


MEMORANDUM

TO: Council, AP, and SSC Members

FROM: Clarence G. Pautzke   
Executive Director

DATE: January 14, 1993

SUBJECT: Research Priorities

**ACTION REQUIRED**

- a) Review recommendations from Plan Teams and forward to NMFS.
- b) Receive report on expansion of survey assessment for Greenland turbot.

**BACKGROUND**

Research Priorities: Plan Team Recommendations

In October 1988, NMFS requested Council input on research priorities of 1989 to be included in their budget planning process. This has become an annual request and the Council developed a policy for the development of research priorities (Item C-4(a)).

The groundfish Plan Teams have developed a list of priority research topics. This is attached as Item C-4(b). Please note that these are more specific topics of research, rather than general areas of research as has been presented in the past. Many of these topics require continuing attention and effort over an extended period. Consequently, research budgets were not prepared. Costs may vary depending on the techniques and level of research required.

At past January meetings, the Council has reviewed research topics and developed priority recommendations. However, we have no mechanism to receive direct feedback as to what research gets funded in the NMFS budget. It probably would be very helpful to request NMFS to report back to us on the extent to which our research recommendations are addressed.

Aleutian Islands Greenland Turbot Survey.

At the September 1992 meeting the Council requested the Plan Team to develop a report regarding the ability to expand the current foreign or domestic longline surveys into deeper water to better assess the abundance of Greenland turbot in that area. The request also included an assessment of expanding the trawl survey for the same reason.

Staff from the AFCS will provide you with a letter at the meeting detailing the Center's recommendation on this request.

NORTH PACIFIC FISHERY MANAGEMENT COUNCIL

Policy on Development of Research Priorities

In 1989, the Council adopted an annual schedule for the development of fishery research priorities. The following schedule is intended to provide NOAA Fisheries with the Council's research priorities as they prepare their agency budget and research plan.

- September      Plan Teams prepare list of research topics. These topics would be influenced by ongoing research programs, stock assessment surveys, problems with management of fisheries, industry proposals, and prior Council discussion.
- October          Research topics are more fully developed and costs estimated (this work could be performed by Plan Teams and representatives of NOAA Fisheries (Alaska Region), Alaska Fisheries Science Center, and the Alaska Department of Fish and Game who are knowledgeable with the proposed work).
- November        Plan Teams review topics, finalize list and make priority recommendations.
- December        Recommended research priorities are presented to the Council, SSC, and NOAA Fisheries Regional Office for review.
- January          Council reviews research topics and comments, and develops their priority recommendations. These are then forwarded to the NOAA Fisheries Regional Director for use in preparing annual budgets.

The long lead time in the NOAA Fisheries budget planning process means that major research initiatives approved by the Council in January of one year will not be incorporated by NOAA Fisheries until two years later.

**PRIORITY RESEARCH TOPICS  
GULF OF ALASKA AND BERING SEA/ALEUTIAN ISLANDS  
GROUNDFISH PLAN TEAMS  
November 1992**

The following research areas are recommended by the Plan Teams. The list is not in priority order. These are specific research topics listed by area.

Gulf of Alaska

1. A winter trawl survey to assess the size composition of Pacific cod in the western Gulf. Size composition from the 1990 groundfish survey and NMFS longline survey didn't reflect the high proportion of large (>70 cm) cod taken in the first two quarters of that year. These fish may be migrating from the BSAI into the Gulf to spawn, thus affecting estimates of exploitable biomass.
2. Meristic, tagging, or other studies to determine if Atka mackerel in the western Gulf and Aleutian Islands are the same or different stocks. Movement from the BSAI into the western Gulf may result in the overharvesting of the BSAI stocks.
3. Age, growth, and other life history data are needed for deepwater flatfish. Assessments are currently based on life history data for rock sole.
4. Survey deepwater stations during the 1993 GOA bottom trawl survey. Our current estimate of exploitable biomass for deepwater flatfish was based on the 1990 survey adjusted by the proportions of flatfish in shallow and deepwater stations observed in the 1987 survey.
5. Get direct observations on the catchability of sablefish in the longline survey. The current estimate of sablefish absolute abundance is based on trawl survey data. If catchability of the longline could be quantified, better estimates of absolute biomass could be obtained.
6. Collect data on the bycatch of thornyheads and other rockfish taken in the longline sablefish fishery. Information on the number, size, and species composition could be collected by observers, and would provide data for stock assessments and inseason management.
7. Implement better surveys for rockfish. Improved surveys would allow a better estimation of absolute abundance.
8. Life history data are needed for many rockfish species. Species specific age, growth, maturity, and length-weight data will be required for better assessments.
9. Evaluate the appropriateness of  $F_{35}$  harvesting strategies and overfishing levels on populations of long-lived species such as rockfish. The strategy of maintaining minimum levels of SSB/R was based on average stock-recruit relationships, selectively, and maturity schedules.

## Bering Sea Aleutian Islands

### **Ecological and Stock Analyses**

1. **Marine mammal investigations focusing on marine mammal dependence on commercial fish stocks and quantification of the impacts of commercial fishing on the marine mammal populations through direct mortality, disturbance, and commercial harvesting of marine mammal prey species. Endangered and threatened species, such as harbor seals and Steller sea lions continue to decline in much of Alaska. Northern fur seal populations while stabilized, show no signs of recovery. Cause(s) of the declines are unknown, but a change in trophic relationships is likely either as a cause or as a result of these declines.**
2. **Meristic, tagging, and other studies to determine if Atka mackerel, pollock, Pacific cod, sablefish and POP in the western Gulf of Alaska and western Bering Sea and Aleutian Islands areas are the same or different stocks. Although abundance may be accurately assessed if surveys in the two areas occur at the same time, seasonal movements combined with intense localized fisheries could produce localized depletions.**
3. **Collection of age, growth, and maturity data and other life history data and improved stock assessment techniques for yellowfin sole, Greenland turbot and other flatfish.**
4. **Habitat studies of arrowtooth flounder and Greenland turbot to determine the predator-prey relationship within the system. Continuous poor recruitment of turbot remains a concern and may be caused by the increase in population of arrowtooth flounder.**
5. **Pollock life history information and improved stock assessment techniques. Improved and expanded surveys to provide better information on stock structure and distribution, spawning areas, annual stock production, egg/larvae transport, short and long-term movement and stock mixing. Additional studies regarding the impacts of continued fishing in the international waters of the Bering Sea on stocks in the U.S. EEZ. Expanded haul surveys in the northern regions of the BSAI to survey age 1 pollock.**
6. **Improve age determination techniques for sablefish, pollock, and cod. Age validation studies for these species.**
7. **Expanded ecosystem studies for the BSAI, particularly survey and assessment activities aimed at better identifying predator-prey relationships. Inter-relationships of greatest interest are those between Greenland turbot and arrowtooth flounder, those between marine mammals and various fish species, those between Atka mackerel and Steller sea lions, and those between crab and Pacific cod.**
8. **Research of the estimation of natural mortality ( $M$ ) in fishery models. Natural mortality or  $M$  includes death from all causes except fishing. This includes predation, disease, pollution, etc. The components of  $M$  are not well understood. A reasonably accurate estimate of the biological components of  $M$  is central to any understanding of the ecological consequences of harvest schedules.**

9. Evaluate the appropriateness of the exploitation rate for species groups that are managed as a single complex. A number of species groups, such as flatfish, rockfish, and other species are managed as a single complex. The exploitable mass for the complex is generally accepted as the cumulative total of the biomass estimates of the component parts. The exploitation rate is then often set as an average of the range of values for the species involved. Trophic interactions amongst species and potential overharvesting of species within a complex are usually not considered. The current approach to assemblage management needs to be evaluated in view of the considerations.
10. Determine the effects of fishing on spawning aggregations of Pacific cod and walleye pollock.
11. Determine the effects of fishing gear on the habitat and its productivity.
12. Mortality estimates for bycatch species in each fishery. Better quantification of the discard mortality rates and hook injury studies for Pacific Halibut.

#### **Economic and Fisheries Analyses for GOA and BSAI**

1. Collection and analysis of operation cost data for all groundfish fisheries in the Gulf of Alaska and Bering Sea and Aleutian islands.  
  
Such a study could probably be conducted over an 18 month period at the cost of approximately \$100,000.
2. Economic studies of the total value of Alaskan fishery products, including processing, marketing, retailing and consumer demand.
3. Compile and analyze data contained in fishing log books to provide fishery performance information to the industry.  
  
Such research has already been initiated for some segments of the trawl fleet. A dedicated research effort over the course of one year would require a budget of approximately \$60,000.
4. Economic impacts of Alaskan harvests on the world market, including price impacts of changes in foreign and domestic supplies and demand. Estimated costs of such a project would be \$200,000 over 2 years.
5. Economic evaluation of the consequences of various bycatch management alternatives.
6. Net fishing efficiency studies, including effectiveness of various trawl operations in terms of area swept versus retained catch, fish avoidance, etc.
7. Effects of trawl mesh sizes on catch and size composition of pollock and other species in order to minimize the catch of undersize fish.
8. Economic effects on groundfish fisheries of marine mammal competition, marine mammal incidental takes, and marine mammal avoidance regulations.
9. Evaluation of market solution to allocation problems.

JANUARY 1993

Supplemental

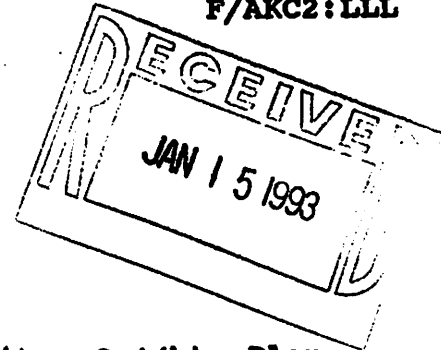


**UNITED STATES DEPARTMENT OF**  
**National Oceanic and Atmospheric Administration**  
 NATIONAL MARINE FISHERIES SERVICE  
 Alaska Fisheries Science Center  
 7600 Sand Point Way NE  
 BIN C15700, Building 4  
 Seattle, Washington 98115-0070

JAN 15 1993

F/AKC2:LLL

Clarence Pautzke  
 Executive Director  
 North Pacific Fishery Management Council  
 P.O. Box 103136  
 Anchorage, AK 99510



Dear Clarence,

This refers to the January Council agenda item C-4(b)--Plan Team report on feasibility of expanding resource surveys in the Aleutian Islands for Greenland Turbot.

I believe the Council is interested in the survey of the eastern Bering Sea slope as well, not just the Aleutians. Therefore, my comments include surveys for the Bering Sea. There are two resource surveys that provide information on Greenland turbot:

1. **The Center's crab/groundfish trawl survey of the EBS shelf.**

This annual shelf survey provides information on the distribution and abundance of Greenland turbot juveniles only. It does not sample the slope where the adult Greenland turbot resource is found. With the present budget situation, it will not be feasible for us to extend this traditional survey into the deeper zone.

In the past, we have successfully conducted slope surveys on a triennial basis using a Japanese commercial trawler and the Miller Freeman. There are insufficient funds and Miller Freeman time to carry out this survey more frequently. Moreover, much of the slope area is untrawlable, and the resource is rather patchy in distribution. These problems result in imprecise estimates of abundance.

2. **Cooperative and Domestic Longline Surveys**

The second series of surveys that could assess Greenland turbot is with longline gear. The Center presently contracts with domestic longliners to carry out the Gulf of Alaska portion of the survey on sablefish and other species. Budget constraints have prevented the expansion of the domestic survey into the Aleutians and the EBS.




2

To provide continuity of the longline assessments into the Aleutians and the EBS, we have conducted a cooperative survey with a Japanese longliner each year. This cooperation extends back to the early 1980s. A review of the surveys indicates that the entire range of adult Greenland turbot has not been surveyed. At each slope station, we have generally run the longline gear from a shallow starting point (about 150-250m) to a deeper ending point (800-1100m). At the deeper end of the gear, Greenland turbot are caught. A review of our work schedule suggests that it should be feasible to add 1-2 km of longline gear to the existing gear and have the longline gear run deeper in order to cover more of the depth zone where adult Greenland turbot are found. The information should be useful for assessing the stock.

Thus, the most expedient way of obtaining the data in 1993 would be to expand the Japanese longline cooperative survey by adding 1-2 km of gear at each station in the area of interest, about 4 stations in the eastern Aleutians and 24 in the eastern Bering Sea.

Yours sincerely,

  
For William Aron  
Science and Research Director  
Alaska Region