

North Pacific Fishery Management Council

Richard B. Lauber, Chairman
Clarence G. Pautzke, Executive Director

605 West 4th Avenue
Anchorage, Alaska 99501



Mailing Address: P.O. Box 103136
Anchorage, Alaska 99510

Telephone: (907) 271-2809
FAX: (907) 271-2817

April 16, 1992

DRAFT AGENDA

**101st Plenary Session
North Pacific Fishery Management Council
April 22-26, 1992
Anchorage, Alaska**

The North Pacific Fishery Management Council will convene at 8:00 a.m. on Wednesday, April 22, 1992, at the Hilton Hotel in Anchorage, Alaska, and possibly continue into Sunday, April 26. Other meetings to be held during the week are:

<u>Committee/Panel</u>	<u>Beginning</u>
Public Hearing-Sablefish/Halibut IFQs Alaska Room	11:30 a.m., Monday, April 20 continuing Tuesday, April 21
Advisory Panel-Dillingham Room	1:00 p.m., Monday, April 20
Scientific and Statistical Committee Katmai Room	1:00 p.m., Monday, April 20

All meetings except Council executive sessions are open to the public. Other committee and workgroup meetings may be scheduled on short notice during the week.

INFORMATION FOR PERSONS WISHING TO TESTIFY AT COUNCIL MEETINGS

Those wishing to testify at Council meetings on a specific agenda item must fill out and deposit a registration card in the box at the registration table **before** public comment begins on that agenda item. Additional cards are generally not accepted **after** public comment has begun. A general comment period is scheduled toward the end of the meeting, time permitting, for comment on matters not on the current agenda.

Submission of Written Testimony at Council Meeting. Any written comments and materials for distribution to Council members should be provided to the Council secretary. A minimum of 18 copies are needed to ensure that every Council member, the executive director, NOAA General Counsel and the official meeting record each receive a copy. Some agenda items may have a formal, published deadline for written comments. For those items, written comments submitted after the published deadline or at the Council meeting, other than simple transcripts of oral testimony, will be stamped "LATE COMMENT." They will not be summarized or analyzed in preparation for the Council meeting, nor will they be placed in Council member notebooks. All "LATE COMMENTS" will be placed in a special notebook, marked as such, and made available to Council members upon their request.

April 16, 1992

DRAFT AGENDA

**101st Plenary Session
North Pacific Fishery Management Council
April 22-26, 1992
Anchorage, Alaska**

- A. CALL TO ORDER, APPROVAL OF AGENDA, AND MINUTES OF PREVIOUS MEETING(S)

- B. REPORTS
 - B-1 Executive Director's Report
 - B-2 Domestic Fisheries Report by ADF&G
 - B-3 NMFS Management Report
(includes overview on amendments and regulatory actions)
 - B-4 Enforcement and Surveillance Report

- C. NEW OR CONTINUING BUSINESS
 - C-1 Sablefish and Halibut Management
Review supplemental analysis and public comments, and take action if appropriate.
(Please note: A notice to rescind earlier action has been submitted.)

 - C-2 Inshore-Offshore
 - (a) Report on Secretarial decision on amendment 18/23.
 - (b) Set alternatives and schedule for analysis of revised amendment for BSAI for 1993-1995.
 - (c) Initiate analysis of inshore-offshore bycatch amendment.
 - (d) Review Community Development Quota program implementation.

 - C-3 Moratorium
 - (a) Report of moratorium committee.
 - (b) Review draft analysis and approve for public review.
 - (c) Receive NOAA GC report on Capital Construction Fund and application of moratorium to state waters.

 - C-4 North Pacific Fisheries Research Plan
 - (a) Review analysis and relevant insurance issues.
 - (b) Approve plan for public review.
 - (c) Establish observer oversight committee.
 - (d) Review proposed changes to observer program for 1993.

C-5 International Fisheries

- (a) Report on regulations proposed to monitor influx of fish products originating in the Russian EEZ.
- (b) NOAA-GC report on Sen. Stevens' proposal to restrict U.S. operations if affiliated with foreign operations in the Donut Hole. Take action as appropriate.
- (c) Status report on establishing permit conditions disallowing U.S. vessels from fishing in the Donut.

C-6 Comprehensive Rationalization Program

- (a) Scope of issues.
- (b) Establish schedule and methodology.

C-7 Other Business

D. FISHERY MANAGEMENT PLANS

D-1 Crab Management

- (a) Review Stock Assessment and Fishery Evaluation Report.
- (b) Report on actions taken by the Alaska Board of Fisheries.
- (c) Consider need for adjustments to management plan.

D-2 Groundfish Management

- (a) Summary of National Bycatch Conference.
- (b) Review Japan longline survey.
- (c) Review results of advanced notice of proposed rulemaking on total estimation and reporting of catch.
- (d) Review trawl testing proposal and analysis.
- (e) Initiate analyses of proposals for exclusive registration and pollock B season delay for 1993. Consider emergency action to delay pollock B season for 1992.
- (f) Review groundfish amendment package with bycatch measures and trawl closure of Eastern Gulf of Alaska.
- (g) Team report on individual bycatch quotas. Council direction on further activity on this issue.
- (h) Progress report on analysis of preferential allocations of Pacific cod to fixed gear fisheries that have low halibut bycatch.
- (i) Set Vessel Incentive Program bycatch standards for 3rd and 4th quarters.

D-3 Staff Tasking

E. FINANCIAL REPORT

F. PUBLIC COMMENTS

G. CHAIRMAN'S REMARKS AND ADJOURNMENT

**Proposed Schedule
SCIENTIFIC AND STATISTICAL COMMITTEE
April 1992
Hilton Hotel
Anchorage, Alaska**

Monday, April 20

1:00 PM D-2 Groundfish Management

5:00 PM Recess

Tuesday, April 21

8:00 AM C-2 Inshore/Offshore

Noon Lunch

1:00 PM C-4 N.P. Fisheries Research Plan

5:00 PM Recess

Wednesday, April 22

8:00 AM D-1 Crab SAFE
C-3 Moratorium

Noon Lunch

1:00 PM C-6 Comprehensive Rationalization Plan
Analysis and Methodology

Adjourn

NOTE: The above agenda items may not be taken in the order in which they appear and are subject to change as necessary.

**ATTENTION: THOSE WISHING TO TESTIFY BEFORE THE SCIENTIFIC AND
STATISTICAL COMMITTEE**

The usual practice is for the SSC to call for public comment immediately following the staff presentation on each agenda item. In addition, the SSC will designate a time, normally at the beginning of the afternoon session on the first day of the SSC meeting, when members of the public will have the opportunity to present testimony on any agenda item. The Committee will discourage testimony that does not directly address the technical issues of concern to the SSC, and presentations lasting more than ten minutes will require prior approval from the Chair.

**Proposed Schedule
ADVISORY PANEL
April 1992
Hilton Hotel
Anchorage, Alaska**

Monday, April 20

1:00 PM Election of Officers
C-2 Inshore/Offshore

5:00 PM Recess

Tuesday, April 21

8:00 AM C-3 Moratorium

Noon Lunch

1:00 PM D-2 Groundfish Management

5:00 PM Recess

Wednesday, April 22

8:00 AM C-4 N.P. Fisheries Research Plan

Noon Lunch

1:00 PM D-1 Crab Management
C-5 Int'l Fisheries
C-6 Comprehensive
Rationalization Plan

Adjourn

ATTENTION: THOSE WISHING TO TESTIFY BEFORE THE ADVISORY PANEL

The Advisory Panel has revised its operating guidelines to incorporate a strict time management approach to its meetings. Therefore, new rules on testimony have been developed which are similar to those used by the Council. Members of the public wishing to testify before the AP **must** sign up on the list for each agenda topic listed above. Sign-up sheets are provided in a special notebook located at the back of the room. The deadline for registering to testify is when the agenda topic comes before the AP. The time available for individual and group testimony will be based on the number registered and determined by the AP Chairman.

North Pacific Fishery Management Council

Richard B. Lauber, Chairman
Clarence G. Pautzke, Executive Director

605 West 4th Avenue
Anchorage, Alaska 99501



Mailing Address: P.O. Box 103136
Anchorage, Alaska 99510

Telephone: (907) 271-2809
FAX (907) 271-2817

Certified by _____
Date _____

DRAFT
ADVISORY PANEL MINUTES
JANUARY 13-15, 1992
PORTLAND, OREGON

The Advisory Panel for the North Pacific Fishery Management Council met on January 13-14, 1992, at the Downtown Portland Hilton Hotel. Members in attendance were:

John Bruce
Al Burch
Gary Cadd
Phil Chitwood
Dan Falvey
Dave Fraser, Vice Chair
Kevin Kaldestad

David Little
Pete Maloney
Dean Paddock
Penny Pagels
Bryon Pfundt
Perfenia Pletnikoff
John Roos

John Sevier
Harold Sparck
Michael Stevens
Beth Stewart
John Woodruff, Chairman
Robert Wurm

Minutes for the December, 1991 meeting were approved.

C-1 MARINE MAMMALS

The AP heard a status report from Council staff and NMFS on marine mammal issues; status reports on Amendments 17/22 and 20/25 as well as the MMPA amendment. After some discussion, some AP members raised concerns about the creation of a 20-mile closed to trawling zone around several rookeries without any industry notice. AP members felt these closures could have significant impact in terms of redistribution of fishing effort during the pollock season and they hope in the future, there will be a better opportunity to comment on such closures.

The AP recommends that the Council encourage NMFS to have a more thorough development and discussion of marine mammal issues in the future especially as they impact fisheries issues.

(This motion passed 18-1)

The AP feels internal communication between NMFS fisheries and marine mammals staffs will be vital in future fisheries management. Further, the AP clearly understands that marine mammal issues must receive high priority status both within the Council family and NMFS. It recommends that NMFS marine mammals scientists begin to attend the full Council meetings.

As a second recommendation, after hearing a status report relative to Amendment 17 to the Bering Sea/Aleutian Islands and specifically the Walrus Islands 12-mile closure, and realizing that the public comment period for the amendment ended on this same day, the AP commented and reaffirmed to the Secretary of Commerce's representative its June, 1991 recommendation. This recommendation was for

a 12-mile closure to fishing around the Walrus Islands except for the area 3 miles seaward of right hand point (this allowed for a transit zone).

(This motion passed 16-3)

The AP members think the Walrus Islands are unique as far as haulout sites and should be protected. Furthermore, several members thought that walrus populations and haulouts could continue to decline for other reasons and wanted to distance themselves from these sites.

C-2 SEABIRDS

The AP would like the Council family to take a more active role in tracking, analyzing, and commenting on marine mammal, seabirds, and related issues. Fishery interactions with other marine life are not well understood by the industry or the fisheries bureaucracy. Yet these interactions can drastically alter the industry's ability to function. We would like to stay abreast of these issues, contribute to developing solutions, and developing data. We would like closer coordination between agencies like NMFS and USFWS. We believe these issues are vital.

(This motion passed unanimously)

C-3 NORTH PACIFIC RESEARCH PLAN

The AP passed a package of 5 motions:

1. AP confirms support of objectives including vessel incentive program and its requirements of increased levels of coverage. (unanimous vote)
2. The AP requests the Council appoint a preliminary oversight committee at this time to review budget concerns and development of implementation program. This group should include a representative of observer contractors, an observer trainer, and an observer. (19-1 vote)
3. The AP supports a change in determination of value of fisheries from ex-vessel to an upward adjusted ex-value not to exceed first wholesale value. (12-6 vote)
4. The AP suggests the fee be assessed based on an estimated average price which would be determined pre-season on a species by species basis and charged per pound. (12-6 vote)
5. The AP would recommend start-up funds be covered by Congress and believes the industry, Council, and environmental community should undertake a coordinated lobbying effort to achieve this goal. (12-7 vote)

Prior to adopting the above package, the AP had voted (10-9) to reaffirm their December action which was to keep a 1% cap on ex-vessel value and any further costs would be borne by the federal government. The level of observer program shall be scaled to available funds. In December, this was a unanimous vote. Further discussion led to approval of the above 5 points.

C-4 INTERNATIONAL FISHERIES

The AP recommend Council reaffirm support for total closure of Donut Hole to fishing by vessels of any nation.

(This motion passed unanimously)

C-5 MORATORIUM

The AP heard a staff report and limited public testimony on the moratorium issue. It then considered each of the items on C-5(a) as follows in terms of what should be analyzed for the moratorium decision documents: (Caveat - These recommendations are only made in the context of developing draft documents for the moratorium decision process and are not necessarily reflective of how the AP feels about the moratorium in general or on each item specifically.)

Qualifying Period: The AP recommends the Council analyze alternative 3. (This motion passed 11-4) The AP thinks the 1980 date is too arbitrary, and starting the qualifying period with the enactment of the Magnuson Act makes more sense. Furthermore, the AP believes the difference in terms of the increase in numbers of boats this will allow, and which would actually resume participation in the fishery, is not unreasonable and probably relatively small.

Length of Moratorium: The AP recommends the Council analyze a 3 year moratorium that could be extended for 2 years if a rationalization plan is imminent. (This motion passed unanimously)

The AP thinks there needs to be pressure to develop a rationalization plan as quickly as possible because overcapitalization problems are here now and need to be addressed. Further, programs such as the moratorium are rarely shortened and tend to be lengthened. Its clearly the AP's intent that rationalization plans be brought to the Council for decisions as soon as possible once the moratorium is in effect.

Crossovers: The AP recommends the Council analyze alternative 2 and notes that crossovers subject to restriction should be from plan-to-plan if allowed by regulatory amendments, and that crossover restrictions not be species specific. (i.e., no restriction between bardii and opillio, but a restriction between crab and groundfish)

The AP recognizes that allowing crossovers could have dramatic impacts on some fisheries and wants to get a good airing of this issue from the public so as many impacts as possible is foreseen. At the same time, the AP clearly believe that vessels should be able to cross individual species groups within their gear group.

(This motion passed 14-4)

Replacement or Reconstruction of Vessels During The Moratorium: The AP recommends the Council analyze alternative 2 with the following additional measures to limit growth in capacity:

1. no increase in overall length is permitted,
2. no increase in registered net tons is permitted,
3. and changes in width should be limited to a reasonable % for safety and stability.

(This motion passed 18-2)

Relative to capacity increases during the moratorium, the AP also recommends the Council recognize that a great part of incentive to increase capacity as well as to engage in crossovers into new fisheries is a desire to earn credit for future allocation. The AP, therefore, recommends the Council include for analysis the option of making explicit within the adoption of a moratorium that the cut-off date may be the termination of accrual of catch history.

(This motion passed 15-5)

In making the first recommendation, alternative 2, the AP wants to limit as much as possible any increase in capacity during the moratorium period. However, it recognizes that some measures of capacity are too

difficult to analyze, measure and/or enforce. The measures suggested we believe are the best to limit capacity effectively.

In making the second recommendation, the AP suggest there should be a way to take away much of the incentive to increase capacity during the moratorium period, although there was an understanding that this is just a recommendation to analyze this issue. Clearly, however, some AP members are not in favor of the approach, while others felt the more absolute the commitment to cutting off credit history now, the more effective the deterrent to speculative entry it would be.

Replacement of Vessels Lost or Destroyed After Moratorium: The AP recommends the Council analyze alternative 2 for the same reasons as stated before.

(This motion passed 15-0)

Replacement of Vessels Lost or Destroyed Before Moratorium: The AP recommends the Council analyze alternative 3. The AP heard of at least a couple vessels that would be affected by this and thought such vessels should be included in the moratorium.

(This motion passed unanimously)

Small Vessel Exemption: The AP recommends the Council analyze alternative 2.

(This motion passed 17-1)

The AP thinks vessels under 60' could be very effective in many fisheries covered under the moratorium and an exemption for them might render it much less effective. While it doesn't see the same problem with under 40' vessels, the AP clearly thinks there will be enough vessels included in the moratorium to harvest the resource and that no provision should be allowed that leaves the field generally open.

Disadvantaged Communities: The AP sees that disadvantaged communities have a CDQ program and potential quotas if either the IFQ or Inshore/Offshore programs are approved by the Secretary of Commerce but with a moratorium, may not have the ability to get the vessels they want or need. They should, at least for analysis purposes, be exempted.

(This motion passed unanimously)

Further to this issue, the AP recommends the Council direct staff to analyze as follows:

1. If CDQ's for Inshore/Offshore or IFQ's are in effect, there would be no restrictions on vessels for purposes of fishing any CDQ's (et. al., they're exempted from moratorium).
2. If CDQ's are not in effect, a CDQ tonnage be granted and administered as per the IFQ and Inshore/Offshore program.

(This motion passed 16-2)

Minimum Poundage: The AP had no recommendation to the Council. It felt that to require a minimum delivery would encumber the analysis to much since it would require looking through ADF&G fish tickets date and lots of number crunching. Furthermore, we think not allowing some vessels on under the moratorium would create more problems than it would be worth.

Applicable Sectors: The AP recommends the Council analyze the harvesting sector only (including catcher processors).

(This motion passed 15-4)

The AP thinks there is definitely plenty of catching capacity in the fishery but a definite need for processing capacity especially if value added products are processed. The purpose of the moratorium should be to freeze catching capacity, not processing capacity.

Appeals: The AP has no recommendation.

Further to the C-5(a) chart, the AP has the following recommendations to the Council regarding the moratorium;

1. A subcommittee of AP members that spans the industry be appointed to keep abreast of the moratorium development and provide impact to staff.
(This motion was passed unanimously)
2. Having a CCF fund and the intent to use those funds for building a vessel, in itself does not constitute a valid contract and should not qualify as "in the pipeline."
(This motion passed 12-8)

MORATORIUM ELEMENTS AND ALTERNATIVES

ELEMENTS	ALTERNATIVE
1. Qualifying Period	Must have made landing at least once between Jan. 1, 1976 and the control date
2. Length of Moratorium	Until Council rescinds or replaces; not to exceed 3 years, but Council may extend for 2 years if limited access program is imminent
3. Crossovers During Moratorium	Council may use regulatory amendment to limit participation in plans to those with history of participation prior to moratorium
4. Replacement or Reconstruction of Vessels During the Moratorium	Can replace with vessel of similar capacity but replaced vessel must leave the fishery. Reconstruction allowed to upgrade safety, stability, or processing equipment, but not to increase fishing capacity. Capacity, no change in LOA, no change in net tons. Only changes in width for stability purposes.
5. Replacement of Vessels Lost or Destroyed During the Moratorium	Can be replaced with vessels of similar capacity. Replaced vessels can not be salvaged and come back into fishery.
6. Replacement of Vessels Lost or Destroyed Before the Moratorium	Vessels lost since June 15, 1989 can be replaced with vessels of similar capacity.
7. Small Vessel Exemption	No exemptions
8. Disadvantaged Communities	Exempt, as defined by Council in CDQs and analyze CDQs even if no CDQs are in effect by Secretary of Commerce. No restrictions.
9. Minimum Qualifying Poundage	No minimum qualifying poundage, just a legal landing in any qualifying year
10. Applicable Sectors of the Industry	Moratorium will be applied equally to all harvesting and catcher vessels and catcher/processor vessels.
11. Appeals	The appeals procedure will consist of an adjudication board of government persons and non-voting industry representatives.

D-2 GROUND FISH MANAGEMENT

On the pollock B season, the AP recommend the Council go forward with a development of a regulatory amendment to be enacted for the 1993 season and beyond that would change the pollock B season opening date to sometime between July 1st and September 1st. The analysis include;

1. Impacts on bycatch of salmon and herring. (The AP wants to segment 1991 data a minimum).
2. Impacts on other groundfish fisheries and (i.e., yellowfin sole) taking appropriate measures to synchronis such openings.

Furthermore, the AP recommends the Council should also analyze a plan amendment to adopt exclusive registration for the Gulf of Alaska and Bering Sea/Aleutian Islands pollock fisheries.

(This motion passed unanimously)

The AP thinks the B season opening date should be moved because of a variety of reasons;

1. Better fish quality
2. Higher recovery rates
3. Potentially lower bycatch rates
4. Better utilization of floating and shoreside capacity

However, any shift in this season will have significant ripple effects such as vessels moving to other areas and these need to be analyzed as thoroughly as possible so the Council can understand the impact of the final decision.

The AP unanimously recommends Council direct NMFS to use an emergency rule for 1992 to move the Gulf of Alaska second quarter pollock release to June. This opens concurrently with the pollock B season in Bering Sea/Aleutian Islands.

The AP unanimously recommends begin a plan amendment process for adoption of a trawl test area as described in Attachment A.

The AP recommends that salmon bycatch be presented by species rather than just chinooks and "other salmon." The AP would like to know the breakdown of other various species to have a better feel of the impacts of the bycatch.

The AP recommends that the Council, beginning January 1st, 1993, require all trawl pollock catch to be weighed as raw fish (or some other means of equivalent accuracy) and that NMFS require such weighing for all species and all gear types including discards by 1994.

(This motion passed unanimously)

Many AP members 2think the use of PRRs is just not an adequate way of determining catch and they think it won't change until the Council requires it. Now is the time.

The AP recommends the Council direct NMFS to use an emergency rule to reduce the pollock roe recovery rate from 10% to 6%.

(This motion passed 15-2)

TRAWL TEST AREA

Problem: Under federal law "fishing" includes putting gear in the water. This means trawlers in Alaska cannot test their gear strength out doors, lings, wires - prior to the opening of the trawl fisheries.

Vessels in Washington state can use an area in Puget Sound designated for trawl testing.

The following motion is intended to create similar test areas in the Kodiak, Sand Point and Dutch Harbor areas.

All areas in the Gulf of Alaska so that only one management plan will have to be amended.

Motion: In Alaska, trawl gear may be tested when the Gulf or Bering Sea is closed to trawling if;

1. The cod end is left open so that the gear does not retain fish and
2. Testing occurs only in the following areas - All are rectangles
 - a) Kodiak - Rectangle encompassing the area outside state waters within the rectangle bounded by a line between Cape Chiniak and the northeast tip of Uzak Island, and extending eastward 23 miles.
 - b) Sand Point - 54°35' to 54°50'
160°30' to 161°00'
 - c) Dutch Harbor 53°00' to 54°00'
166°00' to 165°30'

It is our intent that these areas meet the following criteria:

1. Have the depth and bottom type suitable for testing both midwater and bottom trawls
2. Be outside state waters
3. Be in areas not usually fished by trawlers
4. Be in areas not normally closed to trawlers
5. Be adequately distanced from sea lion rookeries

D-3(b) STRATEGIC BYCATCH PLAN

The AP recommends that the Council approve the team's report and continue their process. In making this recommendation we understand that all items under B on page 6 will continue to be worked on outside the bycatch amendment package. The AP also recommend item B4 be put on its own priority track.

(This motion passed unanimously)

The AP did not review the working document on IBQs and so makes no comment on that portion of the report.

North Pacific Fishery Management Council

Richard B. Lauber, Chairman
Clarence G. Pautzke, Executive Director

605 West 4th Avenue
Anchorage, Alaska 99501



Mailing Address: P.O. Box 103136
Anchorage, Alaska 99510

Telephone: (907) 271-2809
FAX: (907) 271-2817

Certified: Laura Peeler
Date: 3/3/92

MINUTES Scientific and Statistical Committee Portland, Oregon January 13-15, 1992

The Scientific and Statistical Committee of the North Pacific Fishery Management Council met January 13-15, 1992 at the Portland Hilton. Members present were:

William Aron
John Burns
William Clark, Chair
Doug Eggers

Larry Hreha
Dan Huppert
Gordon Kruse
Rich Marasco

Marc Miller
Terry Quinn, Vice-Chair
Don Rosenberg
Jack Tagart

ELECTION OF OFFICERS

Drs. William Clark and Terrance Quinn were unanimously re-elected Chair and Vice Chair of the SSC.

C-1 MARINE MAMMALS

Amendment 20/25 (Sea Lions)

The SSC received a report from NMFS on the status of Amendment 20/25 and the change in the final rule providing a 20-nautical mile harvest closure around 5 rookeries in the Bering Sea/Aleutian Island area during the roe-bearing pollock fishery. It was explained that the enlargement of these five closed areas was believed to be prudent in light of possible shifts in fishing effort resulting from the Bogoslof District closure.

The views of the SSC on sea lion protection zones have not changed since its thorough discussion of this issue at the September 1991 meeting. At that time the Committee stated, among other things:

"While all of the proposed protective measures represent positive steps to reduce the possibility of local pollock depletion, it is unclear whether current fishing mortality rates cause such depletions. Moreover, it is uncertain whether these measures are needed or whether, if applied, they will actually benefit the sea lion population. Finally, even if sea lion abundance increases, it is unlikely that it can be demonstrated that these protective measures caused the sea lion population to increase."

Amendment 17/22 (Walrus Island)

The SSC notes that the Council recommended that the Secretary disapprove that portion of Amendment 17/22 that continued the 12-mile closures around Walrus Island. The SSC continues to support the closures, as detailed in its June, 1991 minutes, because the closures appeared to result in an increase of walrus utilizing haul-out sites in that area. The SSC urges continued monitoring of walrus and fishing activity in the area. Given the high level of subsistence take of walrus in the Bering Sea, the status of walrus populations may become an important issue under the management regime of the proposed amendments to the Marine Mammal Protection Act. The SSC notes that USFWS also supports continuation of the closure.

C-2 U.S. FISH & WILDLIFE SERVICE (USFWS) ALASKA SEABIRD MANAGEMENT PLAN

The SSC is pleased to see the development of the Alaska Seabird Management Plan by the USFWS. The document is generally well-prepared and extensive. The SSC also received written comments by Pat Livingston and Jim Coe of the AFSC.

There are some misstatements regarding the status of fisheries and the possible impact of commercial fisheries on the food supply of marine birds. There is, apart from the "donut hole" fishery, no evidence to support a view that groundfish fisheries in the North Pacific are overfished (p.34) or that commercial exploitation is increasing (p.32). There is no evidence at the current time that commercial fisheries in the North Pacific deprive seabirds of food. For a species like pollock in the eastern Bering Sea, the commercial fisheries harvest may make a larger supply of young fish available at some population levels by reducing cannibalism by the adults on the young for a species like pollock. The statement that the pollock fishery takes 50% of the annual production is also in error. Longline fisheries in Norway have not been banned, as the document suggests (p.37).

The SSC notes that other human activities are likely to have a more significant impact on seabird populations. These activities include exotic animal introductions, egg harvests, habitat alteration and human presence on nesting sites. Commercial fisheries that may have a measurable impact on seabird mortality are the gillnet fisheries and some longline fisheries, although available data are inadequate to say how much. In some situations, commercial fisheries may cause an increase in some seabird populations by providing food from fishing discards; these effects should also be the subject of research efforts by USFWS.

The SSC encourages research efforts planned by the USFWS and their plans to increase information and communication. The SSC concurs with the suggestions that there is a need for strengthening their coordination with the State agencies and NMFS, particularly to examine available fisheries data to better assess the interaction of fisheries and marine birds.

The SSC agrees that the USFWS should produce an information document aimed at fishermen to provide better understanding of birds and how they may interact with fisheries as proposed in the plan (Item C.5.8).

The USFWS apparently does not have management authority for seabirds outside of 3 miles (p.37); this lack of jurisdiction should be corrected. However, the Councils and other fisheries agencies should remain the lead agencies for determining how seabird information is incorporated into fisheries management plans and treaties.

C-3 NORTH PACIFIC FISHERIES RESEARCH PLAN

The SSC reviewed two documents: the framework for the observer program, titled *Outline for North Pacific Fisheries Research Plan* (hereafter referred to as "the plan") and a preliminary technical report on observer coverage levels, titled *Analysis of Levels of Observer Coverage*. The former document provides a framework for administration of the observer program, and the latter provides a preliminary analysis of levels of observer coverage required to meet program objectives for a halibut bycatch example. Our review of these two interrelated documents indicates that the plan, as currently structured, will not meet the objectives stated for the observer program.

There is a strong linkage between program objectives, requisite observer coverage levels, and cost. Projected receipts from the 1% fee collection program would result in a \$1.43 million shortfall with respect to costs of the observer program with status quo levels of coverage, if implemented in 1992. Further, even with this shortfall, the levels of observer coverage in the status quo program are too low to meet stated program objectives. The preliminary technical analysis of halibut bycatch essentially suggests that 100% observer coverage is required to meet program objectives for estimation of total fishing mortality for each fishery and estimation of vessel bycatch rates for the individual vessel incentive program. (We note that 100% coverage means that 100% of the vessels have an observer who is able to sample only a subset of the hauls.) Additionally, as observed in the 1991 salmon and crab fisheries, ex-vessel prices and revenues are extremely volatile and mid-season adjustments in observer coverage may be required routinely to reconcile projected and realized fee receipts. Any future increases in fishery participants and declines in revenues will further compromise program objectives. Given these considerations, the SSC is not convinced that the proposed plan is an improvement over the status quo, pay-as-you-go program.

To address the above problems, the SSC recommends the following five actions:

1. The SSC recognizes that a 1% cap was congressionally mandated. However, we believe that alternatives leading to higher, more stable fee receipts should be sought so that prescribed levels of observer coverage can be funded to meet the program objectives. Indeed, the data collected by the 100% observer program may be worth the full cost. Aside from the program objectives of estimating total fishing mortality and bycatch rates, marine mammal considerations may be another reason for 100% observer coverage. Yet, as non-consumptive uses (e.g., viewing opportunities) of marine mammal and bird resources grow in importance, fee assessments based on harvest levels would seem to become less appropriate.
2. Inclusion of the halibut fishery in the observer program should be considered for the estimation of total bycatch. The SSC acknowledges that some halibut vessels cannot participate in the program for safety and other practical reasons. Nonetheless, other vessels have adequate accommodations to handle observers, and we believe that options for placement of observers aboard halibut vessels should be explored.
3. The SSC agrees that the three primary objectives stated in the technical report are the objectives that the Council is seeking in an observer program. The first objective is to estimate all components of total fishing mortality for purposes of monitoring TACs, PSCs, and overfishing levels. The second objective pertains to the individual vessel incentive program, and the third objective relates to biological monitoring. However, for the purposes of determining levels of observer coverage, we recommend that objectives of the technical report should be stated in terms of statistical power. For example, the first objective may be stated such as *to estimate total mortality (landings, discards, and bycatch) such that the total catch estimate is within 10% of the true estimate 90% of the time*. Similar statements should be

developed for the vessel incentive objective to test for differences in bycatch rates between individual vessels and mean rates for each fishery, and for the objective of estimating catch size/age frequencies for use in stock assessments.

4. Given the disparity between program costs and fee receipts, the analysis should examine alternatives for cost reduction. That is, guidance needs to be provided so that informed decisions can be made about where the program simply cannot afford to meet the stated objectives. We see two sets of alternatives. First, with respect to incentive programs, the analysis should appraise the number of fisheries that can be covered at the 100% rate, given anticipated receipts. Are there particular fisheries for which incentive programs are most critical? Second, with respect to estimation of total fishing mortality, what levels of coverage would be required for lower levels of precision (say, 10%, 20% or 30% of the true estimate)? Can we tolerate lower levels of precision for some fisheries than for others?
5. The analysis should consider the assumption that the presence of observers does not affect bycatch. The presence of significant bias may require 100% coverage. The SSC heard public testimony that individual vessel landings or catch-per-unit-effort may be directly related to bycatch rate. Vessels with poorer than average fishing performance may have higher bycatch rates. If so, catch rate may serve as a proxy for bycatch rate for comparison of observed and unobserved catches. Minimally, the analysis should contain a qualitative assessment of the possible effect of observers on bycatch.

Last, the SSC wishes to reiterate the critical importance of the observer program for purposes of fishery management.

C-5 MORATORIUM

The SSC reviewed the documents concerning the Council's moratorium proposal and prospective analyses. The SSC recommends that the Council clarify its objective for a moratorium program. The objective provided in the moratorium workplan is "... to control continued growth in fishing capacity...". It does not (1) freeze the number of vessels, (2) cap the harvesting capacity of the fleet, or (3) restrict investment in the fishing fleet at 1990 levels.

An expansion of harvesting capacity beyond levels that existed during the control year 1990 is possible under both management alternatives specified in the moratorium workplan. Vessels that didn't fish during the control year, but that fished sometime during the time period January 1, 1980 - September 15, 1990 would be included in the program under Alternative 2. Alternative 3 would include vessels that fished sometime during the period January 1, 1976 - September 15, 1990. In addition, this alternative would allow qualifying vessels to expand capacity by specified amounts.

The SSC recommends that the objective be stated in terms of freezing the number of vessels because of problems associated with selecting a measure of harvesting capacity and controlling investment.

The SSC views the moratorium as a temporary, interim measure, not as a solution to problems of over-capacity or economic inefficiency. Hence, the SSC hopes that the limited analytical resources of the Council will be focussed on the more important comprehensive plan. This would suggest that only a short and rudimentary EA and socioeconomic impact analysis be developed for the moratorium measure. If legal and administrative requirements force the Council to produce a voluminous and time consuming analysis for the moratorium, then we suggest that the Council consider dropping the moratorium and going straight into the comprehensive plan.

C-7 RESEARCH PRIORITIES

The SSC reviewed research recommendations made by the groundfish and crab teams. The SSC drew from these and last year's Research Priorities in coming up with this year's list. The SSC notes that these selected projects are in addition to the ongoing NMFS programs, which should not be curtailed. The SSC categorized recommendations into four general categories:

A. Alaska Fishery Monitoring: Data Entry, Storage, and Analysis System

The Alaska Fishery Research Plan covers the needs of the observer program in regard to fisheries management. The SSC notes that the fishery logbook information may provide important information for stock assessment and fishery evaluation. There is an important need for analysis of the logbook information, which requires additional funding.

B. Expanded Ecosystem Studies

Given the importance of marine mammal and seabird considerations in future fisheries management, further studies are needed in regard to interactions between fisheries and marine mammal and seabird populations. The Alaska Seabird Management Plan contains research priorities for seabirds to be carried out by USFWS; the Northern Sea Lion Recovery Plan contains research priorities for sea lions to be carried out by NMFS. Further studies of marine mammal/fishery interactions, relationship of oceanographic conditions and recruitment, and predator/prey studies are needed. In particular, a research effort regarding status and distribution of forage fishes for marine mammals, seabirds, and fishes is greatly needed.

C. Critical Assessment Problems

Priority 1 Issues:

1. **Pollock stock structure, assessment, and management:** The greatest need is the understanding of stock structure and population status in the Bering Sea, including the western shelf, basin, and eastern shelf.
2. **Crab research:** There is a great need for understanding stock structure and basic life history parameters. The highest priority is for a tagging study of handling mortality, an important but poorly known fishery parameter. This study is also supported by the Crab Team and industry.

Priority 2 Issues:

1. **Rockfish:** Current assessment methodology is inadequate and expanded research efforts are needed.

2. Sablefish: Discrepancies between the two longline surveys suggest the need for further experiments in standardization and calibration. In addition, ageing information for sablefish is needed.
3. Atka mackerel: There is a need for better assessment of Atka mackerel in the Aleutian Islands, which would require a dedicated research effort. This study might be carried out jointly with the rockfish assessment surveys.

The SSC also notes that additional studies are needed, such as ageing techniques, bathymetric mapping, gear studies, and mesh size studies.

D. Socioeconomic research

1. Economic research: Economic evaluation of the consequences of various bycatch management alternatives is the highest priority. This evaluation requires information on fisherman behavior and factors that influence it. Cost, price, and knowledge of various factors that impact them are important.
2. Social research: Groundbreaking research is needed to develop data sources and analytical frameworks to understand the social costs and benefits of management actions.

C-7(b) UNIVERSITY OF ALASKA FISHERIES INITIATIVE

The SSC received a summary of a request to the State of Alaska by the University for a budget increment of approximately \$700,000 to fund new faculty and graduate students in the areas of fishery research and education.

The Committee strongly endorses the University initiative. Research conducted at the University of Alaska (e.g., on sablefish and pollock) has been useful to the Council, and several faculty members are presently serving on the SSC and Plan Teams. A strengthening of the University's teaching and research in fisheries would be a real benefit to the Council and the industry.

C-8 COMPREHENSIVE RATIONALIZATION PROGRAM

Given that the Council is engaged in a strategic planning stage, the SSC believes that it is important to narrow the scope of options for analysis by eliminating some of the seven major possibilities (C-8a, p.2). This could be accomplished via a quick, qualitative evaluation. The analytical resources of the Council could then be directed toward evaluating the few most likely alternatives.

The Council needs to arrange for adequate resources to accomplish the social and economic assessments involved in a Fishery Impact Analysis. This is likely to be reviewed carefully, requiring more in-depth research than was done for the recent sablefish and halibut IFQ amendments. Because the content and standards for socioeconomic analysis need further clarification, the SSC intends to address this issue in the near future.

Specifically, the SSC requests that NMFS supply the Committee with copies of present agency guidelines for economic and social impact analysis prior to the April meeting, and that the Region be prepared to present and discuss the guidelines at that meeting. These guidelines, if available, will serve as the starting point for a discussion by the SSC of the kinds of socioeconomic data and analysis that will be required for a comprehensive rationalization program.

D-1 CRAB MANAGEMENT

The SSC heard public testimony and reports by NMFS and ADF&G regarding the emergency regulation recently adopted by the Alaska Board of Fisheries that prohibits the retention of male Chionoecetes crabs greater than 3.1" carapace width with at least one red eye during the snow crab (C. opilio) season (i.e., after Jan. 15th until the fishery is closed by emergency order). This regulation was adopted to provide more effective enforcement and to prevent the illegal retention of small Tanner crab (C. bairdi) during the snow crab season.

The report by NMFS documents the distribution and abundance of Bering Sea Tanner crab, snow crab, and their hybrids (C. bairdi x C. opilio). Hybrid crab occur in the area where the distributions of Tanner and snow crabs overlap. Depending on size categories considered, Tanner crabs are one to two orders of magnitude less abundant than snow crabs, and hybrid crabs are one to two orders of magnitude less abundant than Tanner crabs.

The ADF&G report documents the effectiveness of three methods of identification of these crabs: by morphological characters, genetic identification (based on protein electrophoresis), and eye color. The study shows that the emergency regulation where crabs are identified by eye color provides for protection of sub-legal Tanner crab while enabling some exploitation of hybrid crab greater than 5.5 inches (preliminary estimate of about 77%) during the Tanner crab fishery and some exploitation of hybrid crabs (preliminary estimate of 23%) during the snow crab fishery. The SSC supports the joint studies by ADF&G and NMFS to provide more effective methods of identifying crab species and their hybrids.

The public testimony reflected the industry's concerns regarding insufficient opportunity to review and comment on recent Board of Fisheries actions to minimize the illegal harvest of sub-legal Tanner crab in the Bering Sea fishery. The industry believes that the emergency regulation un-necessarily limits the opportunity to harvest hybrid crabs. The industry also appears to be concerned about the different starting dates for the two fisheries, which it supported previously.

The SSC notes that no visual method is completely accurate in identifying hybrid crabs. The life history, size at maturity, and fecundity of hybrid snow crabs are not well known, but they are likely to be different from either snow or Tanner crab. The SSC supports initiatives to develop a long-term, comprehensive management strategy for the three forms of Chionoecetes in the Bering Sea.

D-2(b) DISCARD AND CATCH ESTIMATION

The SSC reviewed the product recovery rates used by NMFS to estimate the round weight of retained catches from the weight of final product. (For operations that produce more than one product from the raw fish, a "primary product" is designated and the round weight is estimated from the weight of the primary product.)

The rates in use are not based on NMFS data or experiments, but on statements from sources in industry. In most cases the rates are generally accepted, but there has been controversy over the product recovery rate for pollock surimi in shore-based and at-sea operations.

At best, the product recovery rates are correct on average. They do not reflect differences among seasons, areas, and operations, which can be substantial. The use of average recovery rates would probably not be acceptable in a fishery under QS/IQ management.

Because of the recognized drawbacks of catch estimation based on product weight, NMFS will use actual (weighed) weight of raw fish for all shoreside landings beginning in 1992, and is seeking some alternative to the use of product recovery rates for at-sea operations beginning in 1993.

For 1992, there is a potential for under-reporting of pollock catches in at-sea operations that take roe. Catch estimates for these operations are based on other products (i.e., roe is never designated as the primary product), and the percentage of roe is limited by regulation to no more than 10%. The concern is that operations with a roe recovery rate under 10% will top up to 10% and the raw fish used will not appear in the catch estimate. NMFS plans to avoid these potential errors by using observer estimates of catch weight in cases of doubt.

D-2(c) US/JAPAN LONGLINE SURVEY

The SSC received a report from Alaska Fisheries Science Center staff describing the cooperative US/Japan and domestic longline resource surveys and their histories. These surveys serve as the basis for sablefish stock assessment activities for Bering Sea, Aleutian Islands and Gulf of Alaska (GOA) management areas. Currently, the cooperative survey covers all three areas, while the domestic survey samples only the GOA. The SSC is aware of interest in halting the cooperative US/Japan survey. The importance of survey information to the assessment of the sablefish resource necessitates careful evaluation prior to altering current activities. Stopping the cooperative survey gives rise to the following concerns: (1) assessment of the sablefish resource in the Bering Sea and Aleutian Islands would require instituting a domestic survey at a cost of approximately \$500K, and (2) cooperative and domestic GOA surveys have produced divergent results for the last two years; i.e. the domestic survey indicates that stock abundance is increasing, while the cooperative US/Japan survey indicates the opposite. The SSC recommends that the cooperative survey continue until funding and comparability issues are resolved.

ABC AND OVERFISHING DEFINITION

The SSC again considered some questions and problems that have arisen in the course of applying the Council's overfishing definition during the last two years, namely:

1. The definition calls for scaling down fishing mortality when present biomass is below MSY biomass. (The ratio of present and MSY biomass is multiplied by F_{msy} to obtain a fishing mortality rate.) In the case of most rockfish species, neither the MSY biomass level nor F_{msy} is well known, and the SSC has recommended setting fishing mortality at the level of natural mortality in lieu of F_{msy} . For some rockfish such as Pacific Ocean perch, however, it is certain that present biomass is only about half the MSY biomass, and in those cases the SSC has calculated ABC by halving the fishing mortality rate that would otherwise have been used in accordance with the Council's overfishing definition. This interpretation has been questioned by some members of the industry.
2. Under the overfishing definition, in practice, much more caution is used with stocks that are better known than with those that are poorly known. This is because when F_{msy} is known, it is reduced by the ratio of present and MSY biomass levels. If F_{msy} is not known, the definition defaults to the rate of fishing mortality that reduces

spawning biomass per recruit to 30% of the unfished value, which usually is at least as large as F_{msy} , and this is not reduced at all. The SSC believes that the rule should require more caution when there is less information.

3. The Council's definitions of ABC and overfishing are identical for stocks above the MSY biomass level for which F_{msy} has been estimated. Setting TAC to ABC in these cases leaves no margin for bycatch, discards, or management imprecision, and has raised the danger of being forced to close all fisheries in some areas to avoid overfishing.
4. When the information on a stock is very poor, as in the case of rockfish in Southeast Alaska, the overfishing definition requires that ABC will inexorably be reduced year after year, as is happening in Southeast Alaska, even in the absence of any sign of trouble.

To address these and other problems, the SSC tasked a group (R. Methot, G. Thompson, T. Quinn, W. Clark) to develop a proposal for a plan amendment with a single preferred alternative to the present ABC and overfishing definitions. A report on this proposal will be submitted to the SSC at the June meeting.

For the purpose of setting ABC's in 1992 (for 1993), the SSC intends to interpret the Council's overfishing definition as it did in 1991. Specifically, whenever there is good evidence that present biomass is well below the MSY level, the SSC will apply a proportional reduction to the fishing mortality rate that would have been used otherwise to determine ABC, even if it is not the F_{msy} rate.

SAFE REPORT GUIDELINES

The SSC reviewed guidelines for the organization and content of the annual Stock Assessment and Fishery Evaluation (SAFE) documents. Working from an "Outline of SAFE chapters" (Attachment 1) provided by Dr. Grant Thompson (NMFS/AFSC), the SSC focused attention on the stock assessment chapters of the SAFE document. While the SSC was in general agreement with the basic outline presented by Dr. Thompson, we have suggestions for some changes and some additional elements:

- (1) Each stock assessment chapter should present a complete catch history including catches prior to 1977.
 - (a) When known the catch history should include estimates of annual discards.
 - (b) Catch history should be presented by gear type and relevant management area.
- (2) Biological parameters should include elements recommended by Dr. Thompson plus:
 - (a) Length/weight function coefficients,
 - (b) Growth function coefficients (e.g. L_{∞} , K , t_0).
 - (c) Fecundity at-age (when derived from a functional relationship, present function coefficients).

- (3) Assessment methodology should include a summary of changes from past assessments.
- (4) Abundance and exploitation trends should include:
 - (a) An age specific schedule of selectivity to the fishing gear by sex as appropriate.
 - (b) Current knowledge of stock structure and supporting evidence.
 - (c) A comparison of previous estimates of stock abundance with the current estimates.
 - (d) A table of the standard error of the abundance estimate(s) and/or a discussion of the levels of uncertainty in the analysis.
 - (e) Annual estimates of instantaneous fishing mortality for fully-recruited (selectivity = 1.0) age classes.
 - (f) An analysis of threshold population size, if appropriate.
- (5) The annual estimate of recruits should be presented in a table with the corresponding spawning population size or biomass.
- (6) Each chapter should include a table entitled "Summary of critical population parameters", which should list at a minimum: M , unfished exploitable and spawning biomass, age of full recruitment, current exploitable and spawning biomass, unfished spawning biomass, projected yield at the preferred level of fishing mortality in the coming year, F_{msy} , B_{msy} , $F_{0.1}$, $F_{0.35}$, and $F_{overfishing}$. As in the historical summary, the full-recruitment fishing mortality rates should be given.

In addition to the above elements, each SAFE document should include a historical review of management actions such as fishing season dates, closures, trip limits, etc. Furthermore, the SAFE document should present a discussion of how well management objectives are being met. For example, has roe stripping of pollock diminished as desired by the Council; have annual harvests remained with the TACs; are bycatch caps effectively controlling bycatch mortality, are marine mammal protection measures having the desired effect? These latter points deal directly with "evaluation" of our fishery management practices.

The SSC recommends that the Plan Teams review the revised Guidelines and report their views at the April SSC meeting.

D-3 STAFF TASKING

D-3(a) Plan Teams Terms of Reference

The SSC reviewed the proposed terms of reference and supports the proposal which among other things suggests the Council take better advantage of the expertise contained in the Teams by again including them more directly in the plan amendment process.

D-3(b) Bycatch Team

The SSC reviewed the report and heard a presentation from the Team.

The goals and objectives are particularly well done. The SSC encourages the investigation of market-based solutions (IBQs). We feel that the Team's recommended schedule to develop this amendment is overly optimistic and that more time should be allowed for a full development of this novel solution to a chronic problem.

The SSC noted that the Bycatch Team recommends that no changes to the herring bycatch management time/area closure be undertaken in the next bycatch amendment package. Data will not be available until later in the year. The SSC recommends that the ADF&G undertake an evaluation of the current herring bycatch management regime as soon as possible.

SSC ORGANIZATION

The issues presented to the SSC, and the membership of the SSC, cover a broad range of disciplines in the natural and social sciences. The Committee discussed the desirability of dividing into two groups - a natural science group and a social science group - for the purpose of considering issues that fall mainly into one area of another. For example, the annual SAFE report would be handled by the biologists, and the inshore/offshore analyses would have been handled by the social scientists. While this division of work would be advantageous in some ways, the majority of the SSC felt that most issues are interdisciplinary and all issues benefit from an interdisciplinary examination. The Committee concluded that its present organization is satisfactory.

OUTLINE OF SAFE CHAPTER
(Revised November 1991)

- Introduction** (include scientific name, general distribution, and management unit[s])
- Catch History** (include table showing catch and TAC over time [to the nearest ton], beginning with 1977; indicate average catch since 1977; also, include description of current fishery)
- Biological Parameters** (for all items in this section, indicate any known changes that have occurred over time)
- Natural Mortality, Age and Size of Recruitment, and Maximum Age** (if recruitment is not knife edge, list the age of first recruitment instead of "the" age of recruitment)
- Length and Weight at Age** (equations or schedules)
- Maturity at Length and Age** (again, equations or schedules; also, include age and length at 50% maturity [by sex])
- Assessment Methodology** (describe methods used to estimate quantities presented in the remaining sections)
- Abundance and Exploitation Trends**
- Historical Abundance** (include table showing exploitable biomass [if true exploitable biomass is unavailable, use biomass above the age of first recruitment] over time from as far back as possible up to the present; indicate average abundance since 1977; also, include table showing the corresponding time series of exploitable numbers at age)
- Historical Exploitable Rates** (defined as $F(1-e^{-Z})/Z$ or annual catch [in numbers] divided by January 1 stock size [also in numbers]; include table showing F and exploitation rate by year since 1977; indicate average fishing mortality and exploitation rates since 1977)
- Recruitment** (include table and figure showing recruitment strengths by year class, extending over time as far back a possible; also, include stock-recruitment figure and equation)
- Biomass and Yield per Recruitment** (calculate $F_{0.1}$ and F_{max} ; include figures showing spawning biomass per recruit, exploitable biomass per recruit, and yield per recruit, all plotted against F [scale vertical axes so that maxima are equal to 1.0]; calculate F levels at which spawning biomass per recruit and exploitable biomass per recruit are reduced to 20, 25, 30, 35, and 40% of their respective maxima)
- Maximum Sustainable Yield** (include estimates of MSY, F_{msy} , B_{msy} , and pristine biomass; include figures showing equilibrium biomass [both spawning and exploitable], equilibrium numbers [both spawning and exploitable], and sustainable yield [in biomass] plotted against F)
- Projected Catch and Abundance** (include tables and figures showing projected catch [in biomass], spawning biomass, and exploitable biomass for the coming 5 years under each of the following harvest strategies [and any others desired]: $F_{0.1}$, F_{msy} , $F=M$, and F_{max})
- Prevention of Overfishing** (calculate values for both the fishing mortality rate and the catch corresponding to overfishing [see Plan Team Policy on Acceptable Biological Catch])
- Acceptable Biological Catch** (recommend a single ABC level for the coming year from the values listed in the "Projected Catch and Abundance" section; include justification)
- Ecosystem Considerations** (describe relevant ecological relationships, including major predator-prey interactions; discuss any marine mammal implications of the recommended ABC)
- Total Allowable Catch Considerations** (describe how TAC has compared with ABC in previous years; if appropriate, recommend a single TAC level for the coming year)
- References**