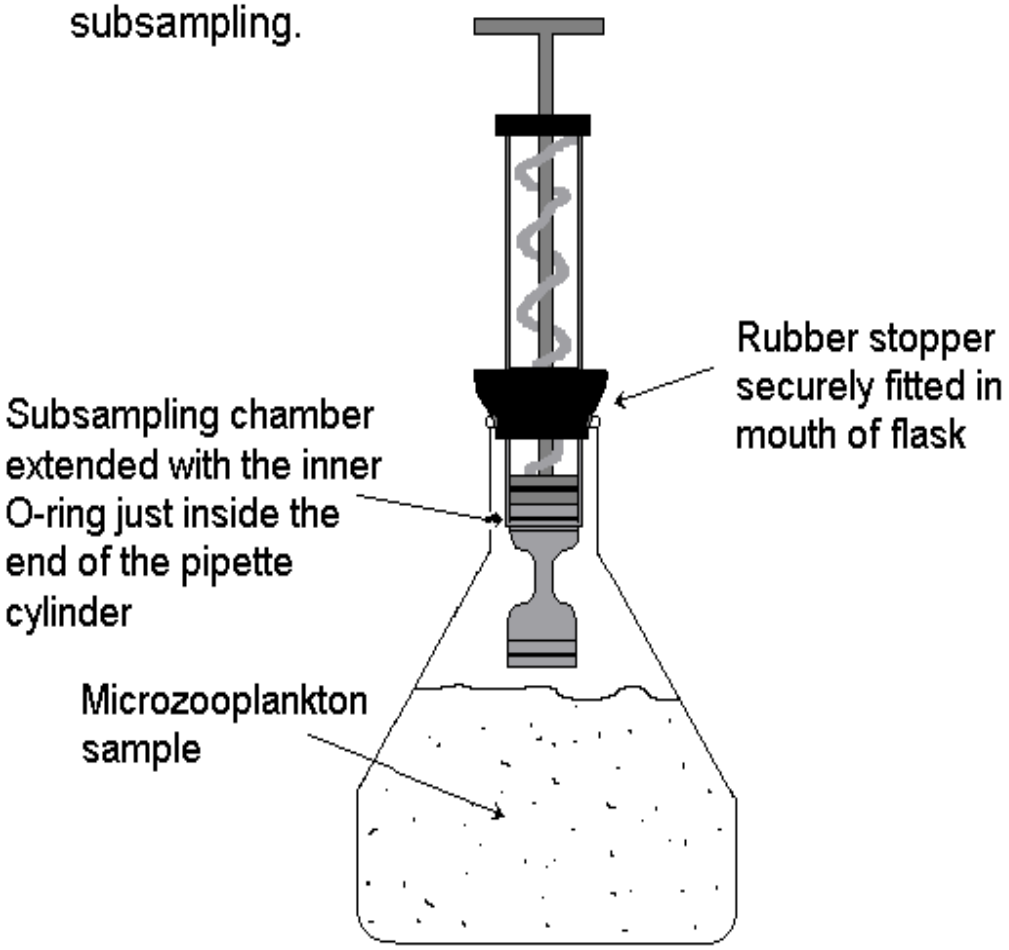


Figure 2. Stempel pipette inserted into flask ready for subsampling.



5. AFSC Predator Protocol

Types of Samplers

Tucker Trawl (0.333 or 0.505 mesh)
MOCNESS (0.333 or 0.505 mesh)
Methot Trawl (2x3 mm mesh)
Methot Beam Trawl (2x3 mm mesh)

Processing

The same processing methods should be used with all types of samplers. Those samples which require both predator and Total Zooplankton sorting (e.g., MOCNESS, some Tuckers) should use different subsamples even if there are taxa common to both sorting procedures (i.e., euphausiids, gammarids, etc.). For example, if **Form A** zooplankton are picked from 1/8 subsample, then **Form D** predators should be picked
from a different subsample that was not used.

Step 1 Make a note on **Form D** of material removed that would interfere with splitting.
Step 2 Split sample to obtain 100-200 organisms from **Form D**
Step 3 Identify and count **Form D** taxa by size category
Step 4 Place each taxa in a separate vial and mark the vial number on the data sheet.
All size categories of a particular taxa can be placed together in the same vial.

Splitting

For a given sample, there should be no more than 2 splits analyzed. For example, if it is a very large sample, than it can be split to 1/64th of the total and this should be analyzed for the common taxa. Then it can be split to 1/32 or 1/16 of the total for the rarer taxa. There should only be up to 4 data pages (2 per split) of **Form D** for each sample. Always record the subsample factor. <u>On the second split, draw a line through the taxa that are not counted during this split.</u>

Archiving

Follow procedure for archiving regular zooplankton in separate document.

Data sheets

Follow procedure for zooplankton data forms with the addition of including the vial number on the sheets.

PLEASE CONTACT JEFFREY NAPP IF YOU HAVE ANY QUESTIONS

FORM D; Page 1

A F S C P R E D A T O R D A T A S H E E T

CRUISE ☐☐☐☐☐☐ STATION ☐☐☐ HAUL ☐☐☐ GEAR ☐☐☐☐☐☐☐☐ NET ☐

MESH ☐☐☐ SAMPLE DATE M M / D D / Y Y Y Y SUBSAMPLE FACTOR ☐☐☐☐

TAXON	CODE				STAGE			SIZE[1]	COUNT	VIAL#
GAMMARIDEA										
Cyphocaris challengeri		8	8	3	9	9	9	5		
Atylus tridens		8	8	4	9	9	9	5		
Other Gammaridea		8	9	5	9	9	9	5		
HYPERIIDEA										
Themisto pacifica	4	6	0	5	9	9	9	5		
Themisto libellula	4	6	0	6	9	9	9	5		
Primno macropa		4	7	7	9	9	9	5		
Hyperia medusarum		4	7	2	9	9	9	5		
Other Hyperiidea		4	5	7	9	9	9	5		
EUPHAUSIACEA										
Thysanoessa inermis	2	0	0	1		6	4	5		
Thysanoessa inermis	2	0	0	1		6	4	6		
Thysanoessa inermis	2	0	0	1		6	4	7		
Thysanoessa raschii	2	0	0	3		6	4	5		
Thysanoessa raschii	2	0	0	3		6	4	6		
Thysanoessa raschii	2	0	0	3		6	4	7		
Thysanoessa spinifera	2	0	2	7		6	4	5		
Thysanoessa spinifera	2	0	2	7		6	4	6		
Thysanoessa spinifera	2	0	2	7		6	4	7		
Thysanoessa longipes	2	0	2	6		6	4	5		
Thysanoessa longipes	2	0	2	6		6	4	6		
Thysanoessa longipes	2	0	2	6		6	4	7		
Thysanoessa inspinata	2	0	2	8		6	4	5		
Thysanoessa inspinata	2	0	2	8		6	4	6		
Thysanoessa inspinata	2	0	2	8		6	4	7		
Euphausia pacifica	2	0	2	5		6	4	5		
Euphausia pacifica	2	0	2	5		6	4	6		
Euphausia pacifica	2	0	2	5		6	4	7		
Other Euphausiiacea	2	0	0	0		6	4	5		
Other Euphausiiacea	2	0	0	0		6	4	6		
Other Euphausiiacea (A & J & F)	2	0	0	0	9	9	9	7		

REMARKS:

COUNTED BY: _____

DATE: _____ (MMDDYY)

[1] Size categories: 5: >5 mm and <20
6: > 20mm
7: damaged, unable to get accurate length

VERSION 7/4/07

FORM D; Page 2

A F S C P R E D A T O R D A T A S H E E T

CRUISE ☐☐☐☐☐☐ STATION ☐☐☐ HAUL ☐☐☐ GEAR ☐☐☐☐☐☐☐☐ NET ☐

TAXON	CODE	STAGE	SIZE[1]	COUNT	VIAL #
MYSIDACEA					
Meterythrops robusta	2809	999	5		
Meterythrops robusta	2809	999	6		
Meterythrops robusta	2809	999	7		
Meterythrops micropthalma	2811	999	5		
Meterythrops micropthalma	2811	999	6		
Meterythrops micropthalma	2811	999	7		
Other Mysidacea	2800	999	5		
Other Mysidacea	2800	999	6		
Other Mysidacea	2800	999	7		
CHAETOGNATHA					
Sagitta elegans	202	999	5		
Sagitta elegans	202	999	6		
Sagitta elegans	202	999	7		
Eukrohnia hamata	211	999	5		
Eukrohnia hamata	211	999	6		
Eukrohnia hamata	211	999	7		
Other Chaetognatha	200	999	5		
Other Chaetognatha	200	999	6		
Other Chaetognatha	200	999	7		
DECAPODA					
Natantia	551	64	5		
Natantia	551	64	6		
Natantia	551	64	7		
Brachyura larvae	1000	51	5		
Brachyura larvae	1000	51	6		
Brachyura larvae	1000	51	7		
GELATINOUS ZOOPLANKTON					
Cnidarian medusae	2350	3	5		
Cnidarian medusae	2350	3	6		
Cnidarian medusae	2350	3	7		
Ctenophora	2700	999	5		
Ctenophora	2700	999	6		
Ctenophora	2700	999	7		
Siphonophora	1800	999	5		
Siphonophora	1800	999	6		
Siphonophora	1800	999	7		

R E M A R K S :

[1] Size categories: 5: >5 mm and <20
6: > 20mm
7: damaged, unable to get accurate length

VERSION 6/13/00

_____ Haul Sta. Cruise Gear Mesh Net Vial __ of __	_____ Haul Sta. Cruise Gear Mesh Net Vial __ of __
_____ Haul Sta. Cruise Gear Mesh Net Vial __ of __	_____ Haul Sta. Cruise Gear Mesh Net Vial __ of __
_____ Haul Sta. Cruise Gear Mesh Net Vial __ of __	_____ Haul Sta. Cruise Gear Mesh Net Vial __ of __
_____ Haul Sta. Cruise Gear Mesh Net Vial __ of __	_____ Haul Sta. Cruise Gear Mesh Net Vial __ of __
_____ Haul Sta. Cruise Gear Mesh Net Vial __ of __	_____ Haul Sta. Cruise Gear Mesh Net Vial __ of __
_____ Haul Sta. Cruise Gear Mesh Net Vial __ of __	_____ Haul Sta. Cruise Gear Mesh Net Vial __ of __

6. RESSLER ZOOPLANKTON Protocol
Samples Sorted May 2012 to April 2013

Types of Samplers

Methot Trawl (2x3 mm mesh)
Tucker Trawl (0.505 mm mesh)

Processing

Step 1 Make a note on **Ressler Zooplankton Data Sheet** of material removed that would interfere with splitting.

Step 2 Split sample to obtain 100 - 200 of the larger organisms (≥ 5 mm) in the sample, like euphausiids, amphipods, large copepods, fish, etc., from the list of taxa on **Ressler Zooplankton Data Sheet.**

Step 3 Identify and count **Ressler Zooplankton Data Sheet** taxa.

Step 4 For each taxon in the split, record zooplankton lengths (as defined in Figure 1) to the nearest millimeter for 25 undamaged specimens on **Ressler Zooplankton Length Form**.

Step 5 Place each taxon in a separate vial and mark the vial number on the data sheet. All size categories of a particular taxa can be placed together in the same vial.

Splitting

For a given sample, analyze one split that meets the criteria in Step 2.

Archiving

Follow procedure for archiving regular zooplankton in separate document.

Data sheets

Follow procedure for zooplankton data forms with the addition of including the vial number on the sheets.

Also, enter the data on paper zooplankton data forms into the electronic form called 'Ressler_Forms_2009.xls,' creating a new file for each sample with a name like 'Ressler_Forms_2009_haul001.xls'. The file 'Ressler_Forms_2009_example.xls' shows an example of how to enter the data.

PLEASE CONTACT JEFFREY NAPP IF YOU HAVE ANY QUESTIONS

Ressler Data Form Sheet ___ of ____

RESSLER ZOOPLANKTON DATA SHEET
Samples Sorted May 2008 to April 2009

CRUISE ☐☐☐☐☐☐ HAUL ☐☐☐ GEAR ☐☐☐☐☐☐☐☐ NET ☐

MESH ☐☐☐ SUBSAMPLE FACTOR ☐☐☐☐

TAXON	CODE	STAGE	COUNT	VIAL#
Copepoda				
Neocalanus cristatus	4189	999		
Eucalanus bungii	4187	999		
Other copepods	1000	999		
Euphausiacea				
Tessarabrachion oculatum	2049	999		
Thysanoessa raschii	2003	999		
T. inermis	2001	999		
T. spinifera	2027	999		
T. longipes	2026	999		
T. inspinata	2028	999		
Euphausia pacifica	2025	999		
Other euphausiids	2000	999		
Chaetognatha	2000	999		
Teleost larvae	3500	999		
Natantia	5551	999		
Other Zooplankton				
Cnidarian (medusae)	2350	999		
Ctenophora	2700	999		
Gammaridea	8955	999		
Hyperiidea	4577	999		
Mysidacea	2800	999		
Siphonophora	1800	999		

REMARKS:

IDENTIFIED BY:_____

DATE:_____
(DD/MMM/YYYY)
(e.g. 01/SEP/1997)

VERSION 04/23/08

Ressler Length Form Sheet ___ of ____

RESSLER ZOOPLANKTON LENGTH FORM
Samples Sorted May 2008 to April 2009

CRUISE HAUL GEAR NET

MESH SUBSAMPLE FACTOR

Enter lengths to the nearest millimeter for up to 25 specimens of each taxa in split.

TAXON	CODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Copepoda																										
Neocalanus cristatus	4189																									
Eucalanus bungii	4187																									
Other copepods	100																									
Euphausiacea																										
Tessarabrachion oculatum	2049																									
Thysanoessa raschii	2003																									
T. inermis	2001																									
T. spinifera	2027																									
T. longipes	2026																									
T. inspinata	2028																									
Euphausia pacifica	2025																									
Other euphausiids	2000																									
Chaetognatha	200																									
Teleost larvae	3500																									
Natantia	551																									
Other Zooplankton																										
Cnidarian (medusae)	2350																									
Ctenophora	2700																									
Gammaridea	895																									
Hyperiidea	457																									
Mysidacea	2800																									
Siphonophora	1800																									

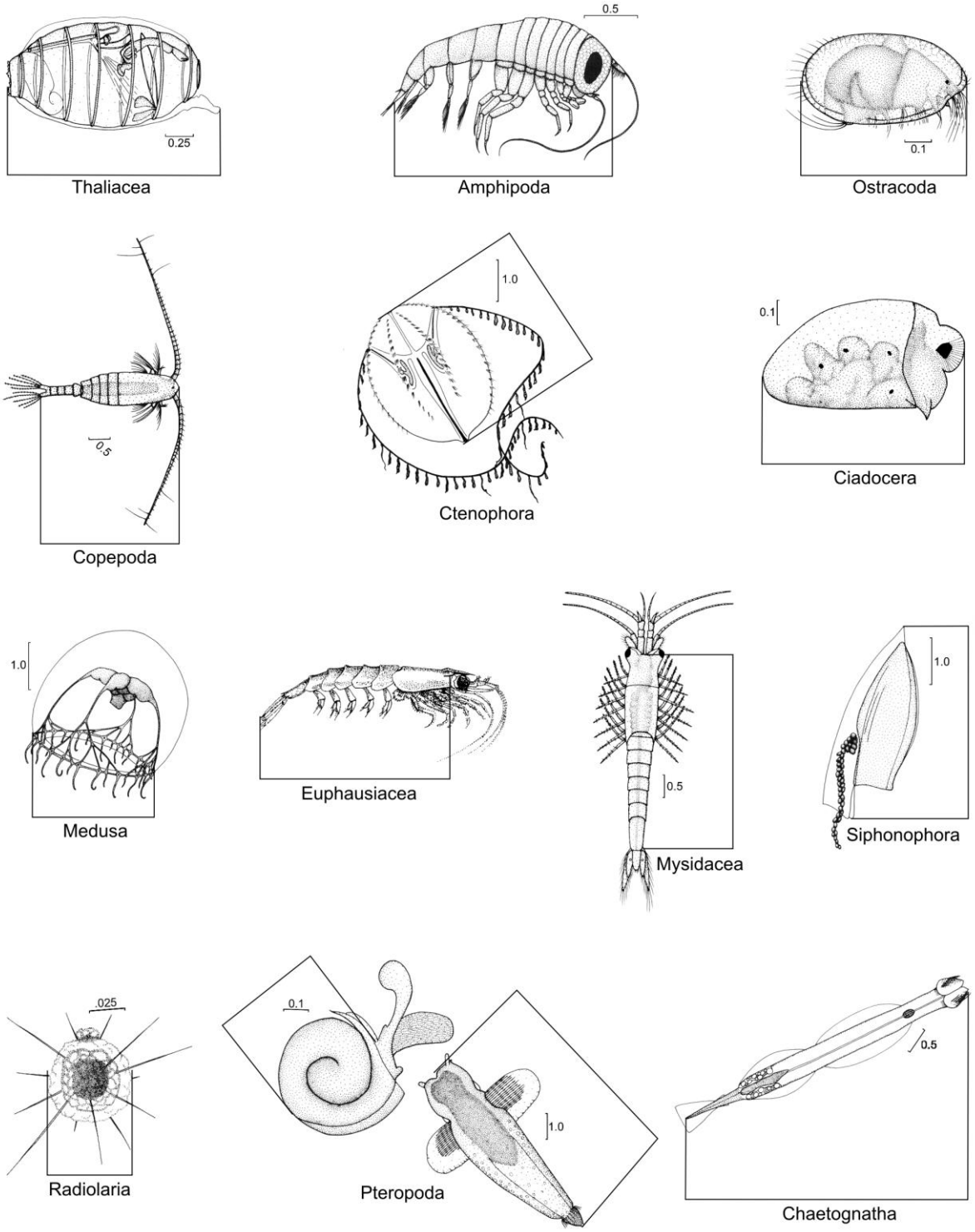
R E M A R K S :

IDENTIFIED BY:_____

DATE:_____
(DD/MMM/YYYY)
(e.g. 01/SEP/1997)

VERSION 04/23/08

Figure 1. Length measurements for zooplankton



C. NEFSC Sorting Protocols

ECOSYSTEM MONITORING - ZOOPLANKTON

ECOSYSTEM MONITORING – ICHTHYOPLANKTON

CONTINUOUS PLANKTON RECORDER

April 2012

1. NEFSC SORTING PROTOCOLS
ECOSYSTEM MONITORING
ZOOPLANKTON

Beginning with the late spring cruise of 1999, bongo nets were towed with paired 6B3 nets. Samples that are to be sorted for zooplankton are labeled 6B3Z.

ZOOPLANKTON

The 6B3Z samples will be processed as follows:

ZOOPLANKTON SAMPLES WILL BE RETURNED TO NARRAGANSETT WHEN PROCESSING IS COMPLETE

After removal of nonplankton and contaminant material, the displacement is determined and recorded, as "VOLSML" on the MARMAP Zooplankton Identifier's Worksheet (ZIW). Following the sample volume determination, an aliquot of approximately 500 organisms is taken for sorting, identification and enumeration with appropriate recording of aliquot factor on the log sheet. The zooplankton aliquot is then sorted according to the taxonomic categories indicated on the ZIW as follows:

- All specimens belonging to the "Major Copepoda Taxa," on the ZIW, will be identified to species and the numbers of each of these taxa belonging to the life stages listed across the top of the worksheet will be logged. The total number of the one or more stages per taxon will be entered under "ZOOCNT" at the right of each row.

- All specimens belonging to the "Euphausiacea Taxa," on the ZIW, will be identified to species and the numbers of each of these taxa belonging to the life stages listed across the top of the worksheet will be logged. The total number of the one or more stages per taxon will be entered under "ZOOCNT" at the right of each row.

- All specimens belonging to the "Fish Taxa," on the ZIW, will be so identified and the numbers belonging to the life stages listed across the top of the worksheet will be logged. The total number of the one or more stages per taxon will be entered under "ZOOCNT" at the right of each row.

- All specimens belonging to the "Non-Major Copepoda Taxa" or the "Other Zooplankton Taxa," if present, will be identified as preprinted and the numbers of each will be logged under "ZOOCNT" at the right of each row. NOTE: For some specimens, several preprinted names may exist. Such specimens are to be logged with the lowest taxonomic level, preprinted name. Logging with higher level preprinted names must exclude any specimens that could have been logged at a lower, preprinted level, e.g., the one specimen of Calanoida logged on the following sample

ZIW is a separate specimen from the various Calanoida specimens logged with lower level, preprinted names. NOTE: Write-ins are permitted in two instances: 1) where a preprinted entry is not available, and 2) where a preprinted entry is available but organisms identifiable to a lower level either contribute more than 20% to the single sample, or have been recurring over two years or more in the samples. It is left to the judgment of the Chief, Zooplankton Ecology Group (ZSIOP) to determine if a write-in is justified. If a write-in occurs, the Chied Zooplankton Ecology Group should notify Jon Hare (jon.hare@noaa.gov) as soon as possible. On the following sample ZIW, the write-ins belong to a preprinted taxa: *Sapphirina* spp. should have been logged with Cyclopoida, and Sergestidae should have been logged with Decapoda-Arthropoda. The write-in for *Balanus balanus* is appropriate since these specimens contributed over 24% of the total sample. Requests for additions to the pre-printed list or for new taxonomic codes should be made to Jon Hare, Narragansett, and should include the formal name of the specimen(s) and its position (Order, Family, Genus, etc.) in the taxonomic hierarchy. When logging write-ins, log the full name (PLKTAXNAM); plankton taxonomic number (PLKTAXNUM) (fax Narragansett if new number is needed); and ZOOCNT.

- The identifier's initials, and the time and date that the station was completed are logged. Also, any comments helpful to the interpretation of the data logged on the worksheet must be recorded.

- Any sample designated to be sorted should be listed on the Zooplankton Sorting Record; if this sample cannot be volumized and sorted because of breakage, poor preservation, etc., it should be noted in the comments section of the ZSR.

- Quality control procedures involve the examination of 10% of the sorted aliquots from each cruise for counts and identification by the Chief of the Zooplankton Group. The results of the quality control are used to ensure the highest quality data and to identify any training needs.

- Lids on vials should be gently tightened after label is inserted

Shipment of Zooplankton and Data.
Please ship vials of zooplankton and hard copies of data to Jon Hare, NOAA/NMFS/NEFSC, Narragansett Laboratory, 28 Tarzwell Drive, Narragansett, RI 02882 USA.

PLEASE DIRECT ANY QUESTIONS REGARDING THESE SAMPLES TO JON HARE (jon.hare@noaa.gov, (p) 401 782-3295, (FAX) 401-782-3201.

Email the completed Excel file to jon.hare@noaa.gov and Harvey.walsh@noaa.gov
A detailed definition of entries made on the ZIW follows.

DEFINITIONS OF ENTRIES MADE ON MARMAP ZOOPLANKTON
IDENTIFIERS WORKSHEET (Form ZIW, 03/03)

1. CRUCOD=cruise code (do not enter)
2. CRUNAM=cruise name, e.g., AL9601.
3. STA=station number, e.g., 1.
4. GERCOD=sampling gear code, e.g., 6B3Z.
5. BONNUM=the consecutive haul made with this gear at this station, e.g., 1.
6. VOLSML=displacement volume of organisms ≤2.5cm logged to the nearest whole milliliter, e.g., 125..
7. ALQFCTR=aliquot factor for sample examined, e.g., 128. Do not enter 1/128.
8. TOTCNT=total number of specimens counted in the aliquot (do not enter).
9. PLKTAXNUM=plankton taxonomic number, e.g., 101.
10. PLKTAXNAM=plankton taxonomic name, e.g., Euphausia krohnii.
11. Vial No.=number of the vial containing each taxon found at this station, e.g.,1.
12. ZOOSTG (major Copepoda taxa)

```
 000 (Adult)      |
 024 (Cop5)       |
 023 (Cop4)       |  the count (number in the aliquot) of specimens belonging
 022 (Cop3)       |= to the life stages of Copepoda found in the aliquot, e.g., 21.
 021 (Cop2)       |  For shaded life stages, enter count under "Unknown".
 020 (Cop1)       |
 999 (Unknown)|
```

13. ZOOCNT=the sum of the one or more stages of a taxon found in the aliquot, (do not enter here or elsewhere on this log).
14. ZOOSTG (Euphausiacea taxa)

```
 000 (Adult)        |
 030 (Cyrtopia)   |= the count (number  in the aliquot) of specimens belonging
 029 (Furcilia)     |  to the life stages of Euphausiacea found in the aliquot,
 028 (Calyptopis)|  e.g., 3.
 013 (Nauplius)   |
 999 (Unknown)  |
```

15. ZOOSTG (Fish taxa)

```
 000 (Adult).      |
 054 (Juvenile)   |
 051 (Larvae)     |= the count (number in the aliquot) of specimens belonging to
 050 (Eggs)        |   the life stages of fish taxa  found in the aliquot, e.g., 1.
 000 (Unknown) |
```

16. VOLLRG=displacement volume of organisms ≥2.5 cm logged to the nearest whole milliliter for specimens belonging to this taxon, e.g., 125.
17. LENLRG=standardized length of organisms ≥2.5 cm logged to nearest millimeter for the specimens belonging to this taxon, e.g., 36.

18. CNTLRG=the count of specimens ≥2.5 cm belonging to this taxon, e.g., 10.
Note: It is left to the Chief of the Zooplankton Group to decide whether to record volume, length, and/or count, for specimens ≥2.5 cm in longest dimension, depending on the taxon involved.

19. Recorded By:= Initials of person entering data on the ZIW.

20. Analysis Date:= day, month, and year when analysis of the zooplankton at this station was completed.

21. Comments:=Any remarks useful to the understanding of entries made on this log.

Example ZIW, page 1

U.S. Dept. of Commerce-NOAA/NMFS/NEFSC
Oceanography Branch (Form ZIW,03/03)

MARMAP ZOOPLANTKON IDENTIFIER'S WORKSHEET (ZIW)

Page 1 of 2

CRUCOD (Cruise Code)	CRUNAM (Cruise Name)	STA (Station #)	GERCOD (Gear Code)	BONNUM (Haul #)
			6B3Z	

VOLSML (ml)	ALQFCTR	TOTCNT
		0

"MAJOR COPEPODA TAXA"

PLKTAX NUM	PLKTAX NAM	ZOOSTG-> Vial No.	OOO (Adult)	024 (Cop5)	023 (Cop4)	022 (Cop3)	021 (Cop2)	020 (Cop1)	999 (Unknown)	ZOOCNT
0101	Calanus finmarchicus									0
0109	Centropages hamatus									0
0103	Centropages typicus									0
0157	Clausocalanus arcuicornis									0
0105	Metridia lucens									0
0143	Nannocalanus minor									0
0135	Paracalanus parvus									0
0102	Pseudocalanus minutus									0
0104	Temora longicornis									0

"EUPHAUSIACEA TAXA"

PLKTAX NUM	PLKTAXNAM NAM	ZOOSTG-> Vial No.	000 (Adult)	030 (Crytopia)	029 (Furcilia)	028 (Calyptopis)	013 (Nauplius)		999 (Unknown)	ZOOCNT
2006	Euphausia krohnii									0
2002	Meganyctiphanes norvegica									0
2019	Nematoscelis megalops									0
2012	Thysanoessa gregaria									0
2001	Thysanoessa inermis									0
2004	Thysanoessa longicaudata									0
2003	Thysanoessa raschii									0

"FISH TAXA"

PLKTAX NUM	PLKTAX NAM	ZOOSTG-> Vial No.	000 (Adult)	054 (Juvenile)	051 (Larvae)	050 (Egg)		999 (Unknown)	ZOOCNT
3500	Fish								0

"ORGANISMS ≥ 2.5 cm"

PLKTAX NUM	PLKTAX NAM	VOLLRG (ml)	LENLRG (mm)	CNTLRG

Recorded By:_____
Analysis Date:_____
dd mm yy

Comments:

Notes: 1. Column headings in uppercase are oracle data base column names.
Notes:2 Make no entries in shaded cells. They are either inappropriate, or will be filled in via excel formulae.

Example ZIW, page 2

U.S. Dept. of Commerce-NOAA/NMFS/NEFSC
Oceanography Branch (Form ZIW,03/03)

MARMAP ZOOPLANKTON IDENTIFIER'S WORKSHEET (ZIW)

CRUCOD	CRUNAM	STA	GERCOD	BONNUM

Page 2 of 2

"NON-MAJOR COPEPODA TAXA"

PLKTAX NUM	PLKTAX NAM	Vial No.	ZOOCNT
0148	Acartia danae		
0107	Acartia longiremis		
4027	Acartia spp.		
4195	Acrocalanus longicornis		
4061	Aetideidae		
0192	Alteutha depressa		
0142	Calanoida		
0178	Calanus spp.		
0156	Calocalanus pavo		
4129	Calocalanus spp.		
0117	Candacia armata		
4042	Candacia spp.		
4020	Centropages bradyi		
4112	Centropages furcatus		
0133	Centropages spp.		
4064	Clausocalanus furcatus		
4098	Clausocalanus spp.		
0100	Copepoda		
4045	Corycaeidae		
0130	Cyclopoida		
0180	Eucalanus spp.		
0169	Euchaeta marina		
0116	Euchaeta norvegica		
4062	Euchaetidae		
0132	Eurytemora spp.		
0131	Harpacticoida		
4030	Heterorhabdidae		
0159	Labidocera aestiva		
4025	Labidocera spp.		
4007	Lucicutia spp.		
0146	Mecynocera clausi		
0149	Metridia spp.		
0150	Microcalanus pusillus		
4125	Microcalanus spp.		
4108	Neocalanus spp.		
0106	Oithona similis		
0114	Oithona spinirostris		
0138	Oithona spp.		
0191	Oncaea spp.		
4118	Paracalanus spp.		
4002	Pleuromamma abdominalis		
0176	Pleuromamma borealis		
4057	Pleuromamma spp.		
4058	Pontellidae		
4013	Pseudocalanidae		
0175	Rhincalanus cornutus		
0125	Rhincalanus nasutus		
4100	Rhincalanus spp.		
4066	Scolecithricidae		
4033	Scolecithrix bradyi		
0162	Scolecithrix danae		
4059	Temora spp.		
0153	Temora stylifera		
4094	Temora turbinata		
0108	Tortanus discaudatus		
4019	Undinula vulgaris		

"OTHER ZOOPLANKTON TAXA"

PLKTAX NUM	PLKTAX NAM	Vial No.	ZOOCNT
0400	Amphipoda		
0700	Appendicularia		
2101	Balanidae		
1000	Brachyura		
0900	Bryozoa		
0554	Caridea		
0200	Chaetognatha		
2350	Coelenterata		
0567	Crangonidae		
2700	Ctenophora		
1700	Cumacea		
0500	Decapoda-Arthropoda		
1500	Echinodermata		
2000	Euphausiacea		
0607	Evadne nordmanni		
0605	Evadne spp.		
3900	Foraminifera		
0895	Gammaridea		
1100	Gastropoda		
3300	Heteropoda		
0457	Hyperidea		
2200	Isopoda		
0568	Lucifer spp.		
2800	Mysidacea		
2801	Mysidopsis bigelowi		
1801	Nanomia cara		
2802	Neomysis americana		
0701	Oikopleura spp.		
3600	Ostracoda		
3209	Paguridea		
1300	Pelecypoda		
0555	Penaeidae		
0611	Penilia avirostris		
5101	Phoronis spp.		
0601	Podon spp.		
2500	Polychaeta		
0202	Sagitta elegans		
0203	Sagitta enflata		
0201	Sagitta serratodentata		
0218	Sagitta spp.		
3403	Salpidae		
1800	Siphonophora		
0305	Spiratella spp.		
3400	Thaliacea		
0300	Thecosomata		
2502	Tomopteris helgolandica		
2501	Tomopteris spp.		
0002	Unidentified zooplankton		

Comments:

2. ECOSYSTEM MONITORING
ICHTHYOPLANKTON

PRE-SORTED AND UNSORTED ICHTHYOPLANKTON,

Beginning with the late spring cruise of 1999, bongo nets were towed with paired 6B3 nets. Samples that are to be sorted for ichthyoplankton are labeled 6B3I.

ICHTHYOPLANKTON

The 6B3I and 6B5I samples are to be processed as follows.

ICHTYOPLANKTON SAMPLES WILL BE RETURNED TO NARRAGANSETT WHEN PROCESSING IS COMPLETE

CEPHALOPODS SHOULD BE SORTED FROM ICHTYOPLANKTON SAMPLES AND RETURNED TO NARRAGANSETT WHEN PROCESSING IS COMPLETE

Fish Eggs
Count fish eggs up to two hundred per sample. If there are greater than two hundred eggs in a sample, please so indicate on the Ichthyoplankton Sorting Record.

If there are no fish eggs in a sample, please enter zero on the Ichthyoplankton Sorting Record.

All fish eggs should be placed in 1-dram vials filled with **3% formalin** as a preservative. All vial caps should have polyvinyl liners. Labels for egg vials should follow the MARMAP protocol.

NOTE: If a sample is missing, broken, or inadvertently not preserved, please indicate this on the Ichthyoplankton Sorting Record.

Enumeration and Identification of Fish Larvae (Standard MARMAP Protocol)
All larvae are counted and identified to species or the lowest possible taxon.

Measurement of Fish Larvae
All larvae of each taxon should be measured when the number of specimens is less than 50. When the counts exceed 50, a randomly selected sub-sample of 50 individuals should be measured. Random selection should involve randomly selecting 50 individuals from the whole sample.

After measurements are completed, larvae of each taxon are placed in separate 3-dram vials with appropriate label information (cruise, station, scientific name, date, and gear) using **95% ethanol** as a preservative. Outside labels specifying cruise, station, and gear type are to be attached to vial caps.

NOTE REGARDING SAMPLE PRESERVATION: Although the sample was originally preserved in formalin on shipboard, after sorting the larvae from the samples, they should

be placed in vials with **95% ethanol** as a preservative. However, as noted above, the fish eggs should be placed in vials with **3% formalin** as a preservative. All vial caps should have polyvinyl liners and should be gently tightened after the label is inserted.

Data

Number of larvae and length of larvae are to be recorded on the IDRL Log (see example)

Complete an Ichthyoplankton Sorting Record (ISR) for each of the cruises. PLEASE NOTE THAT THIS FORM HAS BEEN UPDATED AND WILL BE PROVIDED ELECTRONICALLY

Email the completed Excel file to jon.hare@noaa.gov

Shipment of Eggs, Larvae, and Data.

Please ship vials of eggs, vials of larvae, and hard copies of Larval Length Data Sheets and Ichthyoplankton Sorting Records to Jon Hare, NOAA/NMFS/NEFSC, Narragansett Laboratory, 28 Tarzwell Drive, Narragansett, RI 02882 USA.

PLEASE DIRECT ANY QUESTIONS REGARDING THESE SAMPLES TO JON HARE (jon.hare@noaa.gov, (p) 401 782-3295, (FAX) 401-782-3201

Example of IDRL Excel Spreadsheet to be used for reporting larval identification, number of length data.

Vessel	Cruise	Station	Haul	Gear/Mesh	Sample Data	Volume (ml)
ALBATROSS	0503	3	1	6B3I		64

Sorted by:	Identified by:	Entered by:	Depth	Aliquot	Total
-	BK	MC	-	1	**1**

TAXON CODE	TAXON	Box	Vial	Standard Length (in mm)										Measured	Not measured	∑ #
				1	2	3	4	5	6	7	8	9	10			
100000001	Damaged larvae	1												**0**	**1**	**1**

Ichthyoplankton Sorting Record

Vessel/Cruise:		Gear/Mesh		No. Samples	

Consecutive Number	Station Number	Haul Number	Sample Date D-M-Y	Eggs Removed	Larvae Removed	ID	QUALITY CONTROL			Displacement Volume Organisms <2.5 cm	Remarks
							Eggs	Larvae	Checker CEPHAL.		

3. NEFSC SORTING PROTOCOLS
CONTINUOUS PLANKTON RECORDER (CPR)

INTRODUCTION

Through an exceptional effort of the ZSIOP Branch in Gdynia, CPR data bases have been corrected for the Gulf of Maine and the Middle Atlantic Bight beyond the year 2006. This puts us in a position to initiate a change in the protocol to permit the analysis and reporting of these data within no more than 60 days of collection. This will be accomplished by the following:

1. FedEx delivery to ZSIOP of new cruise samples, and EXCEL file (*cruisename*CprLogs.xls) within 1 week of collection
2. Analysis of new cruise by ZSIOP immediately upon completion of cruise currently being analyzed.
3. Direct entry of data from tally sheets to EXCEL file. This file consists of seven pages, each identical to the previously used paper logs.
4. Emailing EXCEL file to and scanned tally sheets to Narragansett.

THE ANALYSES

The analysis of the samples is carried out in the following steps:

1. Color Estimation (performed at Narragansett)
2. Phytoplankton Examination
3. Zooplankton Traverse Examination
4. Zooplankton Eyecount Examination
5. Check of Routine Analysis
5. Data Entry and Transmission

Step 1 is carried out by the phytoplankton specialist in Narragansett before the rolls of silk are cut into samples and assigned a substation number. Steps 2-4 are carried out at the ZSIOP, each member of the team being given a random selection of the samples (see "Allocating Samples to Analysts", below). Step 5, the check of the analysis, is carried out by the senior member of the ZSIOP analysis team. Step 6 is carried out at the ZSIOP.

ALLOCATING SAMPLES TO ANALYSTS

Samples are allocated to analysts such that the following objectives are met:

1. No successive samples from a cruise are assigned to the same analyst.
2. Samples from a cruise are assigned as randomly as possible, while satisfying objective 1, above, so that the “easy” and “difficult” samples are evenly spread among analysts.

PHYTOPLANKTON EXAMINATION

Microscope

The microscope stage and fume hood for examining CPR samples are custom built. A compound microscope of ≥450 x magnification and an optical field diameter of approximately 0.295 mm is required, or a microscope resulting from the new design effort at SAHFOS may be substituted.

Microscopes used in the analyses of CPR samples are configured to produce an approximate magnification and field diameter for 1) the zooplankton traverse, and 2) the phytoplankton examination. The actual magnification and field diameter varies between microscopes. Using a stage micrometer, the field diameter must be determined to permit the organism counts to be used for plankton abundance calculations. Since a number of microscopes are in use and are sometimes used by different analysts, it is necessary to identify each instrument with a unique number (MICNUM), to document its specifications, and to include the MICNUM on the analysis logs for each sample (SUBSTA). Table 1 lists MICNUMs and specifications for CPR microscopes currently in use. Configurations for any new microscopes and for any changes to existing microscopes must be communicated to Narragansett for assignment of new MICNUMs.

Procedure

Counting The graduated (filtering) silk is laid out on the microscope stage for examination. Twenty fields are examined in two diagonals of ten fields running right across the filtering area of the silk (Fig.1). Counts are made and logged after moving the microscope stage to center the field of view over the nearest filtering silk aperture. The number of fields in which each taxon is observed is recorded. For example, if *Ceratium fusus* is observed in fifteen fields and *Hyalochaete* spp. in twenty fields, then the value 15 is recorded for *C. fusus* and the value 20 for *Hyalochaete* spp.. Genera, species, or varieties seen during any other steps of the analysis, e.g. zooplankton traverse, are recorded as "+". Also, the following taxa, if seen in the 20 fields, are logged as "+":

Phaeocystis spp.
Halosphera spp.
Silicoflagellata.

The organisms are counted only if the following parts appear in the field of the microscope:

- For elongate diatoms such as *Rhizosolenia* spp., the end of a cell.
- For all other single-celled diatoms, the body of a cell and for all diatom chains, a cell of the chain.
- For all dinoflagellates, the body of a cell.
- For all other organisms; if single-celled, then the body of the cell. If multi-celled, then any part of the organism.

While the 20 fields of a sample are being examined, occurrences of numerous taxa will be accumulating. This information may be recorded on mechanical counters, tape recorders, or by other methods agreeable to the analysis team (currently tally sheets). When the phytoplankton examination of a sample is completed, the counting information is delivered to the senior member of the analysis team for checking and data entry.

Identification- Every effort should be made to identify the organisms to the levels preprinted on the Hardy Phytoplankton Log. Write-ins are permitted only where a preprinted entry is not available. A survey of write-in taxa which contribute more than 20% to the single sample, or have been recurring over two years or

more in the samples will be made annually and will be discussed at each Advisory Committee meeting to determine if they should be added to those pre-printed.

The "Log Sheets"

The results of the phytoplankton examination at centered locations are entered into spreadsheets of the EXCEL file: *cruisename*CprLogs.xls, pages 1 and 2 (Hardy Phytoplankton Logs-a, C/R and –w,C/R). This file will be emailed to the ZSIOP at the same time the sample is FedEx'ed. The following fields will be logged in Narragansett: CRUNAM, CRUCOD, STA, RTENUM, GERCOD, HALGER, CORFCT, ALQFCT, PHYCLR, and SUBSTA. Fields logged in Poland are: DATE PHYTOPLANKTON ANALYSIS COMPLETE, ANALYST'S INITIALS, MICNUM, PHYCNT, and COMMENTS AND DOCUMENTATION. For taxa not preprinted, the taxonomic name and taxonomic number (if not available, request new taxonomic code) are entered on the HPLw,C-R spread sheet. In these instance Jon Hare (jon.hare@noaa.gov) are to be notified as soon as possible.

If a substation silk is examined and no phytoplankton are observed, a zero (0) is entered at the bottom row (PLKTAXNAM = Absent) of the HPLa,C-R spread sheet for that substation.

When pages 1 and 2 are complete the file is saved and retained for further logging of the results of the zooplantkon traverse and the zooplankton eyecount.

Note: Depending on the computer display used it may be useful to change the size of the spread sheet on the screen. This can be done by clicking View/Zoom on the command line of EXCEL, and customizing the size of the page for convenience of entry.

ZOOPLANKTON TRAVERSE

Microscope

A dissecting microscope with greater than or equal to 50 x magnification, and an optical field diameter of 2.06 mm± 0.05 mm *or* an eyepiece reticle providing such dimensions is required. Also required is a special microscope stage and fume hood as discussed in "Phytoplankton Examination", above.

Microscopes used in the analyses of CPR samples are configured to produce an approximate magnification and field diameter for 1) the zooplankton traverse, and 2) the phytoplankton examination. The actual magnification and field diameter must be determined to permit the organism counts to be used for plankton abundance calculations. Since a number of microscopes are in use and are sometimes used by different analysts, it is necessary to identify each instrument with a unique number (MICNUM), to document is specifications, and to include the MICNUM on the analysis logs for each sample (SUBSTA). Table 1 lists MICNUMs and specifications for CPR microscopes currently in use. Configurations for any new microscopes and for any changes to existing microscopes must be communicated to Narragansett for assignment of new MICNUMs.

Procedure
The silks are laid out on the microscope stage as indicated in Fig. 1, with the plankton side uppermost. The silks are flooded with water.

Counting: Until sufficient experience is achieved, specimens being counted may have to be removed from the silk for identification. *All specimens* are to be returned to the silk at the conclusion of the examination. All organisms in the traverse are actually counted. No estimating will be done.

All organisms are counted during the traverse whose following parts appear in the microscope field of view (or reticle):

All Crustacea……Base of the Antenna
Thecosomata……Apex of the Shell
Lamellibranchia……Hinge of **t**he Shell
Chaetognatha……The Head

Cyphonautes larvae……..Apex of the Shell
Echinoderm larvae……Dorsal Apex
Larvacea……Center of Body Mass
Tintinnidae……Center of Body Mass
Radiolaria [Logged as "Sarcodina (Not Foraminifera)"]….Center of Body Mass
Foraminifera……..Center of Body Mass

While the traverse of the sample is being conducted, counts of numerous taxa will be accumulating. This information may be recorded on mechanical counters, tape recorders, or by other methods agreeable to the analysis team (currently tally sheets). When the zooplankton examination of a sample is completed the counting information is delivered to the senior member of the analysis team for checking and data entry.

Identification and Staging Every effort should be made to identify and stage the organisms to the levels preprinted on the Hardy Zooplankton Traverse Logs. The preprinted taxonomic number and life stage combinations are uniquely tied to time series for these particular organisms. For taxa not preprinted, the policy is identical to that used for phytoplankton samples, described above, with the additional requirement that any questions about eye-count vs. traverse organisms be forwarded to Narragansett, for resolution.

The "Log Sheets"
The results of the zooplankton traverse are entered into spreadsheets of the EXCEL file: *cruisename*CprLogs.xls, pages 3, 4, and 5 (Hardy Zooplankton

Traverse Log-a, –b, and -w). This file will be emailed to the ZSIOP at the same time the sample is FedEx'ed. The following fields will be logged in Narragansett: CRUNAM, CRUCOD, STA, RTENUM, GERCOD, HALGER, CORFCT, ALQFCT, and SUBSTA. Fields logged in Poland are: ANALYST'S INITIALS, MICNUM, ACTCNT or "+"s for the preprinted taxa, and COMMENTS and DOCUMENTATION. For taxa not preprinted, the taxonomic name and taxonomic number (if not available, request new taxonomic code) are entered on the HZTL-w spread sheet. In the very unlikely event that a substation silk is examined and no zooplankton are observed during both the traverse and eyecount, a zero (0) is entered on the bottom row (PLKTAXNAM = Absent) of the HZELa, spread sheet).

When pages 1-7 are complete, the file is saved and retained for further logging of the results of the zooplankton eyecount. The EXCEL file and a scanned copy of the phytoplankton and zooplankton tally sheets are sent to Narragansett.

Note: Depending on the computer display used it may be useful to change the size of the spread sheet on the screen. This can be done by clicking View/Zoom on the command line of EXCEL, and customizing the size of the page for convenience of entry.

ZOOPLANKTON EYE-COUNT

Procedure

With the silks laid out as for the traverse, the number of the larger zooplankton organisms is counted by the naked eye. It is general practice to remove any organisms, the identification of which is in doubt, for further examination using any convenient microscope. The organisms to be identified, staged, and enumerated during the eye-count are preprinted on the Hardy Zooplankton Eye-Count Log. In general the lower limit of size of eye-count organisms is set by *Metridia lucens*, c.5. No taxon/stage organisms preprinted on the traverse logs are to be included in the eye-count.

Counting: Until sufficient experience is achieved, specimens being counted may have to be removed from the silk for identification. *All specimens* are to be returned to the silk at the conclusion of the examination. All organisms in the eye-count are actually counted. No estimating will be done.

Specimens at the sample edges (cutting points) are to be included for counting according to the same rules as those applying during the traverse.

While the eye-count of the sample is being conducted, counts of numerous taxa will be accumulating. This information may be recorded on mechanical counters, tape recordings, or by other methods agreeable to the analysis team (currently tally sheets). When the zooplankton examination of the sample is completed, the

counting information is delivered to the senior member of the analysis team for checking and data entry.

Identification and Staging Every effort should be made to identify the organisms to the levels preprinted on the Hardy Zooplankton Eye-Count Logs. The preprinted taxonomic numbers and life stage combinations are uniquely tied to time series for these particular organisms. For those taxa not preprinted, the policy is identical to that used for CPR Phytoplankton samples, described above, with the additional requirement that any question about eye-count vs. traverse organisms be forwarded to Narragansett, for resolution.

The "Log Sheets"
The results of the zooplankton eye-count are entered into spreadsheets of the EXCEL file: *cruisename*CprLogs.xls, pages 6 and 7 (Hardy Zooplankton Eyecount Log-a and -w). The following fields will be logged in Narragansett: CRUNAM, CRUCOD, and SUBSTA. This file will be emailed to the ZSIOP at the same time the sample is FedEx'ed. Fields logged in Poland are: ANALYST'S INITIALS, DATE ZOOP. EYECOUNT ANALYSIS COMPLETE, ACTCNT or "+"s for the preprinted taxa, and COMMENTS and DOCUMENTATION. For taxa not preprinted, the taxonomic name and taxonomic number (if not available, request new taxonomic code) are entered on the HZEL-w spread sheet. In the very unlikely event that a substation silk is examined and no zooplankton are observed during both the traverse and eyecount, a zero (0) is entered on the bottom row (PLKTAXNAM = Absent) of the HZELa, spread sheet).

When pages 1-7 are complete the file is saved and a copy is made for ZSIOP records. The file is then sent to Narragansett as an attachment to an email.

Note: Depending on the computer display used it may be useful to change the size of the spread sheet on the screen. This can be done by clicking View/Zoom on the command line of EXCEL, and customizing the size of the page for convenience of entry.

CHECKING ROUTINE ANALYSIS

It is the responsibility of the Chief, Sorting and Plankton Identification Group Gdynia to ensure that the data logs have been filled in correctly and completely.

The tally sheets are examined with a view to correcting misidentifications or miscounting of any organism. This is done by comparing the results of the analysis of each sample with those of the adjacent samples. If any probable errors are observed, then the analyst responsible is requested to check the sample. In general, before a possible miscount is checked, there should be a ACTCNT difference equivalent to at least two categories (See Table 2) between the count for a taxon of the suspect sample and those of the adjacent samples.

This method of checking the analysis requires that two successive samples of the same survey should never be allocated to the same analyst. Provision for this is made in the allocation system (see above).

In order to check on inconsistencies of identification that may exist between analysts, one sample from each cruise that was originally analyzed will be re-analyzed by a different analyst. Results will be used to ensure the highest quality and consistency of data. The samples are allocated so that each analyst successively checks samples analyzed by all the other analysts. The results are entered on the same spread sheet as the original data, in a substation column at the far right, in red font. Unlike original data, SUBSTA is entered in Poland for this consistency-check data. Any significant differences between the original and check analyses are investigated. The original results are not corrected for any errors that may occur. The checks are there to note and correct any bias that analysts may have.

DISPOSITION OF SAMPLES AND DATA

All samples with their labels and plastic wrappings are to be returned to the shipping boxes and sent back to Narragansett (Figs. 2 and 3). Following the quality checks outlined above, the EXCEL file and scanned tally sheets for each cruise will immediately be emailed to jon.hare@noaa.gov and copies sent to Wanda Kalandyk (kalandyk@mir.gdynia.pl).

COMMUNICATION

All commincations regarding CPR samples will be copied to Jon Hare (jon.hare@noaa.gov) and Wanda Kalandyk (kalandyk@mir.gdynia.pl).

LOG SHEETS

No paper log sheets will be used henceforth. Tally sheets and an EXCEL file for each cruise (e.g., OL0303*CprLogs.xls* will be used and archived in the future. [Jon- Poland is still sending not only the excel files and tally sheets, but also the paper log sheets. We should ask them to
Stop sending the paper.]

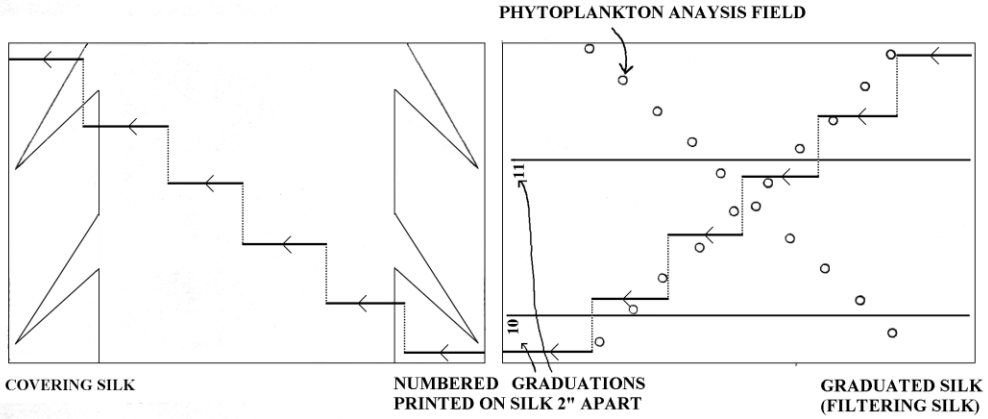


Figure 1. Locations for examination of a Continuous Plankton Recorder (CPR) sample. Continuous line with arrow shows the track on a zooplankton traverse. Circles indicate the 20 phytoplankton fields.

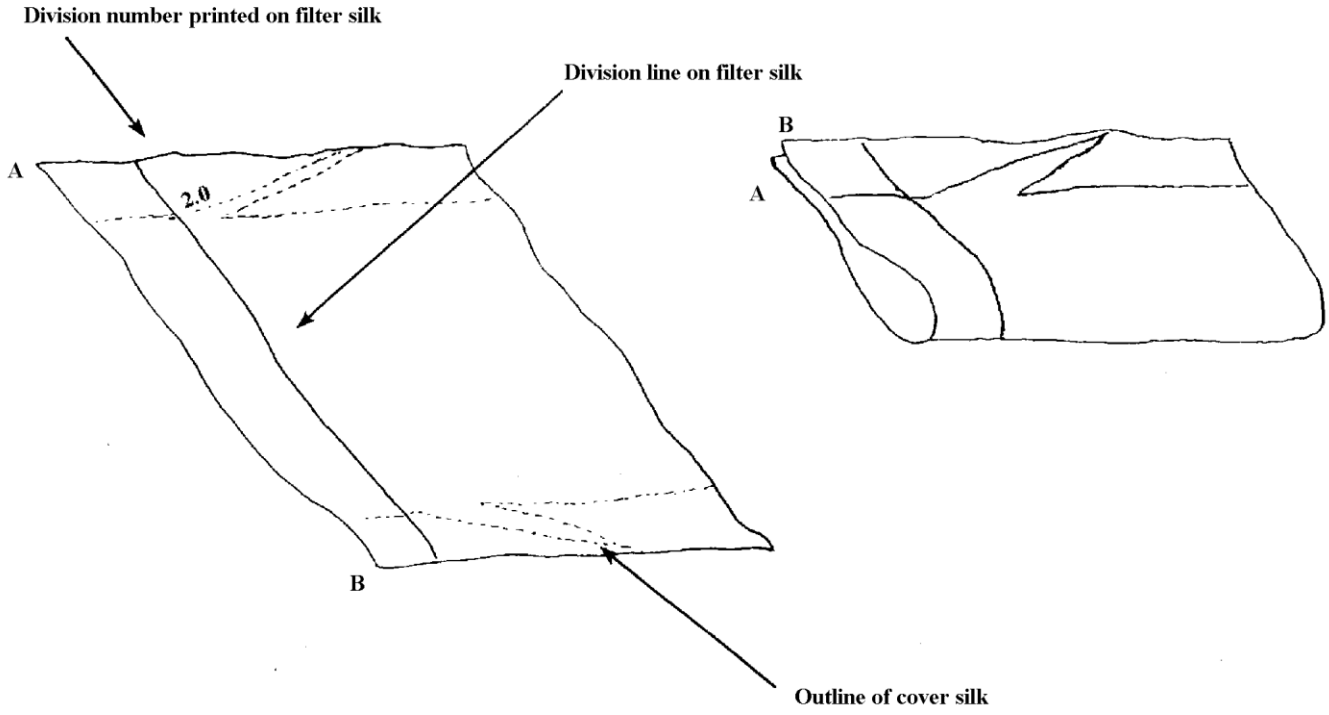


Figure 2. Folding of Continuous Plankton Recorder (CPR) silk prior to wrapping in plastic film.

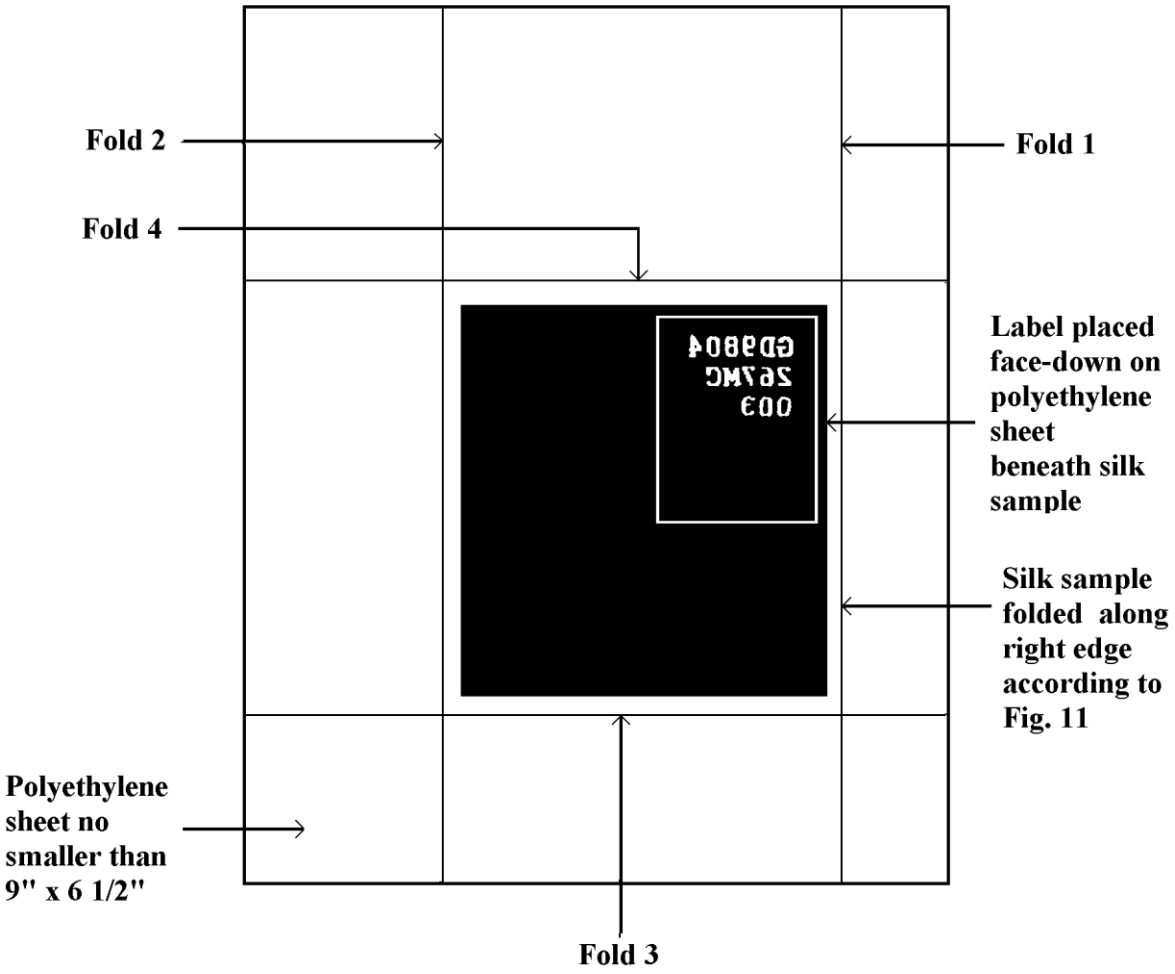


Figure 3. Method of wrapping Continuous Plankton Recorder (CPR) silk samples.

Table 1. Microscope numbers (MICNUM), brands/models, and users, employed in the analyses of Northeast Fisheries Science Center's CPR samples.

MICNUM	BRAND/MODEL	**USER**
N01	Watson-Barnet	Smith Melrose
N02	Olympus	Smith Melrose
N04	Wild	
N05	Wild	
P01	?	Katarzyna Kohnke
P02	?	Hanna Skolska

Note: Please provide Brand/Model of two microscopes in Poland.

Table 2. Continuous Plankton Recorder Counting Categories used in zooplankton examination. Note that no higher category than 12 has, as yet, been required.

Zooplankton Category	**Zooplankton Count or Count Range**
1	1
2	2
3	3
4	4-11
5	12-25
6	26-50
7	51-125
8	126-250
9	251-500
10	501-1000
11	1001-2000
12	2001-4000

Annex 4 Quality Control

QUALITY CONTROL PROTOCOL FOR COMPUTER DATA ENTRY

Applies to ALL computer data entry

Last Revised - June 2003

All data on fish eggs, fish larvae, and zooplankton are recorded on paper log-sheets provided by each NOAA Center. Each taxonomist will error check original paper log-sheets to ensure that tally marks are correctly summed and that decimal points are included for each length measurement.

All computer data entry must be verified to ensure that the database/spreadsheet data and original log-sheet data are the same. This checking procedure will be done by printing out database/spreadsheet hard copy, and reading data back to the data entry individual. After data are verified, the electronic database/spreadsheet data are sent to the appropriate NOAA scientists as email attachments. Samples, original paper log-sheets, and printouts of database/spreadsheet data are sent separately by surface mail as soon as possible as required by the appropriate protocol.

Annex 5 Pro Forma Invoices

Description of labeling to use for shipments from Poland to the U.S. using the postal service.

At the Advisory Committee Meeting, the committee agreed that three forms of labeling would be used for boxes sent via the post office from ZSIOP to NOAA labs. This does not apply to samples that are shipped via common carrier. The three labels would be: 1) the carbon copy Polska Administracja Pocztowa form, 2) the packing list, and 3) a clear Ship To label. In addition, during the routing from the Poczta Polska to the U.S. Postal Service a routing label is applied. These elements of labeling are shown below.

The NEFSC will provide Ship To labels (#3 above) for all the U.S. destinations. These will be sent to ZSIOP by the end of May 2012.

1 – Carbon Copy Postal Form

2 – Packing List

4 – Routing label

3 - Ship To label

SENT BY: Mrs. Pamela J. Bond Company name: US Dept. of Commerce Department NOAA / National Marine Fisheries Service Address: 3209 Frederic Street Pascagoula, MS 39567, U.S.A. Tel: 228-762-4591 e-mail: pamela.j.bond@noaa.gov	PRO FORMA INVOICE No: /2012 Number of pieces: Total gross weight: kg
SENT TO: Wanda Kalandyk Company name: Morski Instytut Rybacki Department name: Zakład Sortowania i Oznaczania Planktonu Address: ul. Kazimierza Królewicza 4, pawilon E City Postal Code: 71-550 Szczecin, Poland Tel: 0 11 48 91 4554463 Fax: 0 11 48 91 4227203 e-mail: wanda.kalandyk@mir.gdynia.pl	CARRIER: AMERPOL International, Inc. 20 Vesey street, Suite 1400, New York, N.Y. 10007 International Freight Forwarders - Customs House Brokers Booking No.

Full description of goods:	Customs commodity code PCN	Country of origin	Quantity / number of units	Net weight	Subtotal value and currency
Plankton samples in jars **plastic or wood pallets**	300290900	USA			USD
3 dram vials	701090910	USA			USD
Plastic caps for vials	392390900	USA			USD
Empty glass jars (small)	701090910	USA			USD
Plastic caps for jars	392390900	USA			USD
Multi-purpose labels	4821101000	USA			USD
Syracuse watch glasses	7017900000	USA			USD
Forceps	628203201000	USA			USD
				Total value: Currency	200.00 USD

VALUE FOR CUSTOMS PURPOSES ONLY: USD
Reason for Export: Scientific materials exchange between U.S. Department of Commerce, NOAA / National Marine Fisheries Service and Polish Plankton Sorting and Identification Center at Szczecin, Poland
Terms of delivery: DDU Gdynia, Poland
Note: **plastic pallets or wood pallets.**

I hereby certify that information on this invoice is true and correct and that the contents of this shipment was as stated above.

Datę: Signature: Name (in print): Pamela Bond
Day/Month/Year

Annex 6 Shipping Schedule

Samples Expected in Poland by Month, by Center, by Sample Type

Center	Type		2010								2011				Totals
		In Poland	Apr 2012	May 2012	Jun 2012	Jul 2012	Aug 2012	Sep 2012	Oct 2012	Nov 2012	Dec 2012	Jan 2013	Feb 2013	Mar 2013	
		In Poland	May 2012	Jun 2012	Jul 2012	Aug 2012	Sep 2012	Oct 2012	Nov 2012	Dec 2012	Jan 2013	Feb 2013	Mar 2013	Apr 2013	
AFSC	Ich	0	0	0	0	336	0	0	0	724	0	0	0	0	1060
AFSC	Zoo	0	0	0	0	704	0	0	0	711	0	0	0	0	1415
DISL	Ich	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SEFSC	Ich	0	0	0	742	0	0	0	476	0	0	0	0	0	1218
SEFSC	Zoo	451	0	0	212	0	0	0	0	0	0	0	0	0	663
NEFSC	Ich	0	234	0	0	240	0	0	0	360	0	0	0	0	834
NEFSC	Zoo	0	218	0	0	240	0	0	0	360	0	0	0	0	818
NEFSC	CPR	0	24	36	36	36	36	36	36	36	36	36	36	36	420

6428

Sum of Samples Expected in Poland by Month and by Sample Type

Zoo Samples	451	218	0	212	944	0	0	0	1071	0	0	0	0	2896
Ichthyo Samples	0	234	0	742	576	0	0	476	1084	0	0	0	0	3112
CPR Samples	0	24	36	36	36	36	36	36	36	36	36	36	36	420

Overall Total of Samples to be	6428

ANNEX 7 Number of Vials

Vials and caps estimate for the fiscal year 2012/2013

AFSC Seattle	
3-dram vials with caps for ichthyoplankton	8000
3-dram vials with caps for zooplankton	17000
1,5 dram vials with caps for eggs	1500
30 ml vials with caps for large larvae	1500
Subtotal vials:	28000
Also, 30000 shamrock dots 1/2", and 2000 shamrock dots 3/4",	

NEFSC Narragansett	
3-dram vials with caps for ichthyoplankton	8000
3-dram vials with caps for zooplankton	5000
1,5 dram vials with caps for eggs	2000
11-dram vials with caps for archiving zooplankton	1000
Subtotal:	16000
Also, 16500 shamrock dots 1/2"	
and 17000 Multi-use round labels 3/4" white	

SEFSC Pascagoula	
3-dram vials with caps for ichthyoplankton	30000
3-dram vials with caps for zooplankton	7000
1,5 dram vials with caps for eggs	3000
Subtotal:	40000
Also, 40000 shamrock dots 1/2"	
Jars for large larvae 60 ml	600
Jars for large larvae 120 ml	400
30 ml vials with caps for large larvae	1000
Subtotal:	2000

Total vials :	84000
Total jars :	2000

Additional requests:

Live Inspect Collecting Forceps (no. 26029-10, 10cm, Sharp/sharp)	30
Dumont forceps #5 BIO DMX (FST No. 11252-30) or #55 BIO INOX (FST No. 1255-20)	15
Needle holder with screw chuck (stainless steel, 10.3cm) & thin needles (000)	10
Plastic Petri Dish (FALCON 351112)	30
Glass Petri Dish "PYREX" with brown squares on the bottom	20

Annex 8 Publications

DOCUMENTS RESULTING FROM SAMPLES EXAMINED BY THE ZSIOP, 2008-2012

Able, K.W., D.M. Allen, G. Bath-Martin, J.A. Hare, D.E. Hoss, K.E. Marancik, P.M. Powles, D.E. Richardson, J.C. Taylor, and H.J. Walsh. 2011. Life history and habitat use of the speckled worm eel, Myrophis punctatus, along the east coast of the United States. Environmental Biology of Fishes 92:237-259.

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ANNEX 9 Priorities for Sorting

Progress Report for the period from 1 May 2011 to 30 April 2012

Priority	Type	Center	Vessel	Cruise	Number of Samples		Gear	Protocol	Planned Ship Date	Samples Recieved	Sorting		Identification		Identification Check		Data Entry		Vial Mailing Date	Excel File Transmittal Date	Logsheets Mailing Date
					Agreed	Received					Start	Finish	Start	Finish	Start	Finish	Start	Finish			
ICHTHYOPLANKTON																					
1	Ich	SEFSC	Gordon Gunter	GU1201	49		Bon	Ich/Sort Eggs/TUNA	Jun 2012												
1	Ich	SEFSC	Gordon Gunter	GU1201	97		Neu	Ich/Sort Eggs/TUNA	Jun 2012												
1	Ich	SEFSC	Gordon Gunter	GU1201	97		[illegible]	Ich/Sort Eggs/TUNA	Jun 2012												
1	Ich	SEFSC	Gordon Gunter	GU1201	65		MOC (1-6)	Ich/Sort Eggs/TUNA	Jun 2012												
2	Ich	SEFSC	Pelican	Pel 111	7		Bon	Ich/Sort Eggs	Jun 2012												
2	Ich	SEFSC	Pelican	Pel 111	7		Neu	Ich	Jun 2012												
2	Ich	SEFSC	Pelican	Pel 112	7		Bon	Ich/Sort Eggs	Jun 2012												
2	Ich	SEFSC	Pelican	Pel 112	7		Neu	Ich	Jun 2012												
2	Ich	SEFSC	Pisces	PC 1108	27		Bon	Ich/Sort Eggs	Jun 2012												
2	Ich	SEFSC	Pisces	PC 1108	27		Neu	Ich	Jun 2012												
2	Ich	SEFSC	Pelican	Pel 121	7		Bon	Ich/Sort Eggs	Jun 2012												
2	Ich	SEFSC	Pelican	Pel 121	7		Neu	Ich	Jun 2012												
2	Ich	SEFSC	Pelican	Pel 122	7		Bon	Ich/Sort Eggs	Jun 2012												
2	Ich	SEFSC	Pelican	Pel 122	7		Neu	Ich	Jun 2012												
2	Ich	SEFSC	Tommy Munro	TM 1202	4		Bon	Ich/Sort Eggs	Jun 2012												
2	Ich	SEFSC	Tommy Munro	TM 1202	4		Neu	Ich	Jun 2012												
2	Ich	SEFSC	Oregon II	OI 0297	54		Bon	Ich/Sort Eggs	Jun 2012												
2	Ich	SEFSC	Oregon II	OI 0297	55		Neu	Ich	Jun 2012												
2	Ich	SEFSC	Oregon II	OI 0298	107		Bon	Ich/Sort Eggs	Jun 2012												
2	Ich	SEFSC	Oregon II	OI 0298	106		Neu	Ich	Jun 2012												
2	Ich	SEFSC	Oregon II	OI 0298	0		MOC (1-7)	Ich/Sort Eggs	Jun 2012												
					742																
3	Ich	SEFSC	Gordon Gunter	GU 1203	143		Bon	Ich/Sort Eggs	Oct 2012												
3	Ich	SEFSC	Gordon Gunter	GU 1203	143		Neu	Ich/Sort Eggs	Oct 2012												
3	Ich	SEFSC	Gordon Gunter	GU 1203	12		MOC	Ich/Sort Eggs	Oct 2012												
3	Ich	SEFSC	Oregon II	OI 0299	85		Bon	Ich/Sort Eggs	Oct 2012												
3	Ich	SEFSC	Oregon II	OI 0299	85		Neu	Ich	Oct 2012												
3	Ich	SEFSC	Atlantis Discovery	AD 1203	6		Bon	Ich/Sort Eggs	Oct 2012												
3	Ich	SEFSC	Atlantis Discovery	AD 1203	6		Neu	Ich	Oct 2012												
3	Ich	SEFSC	Tommy Munro	TM 1204	4		Bon	Ich/Sort Eggs	Oct 2012												
3	Ich	SEFSC	Tommy Munro	TM 1204	4		Neu	Ich	Oct 2012												
3	Ich	SEFSC	Pelican	[illegible]	7		Bon	Ich/Sort Eggs	Oct 2012												
3	Ich	SEFSC	Pelican	[illegible]	7		Neu	Ich	Oct 2012												
3	Ich	SEFSC	Pelican	Pel 124	7		Bon	Ich/Sort Eggs	Oct 2012												
3	Ich	SEFSC	Pelican	Pel 124	7		Neu	Ich	Oct 2012												
					476	0															

Progress Report for the period from 1 May 2011 to 30 April 2012

Priority	Type	Center	Vessel	Cruise	Number of Samples Agreed	Number of Samples Received	Gear	Protocol	Planned Ship Date	Samples Recieved	Sorting Start	Sorting Finish	Identification Start	Identification Finish	Identification Check Start	Identification Check Finish	Data Entry Start	Data Entry Finish	Vial Mailing Date	Excel File Transmittal Date	Logsheets Mailing Date
2	Ich	AFSC	Oscar Dyson	1DY12	48		60Bon	Ich/Degge	Jul 2012												
2	Ich	AFSC	Oscary Dyson	2DY12	288		60Bon	Ich/Degge	Jul 2012												
2	Ich	AFSC	Oscary Dyson	2DY12	0		NEU	Ich/Degge	Jul 2012												
3	Ich	AFSC	Bristol Explorer	1BE12	70		60Bon	Ich/Degge	Nov 2012												
3	Ich	AFSC	Bristol Explorer	2BE12	65		60Bon	Ich/Degge	Nov 2012												
3	Ich	AFSC	Bristol Explorer	3BE12	60		60Bon	Ich/Degge	Nov 2012												
3	Ich	AFSC	CHAOZ	?	75		SLED	Ich/Degge	Nov 2012												
3	Ich	AFSC	CHAOZ	?	75		LGCB	Ich/Degge	Nov 2012												
3	Ich	AFSC	Oscary Dyson	3-5DY12	165		60Bon	Ich/Degge	Nov 2012												
3	Ich	AFSC	Oscary Dyson	XDY11	100		60Bon	Ich/Degge	Nov 2012												
4	Ich	AFSC	Gulf of Alaska	? (NW Exp)	114		60Bon	Ich/Degge	Nov 2012												
					1060	0															
1	Ich	NEFSC	Delaware	DE1202	120		60Bon	683I	Apr 2012												
2	Ich	NEFSC	Henry Bigelow	HB1201	120		60Bon	683I	Jul 2012												
2	Ich	NEFSC	Henry Bigelow	HB1202	120		60Bon	683I	Jul 2012												
3	Ich	NEFSC	Henry Bigelow	HB1205	120		60Bon	683I	Nov 2012												
3	Ich	NEFSC	Henry Bigelow	HB1206	120		60Bon	683I	Nov 2012												
3	Ich	NEFSC	TBD	TBD	120		60Bon	683I	Nov 2012												
1	Ich	NEFSC	Delaware	DE0808	11		60Bon	683I	Apr 2012												
1	Ich	NEFSC	Delaware	DE1202	9		60Bon	683I	Apr 2012												
1	Ich	NEFSC	Delaware	DE1202	9		60Bon	685I	Apr 2012												
1	Ich	NEFSC	Delaware	DE1202	9		IKMT	685I	Apr 2012												
1	Ich	NEFSC	Delaware	DE1009	12		60Bon	683I	Apr 2012												
1	Ich	NEFSC	Delaware	DE1102	18		60Bon	683I	Apr 2012												
1	Ich	NEFSC	Delaware	DE1102	18		60Bon	685I	Apr 2012												
1	Ich	NEFSC	Delaware	DE1109	28		60Bon	683I	Apr 2012												
					834																

ZOOPLANKTON

2	Zoo	SEFSC	Oregon II	OI 0298	107		Bon	dcZ	Jun 2012												
2	Zoo	SEFSC	Oregon II	OI 0298	105		Neu	dcZ	Jun 2012												
1	Zoo	SEFSC	Oregon II	OI 0284	37	37	Bon	dcZ	In Poland												
1	Zoo	SEFSC	Oregon II	OI 0284	37	37	Neu	dcZ	In Poland												
1	Zoo	SEFSC	Gordon Gunter	GU1101	49	49	Bon	dcZ	In Poland												
1	Zoo	SEFSC	Gordon Gunter	GU1101	97	97	Neu	dcZ	In Poland												
1	Zoo	SEFSC	Gordon Gunter	GU 0805	34	34	Bon	dcZ	In Poland												
1	Zoo	SEFSC	Gordon Gunter	GU 0805	34	34	Neu	dcZ	In Poland												
1	Zoo	SEFSC	Gordon Gunter	GU 1103	149	149	Bon	dcZ	In Poland												
1	Zoo	SEFSC	Gordon Gunter	GU 1103	0	0	Neu	dcZ	In Poland												
1	Zoo	SEFSC	Oregon II	OI 0288	7	7	Bon	dcZ	In Poland												
1	Zoo	SEFSC	Oregon II	OI 0288	7	7	Neu	dcZ	In Poland												
					683	451															

Progress Report for the period from 1 May 2011 to 30 April 2012

Priority	Type	Center	Vessel	Cruise	Number of Samples Agreed	Number of Samples Received	Gear	Protocol	Planned Ship Date	Samples Recieved	Sorting Start	Sorting Finish	Identification Start	Identification Finish	Identification Check Start	Identification Check Finish	Data Entry Start	Data Entry Finish	Vial Mailing Date	Excel File Transmittal Date	Logsheets Mailing Date
2	Zoo	AFSC	Oscar Dyson	1DY12	48		20Bon	TZ	Jul 2012												
2	Zoo	AFSC	Oscar Dyson	1DY12	48		60Bon	TZ	Jul 2012												
2	Zoo	AFSC	Oscar Dyson	1DY12	12		CalVET	MZ	Jul 2012												
2	Zoo	AFSC	Oscar Dyson	2DY12	288		20Bon	TZ	Jul 2012												
2	Zoo	AFSC	Oscar Dyson	2DY12	288		60Bon	TZ	Jul 2012												
2	Zoo	AFSC	Oscar Dyson	2DY12	72		CalVET	MZ	Jul 2012												
3	Zoo	AFSC	Bristol Explorer	1BE12	28		CTDB	MZ	Nov 2012												
3	Zoo	AFSC	Bristol Explorer	2BE12	5		CTDB	MZ	Nov 2012												
3	Zoo	AFSC	OHAOZ	7	150		SLED	TZ	Nov 2012												
3	Zoo	AFSC	OHAOZ	7	75		LGCB	TZ	Nov 2012												
3	Zoo	AFSC	Oscar Dyson	3-5DY12	165		20Bon	TZ	Nov 2012												
3	Zoo	AFSC	Oscar Dyson	3-5DY12	165		60Bon	TZ	Nov 2012												
3	Zoo	AFSC	Oscar Dyson	3-5DY12	12		CalVET	MZ	Nov 2012												
3	Zoo	AFSC	Gulf of Alaska	7 (NW Exp)	114		60Bon	TZ	Nov 2012												
					1418	0															
1	Zoo	NEFSC	Delaware	DE1202	120		60Bon	60SZ	Apr 2012												
1	Zoo	NEFSC	Barnegat Bay	TBD	75		60Bon	60SZ	Apr 2012												
2	Zoo	NEFSC	Henry Bigelow	HB1201	120		60Bon	60SZ	Jul 2012												
2	Zoo	NEFSC	Henry Bigelow	HB1202	120		60Bon	60SZ	Jul 2012												
3	Zoo	NEFSC	Henry Bigelow	HB1206	120		60Bon	60SZ	Nov 2012												
3	Zoo	NEFSC	Henry Bigelow	HB1206	120		60Bon	60SZ	Nov 2012												
3	Zoo	NEFSC	TBD	TBD	120		60Bon	60SZ	Nov 2012												
1	Zoo	NEFSC	Delaware	DE0711	12		60Bon	60SZ	Apr 2012												
1	Zoo	NEFSC	Delaware	DE1009	11		60Bon	60SZ	Apr 2012												
					818	0															

Progress Report for the period from 1 May 2011 to 30 April 2012

Priority	Type	Center	Vessel	Cruise	Number of Samples		Gear	Protocol	Planned Ship Date	Samples Recieved	Sorting		Identification		Identification Check		Data Entry		Vial Mailing Date	Excel File Transmittal Date	Logsheets Mailing Date
					Agreed	Received					Start	Finish	Start	Finish	Start	Finish	Start	Finish			

CONTINUOUS PLANKTON RECORDRED

1	CPR	NEFSC	Oleander	OL1204	24		CPR	CPR	Apr 2012												
1	CPR	NEFSC	Oleander	OL1205	24		CPR	CPR	May 2012												
1	CPR	NEFSC	Oleander	OL1206	24		CPR	CPR	Jun 2012												
1	CPR	NEFSC	Oleander	OL1207	24		CPR	CPR	Jul 2012												
1	CPR	NEFSC	Relyalotus	OL1208	24		CPR	CPR	Aug 2012												
1	CPR	NEFSC	Relyalotus	OL1209	24		CPR	CPR	Sep 2012												
1	CPR	NEFSC	Relyalotus	OL1210	24		CPR	CPR	Oct 2012												
1	CPR	NEFSC	Relyalotus	OL1211	24		CPR	CPR	Nov 2012												
1	CPR	NEFSC	Relyalotus	OL1212	24		CPR	CPR	Dec 2012												
1	CPR	NEFSC	Relyalotus	OL1301	24		CPR	CPR	Jan 2013												
1	CPR	NEFSC	Relyalotus	OL1302	24		CPR	CPR	Feb 2013												
1	CPR	NEFSC	Oleander	OL1303	24		CPR	CPR	Mar 2013												
1	CPR	NEFSC	Relyalotus	RY1204	0		CPR	CPR	Apr 2012												
1	CPR	NEFSC	Relyalotus	RY1205	12		CPR	CPR	May 2012												
1	CPR	NEFSC	Relyalotus	RY1206	12		CPR	CPR	Jun 2012												
1	CPR	NEFSC	Relyalotus	RY1207	12		CPR	CPR	Jul 2012												
1	CPR	NEFSC	Relyalotus	RY1208	12		CPR	CPR	Aug 2012												
1	CPR	NEFSC	Relyalotus	RY1209	12		CPR	CPR	Sep 2012												
1	CPR	NEFSC	Relyalotus	RY1210	12		CPR	CPR	Oct 2012												
1	CPR	NEFSC	Relyalotus	RY1211	12		CPR	CPR	Nov 2012												
1	CPR	NEFSC	Relyalotus	RY1212	12		CPR	CPR	Dec 2012												
1	CPR	NEFSC	Relyalotus	RY1301	12		CPR	CPR	Jan 2013												
1	CPR	NEFSC	Relyalotus	RY1302	12		CPR	CPR	Feb 2013												
1	CPR	NEFSC	Relyalotus	RY1303	12		CPR	CPR	Mar 2013												
					420	0															

Progress Report for the period from 1 May 2011 to 30 April 2012

Priority	Type	Center	Vessel	Cruise	Number of Samples		Gear	Protocol	Planned Ship Date	Samples Recieved	Sorting		Identification		Identification Check		Data Entry		Vial Mailing Date	Excel File Transmittal Date	Logsheets Mailing Date
					Agreed	Received					Start	Finish	Start	Finish	Start	Finish	Start	Finish			

TOTAL:	6428	451

SEFSC Ichthyoplankton	1218	0
AFSC Ichthyoplankton	1060	0
NEFSC Ichthyoplankton	0	0

SEFSC Zooplankton	553	451
AFSC Zooplankton	1415	0
NEFSC Zooplankton	818	0
NEFSC CPR	420	0

Annex 10 Distribution List

RECIPIENTS
OF MONTHLY PROGRESS REPORTS
20012 - 2013

The Monthly Progress Reports will be sent directly to:

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