


MEMORANDUM

TO: Council, SSC and AP Members

FROM: Clarence G. Pautzke 
Executive Director

DATE: September 17, 1992

SUBJECT: Comprehensive Rockfish Management for the Gulf of Alaska

ACTION REQUIRED

Review information compiled by staff and receive report from Rockfish Committee. Consider further development of these management options.

BACKGROUND

As part of their discussions on the proposed Eastern Gulf trawl closure last June, the Council requested that work begin on long-range comprehensive rockfish management strategies for the Gulf of Alaska. The Council established a Gulf Rockfish Committee to oversee development of the long-range plan as well as attempt to resolve the Eastern Gulf trawl closure issue. The Rockfish Committee will be meeting on Sunday, September 20 prior to the Council meeting. The primary focus of that meeting will be on issues relative to the proposed Eastern Gulf trawl closure, but, in that context, the Committee will likely be discussing the issue of overall rockfish management in the Gulf and may have some recommendations for the Council.

The report compiled by staff contains a description of rockfish stock assessment methodologies used in the past, a description of issues surrounding in-season management of rockfish harvests, and some potential management options for consideration. The options for future rockfish management can be described in two broad categories: the first deals primarily with biological/conservation concerns and includes options such as more conservative exploitation strategies, explicit stock rebuilding schedules, and time/area/depth closures. The second category of long-range management strategies goes beyond the basic biological considerations and deals with in-season management concerns. Alteration of directed fishing standards and effort limitation options, such as IFQs, are the primary alternatives within this category.

In developing these future management options, it should be noted that a Rockfish Working Group has already been established within NMFS at the Alaska Fisheries Science Center. This group consists of experts in the field of rockfish biology and stock assessment. Item D-8 (a)(1) contains a summary of the research activities of that Working Group and their progress to date. Future development of long-range management alternatives for rockfish needs to be coordinated between this Working Group, the Council's Rockfish Committee, and other agency personnel involved in this task.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
 NATIONAL MARINE FISHERIES SERVICE
 Alaska Fisheries Science Center
 7600 Sand Point Way NE.
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 Seattle, WA 98115

JUL 27 1992

MEMORANDUM FOR: F/AK - Steven Pennoyer
 FROM: F/AKC - William Aron
 SUBJECT: AFSC's Rockfish Research Activities

The purpose of this memorandum is to provide you with an update of the AFSC's Rockfish Working Group activities. The Center received \$175 K from the error bar reduction initiative this year. These funds supported the following activities:

1. Habitat preference/typing, and rockfish behavior studies,
2. Initial observation aboard commercial rockfish vessels,
3. Analysis of available research and fishery information,
4. Stock identification studies,
5. Age and growth studies, and
6. Hydroacoustics research.

A brief description of accomplishments to date in each of these areas is attached.

I suggest that you express our appreciation to Dr. Fox next week for the FY92 fund allocation. Given the current contentiousness of rockfish assessment and management, I think that it would be a good idea to communicate the importance of receiving future allocations of error bar reduction funds to support the Center's effort to improve rockfish assessments. For your information, \$370 K will be needed to carry out rockfish research activities planned for FY93.

Attachment

TIME	ACT	INFO	ROUTE TO	INT
			Reg. Director	
			Security Director	
			Admin. Serv.	
			Gen. Sec.	
			Information Mgt.	
			Int. Affs.	
			Intelligence	
			Legal & Inv. Sec.	
			PR&M	
			Off. Sec. Dir.	
			Rec.	
			Spec. Coun.	



The following is an up-to-date synopsis describing the six research activities funded by the RWG:

Habitat Preference/Typing, and Rockfish Behavior Studies

The two-person submersible Delta was chartered for 10 days in May. The objectives were to 1) describe the spatial distribution and habitat of shortraker and roughey rockfish, 2) describe and chart substrates for testing sonar bottom-typing equipment, and 3) determine if Pacific ocean perch distribute more than 10 m off the bottom. Thirty three submersible dives were completed in waters off southeastern Alaska to depths of 1200 ft. A wide variety of habitats, substrates, and fish fauna were observed, allowing us to successfully fulfill the above objectives. All observations were recorded by internal and external 8 mm video cameras and by an external 35 mm camera. The processing of the data from this research cruise is ongoing. We hope to have a report detailing our preliminary results by year's end.

Initial Observations Aboard Commercial Rockfish Vessels

During the past year, the RWG met several times with representatives from the rockfish industry to listen to their concerns about our rockfish stock assessments. Several industry representatives felt that the present NMFS trawl surveys do not direct enough effort into areas where rockfish abundance is highest. Furthermore, they felt that our present charter vessels and standard survey gear are not well suited for successful sampling of the slope region. The point was made that when fish are encountered during a commercial operation, they can generally be taken no matter how rugged the bottom. In response to industry's concerns, the RWG devised a number of innovative and novel sampling designs that incorporate the special harvesting skills and techniques that characterize a commercial fishing operation. The RWG believes, however, that before these new sampling designs are attempted on a large scale, feasibility studies should be conducted.

As a first step, the RWG arranged with industry to place scientists onboard two commercial rockfish vessels to observe and document their harvesting and processing operations. Four AFSC scientists (Dr. Jeff Fujioka, Susanne Finckh, Sheryl Corey, and myself) participated. The insight we gained by observing commercial rockfish harvesting operations will better assist the RWG in refining its rockfish sampling designs. More importantly, it will set the stage for more ambitious studies with industry in the future. A complete report of our observations will be forthcoming.

Analysis of Available Research and Fishery Information

The RWG recognizes the need to thoroughly examine the available NMFS survey and observer databases for information that could be useful in improving rockfish stock assessments and management recommendations. To this end, a rockfish database is currently being constructed to facilitate access to data needed

for: analyses of species assemblages, age and size composition, geographic studies on catch and effort distribution, and evaluation of current and proposed rockfish survey methods. Having the ability to easily extract all of the available age and size composition data, as well as catch and effort data information will allow stock assessment scientists to better use complex stock assessment models such as stock synthesis. Increased access to available data will be useful for improving the sampling design and efficient stratification of future rockfish surveys.

Stock Identification Studies

Movement of adult rockfish, especially demersal species, is generally assumed to be minimal, although little is actually known. Lack of confirmation or evaluation of this assumption contributes to uncertainty in our survey results and management recommendations. Moreover, little is known about the "discreteness" of rockfish stocks in time and space. Separation of fish stocks into discrete entities is recognized as a prerequisite to rational management of fisheries. The RWG has begun work to identify and delineate shortraker and rougheye rockfish stocks in waters off Alaska. Currently, scientists at the Auke Bay Laboratory are examining a number of rougheye and shortraker rockfish collected during the 1991 domestic longline survey for parasite tags. These scientists are also making morphometric measurements and meristic counts from these specimens as a further means of identifying discrete stocks and/or local aggregations. The RWG would like to see more refined stock differentiation techniques employed in the future, such as allozyme and mitochondrial DNA analysis.

Age and Growth Studies

The RWG identifies age and growth studies as an important research effort. Current stock assessment models employ age, growth, and mortality rates obtained by older, less accepted ageing methods, substitute rates from different geographic areas or even substitute rates from different species. Ageing and ageing validation methods for rockfish species not currently being aged need to be developed. This is especially acute for shortraker, rougheye, and shortspine thornyhead rockfishes, three species that have taken on increased economic importance in recent years. The RWG is currently making strides to fill this void.

Work was recently completed on developing the ageing technique for rougheye rockfish. We are targeting on manuscript submission of this research to the Fishery Bulletin by the end of the year. We will be extending this work to shortraker rockfish in the very near future. A comparative study of shortspine thornyhead ageing structures is currently underway that examines the utility and validity of various ageing structures, such as otoliths, fin rays, scales and opercles. Finally, the RWG is funding a one year research contract with the University of Washington to evaluate the feasibility of radiometrically ageing

six rockfish species: Pacific ocean perch, shortspine thornyheads, roughey, shortraker, dusky, and northern rockfishes.

Hydroacoustics Research

The RWG believes that hydroacoustic techniques show great promise for improving our rockfish stock assessments in two fundamental ways. First, as an efficient means for determining and quantifying bottom relief and substrate type, for purposes of habitat identification and stratification; and secondly, as a non-invasive means for directly estimating rockfish abundance. As a first step, the RWG has provided funding for an acoustician position within the Resource Assessment and Conservation Engineering division. This individual has begun an in-depth study into the feasibility of employing hydroacoustic approaches for rockfish stock assessments. A report describing his findings and recommendations will be made available to the RWG by the end of the year.

DRAFT

REPORT FROM THE GULF ROCKFISH COMMITTEE SEPTEMBER 21-23, 1992

The Rockfish Committee convened on Sunday September 20 to discuss the Supplemental Information provided by staff. Prior to beginning discussions introductions of Committee members, staff, and other attendees were made. The first item on the agenda for the Committee was to review past and current rockfish assessment methodologies as a basis for the remainder of the meeting. Jon Heifetz of the AFSC and other staff provided an overview, punctuated by discussion among the Committee.

Pacific Ocean Perch

A new stock assessment model used this year for POP was described for the Committee. This model is tuned to the results of the 1990 triennial trawl survey. In the past, the Plan Teams had used averages of the 1987 and 1990 surveys, however, the model used now fits better when data from the 1990 survey is included. Overall, the stock abundance for POP is described as low compared to historical levels. An $F=M$ rate of .05 was applied to reach the 1993 ABC of 4,700 mt. The Committee discussed the situation with POP last year where the SSC reduced the Plan Teams' recommended ABC by 1/2 because the estimate stock levels were estimated at 1/2 of B_{msy} . However, the stock assessment scientists are not comfortable with estimates of B_{msy} for this species and are not recommending this strategy. They feel that the .05 exploitation is conservative and has some stock rebuilding potential built in.

The average age of the current POP biomass is likely around 11 years. Sexual maturity for this species is achieved at 7-9 years of age, according to SAFE documents. It is likely that a large portion of this species group is sexually immature (less than 11 years). The issue was raised regarding the fecundity of POP as a function of age; i.e., whether the fecundity factor was one of a linear relationship with age or exponential. It was noted that an exponential fecundity function may have more serious implications for the stock than a linear one, in that the really older fish which are now believed to be depleted are the ones which would make the most impact on the future of the biomass. Committee noted that observers should be tasked with collecting length and age data on this stock.

In terms of habitat for POP, submersible observations indicate that concentrations of large (adult) POP occur over areas of smooth substrate. The literature suggests, and fishermen concur, that the species are common in and along gullies, canyons, and submarine depressions. These areas characteristically have a gravel or rock bottom. Submersible observations indicate that smaller POP prefer more rugged habitat (including coral) which seems to provide a hiding area for these smaller, juvenile fish. The age break at which the habitat separation occurs seems to be about 5-6 years. The fish recruit into the fishery at about the time they move into the smoother substrate. All concentrations of 30 or more adult fish observed in submersible dives were over smooth substrate. It is uncertain how far-ranging POP are in their movements, but it doesn't appear they migrate very far, although variations in occurrence by depth within the water column have been observed. The literature on POP migrations are, however, contradictory. In May, some fish were observed in deep water (1,000 ft) suspended off the bottom.

Scientists have been concerned about the reliability of trawl surveys to determine rockfish biomass (i.e., over or under estimation). The possibility of herding effects of trawls resulting in overestimates of biomass was discussed. Scientific staff reminded the Committee that, in modelling of the POP stocks, the trawl survey estimates are only one parameter of the current stock synthesis model.

Shortraker/Rougheye

Available information on this species group is limited. They occur at depths greater than POP for example (over 300 m) grow older and much larger. Migration tendencies are unknown. It was interesting to note that juvenile SR are rarely observed in submersible dives, only adults, though positive ID is often difficult among the juveniles. Juvenile RE are observed. The Scientific staff feels that, in the case of SR/RE, the averaging of the 1987 and 1990 surveys is appropriate, lacking information to abandon this methodology.

Large boulder areas are noted as key habitat for these species, particularly on areas with a large degree of slope.

Other Slope Rockfish

Again, the averaging of the last two trawl surveys is considered appropriate for this species group. It was noted that approximately 70% of the biomass of this group is comprised of Northern rockfish, while Northern's account for over 90% of the catch. This is because they are currently higher valued and easier to catch than the remainder of the complex. The Northern rockfish is relatively rare in S.E. Alaska and the majority of the catch occurs in the Western and Central Gulf. The predominant species from this complex which occur in S.E. Alaska are sharpshin, redstripe, and silvergray. This species group prefers shallower, rougher habitat than the POP, for example, though concentrations of silvergray and redstripe have also been noted over smooth substrate, during some portions of the year.

Northern rockfish are currently higher valued and would therefore be more of a target for the commercial fishery if they were not constrained by the halibut PSC limits.

Pelagic Shelf Rockfish

The average of the 1984, 1987, and 1990 trawl surveys is used as the basis for the biomass estimates for this group. Some members of the Committee questioned the use of a three point average as opposed to taking the last trawl survey estimate. The staff responded that the very wide divergence in the estimates (low in 1984, very high in 1987, and low in 1990), and the uncertainty with the accuracy of any of the estimates, is the reason for the averaging. The 1984 and 1987 survey data are currently being reexamined. Black rockfish is still a concern for the staff and the Committee to the extent that they may be receiving disproportionate fishing pressure from the near-shore jig fishery compared to the share of the biomass which they comprise. Further more, they are not being adequately assessed by current methods. The recently recommendation of a natural mortality rate for this group (.09) has resulted in an increase in the ABC since 1991. Previously, the stock assessment biologists had used the .05 rate associated with POP.

Dusky rockfish comprise 92% of the overall biomass for this group, and there is evidence of two separate stocks, or even subspecies, of dusky rockfish, a dark dusky and a light dusky. The dark dusky occurs in shallower areas and could be confused with black rockfish at times, though they occur in water which is still deeper than that commonly associated with black rockfish. These fish are generally thought to be a mid-water schooling fish but are often associated with bottom structure, if not on the bottom itself.

Thornyheads

The 1990 trawl survey was used as the basis for the biomass estimate in this case, because there was evidence to discount the 1987 survey for this species complex. The bottom end of the 90% confidence interval around the biomass estimate was adopted by the Plan Team as a conservative biomass estimate for resulting in a lower ABC than last year. Very little age composition data is available, though ADF&G is currently working on data collected in a recent survey which may add some useful information on age structure of this stock. A general, slight decrease in average size has been noted over the past 4 years and they appear to be depressed and declining. These species are noted to occur everywhere in an apparent random pattern, but appear to prefer a mud bottom in general.

Demersal Shelf Rockfish

Biomass estimates for DSR are now available through work by ADF&G. These estimates are based on establishing an estimated density per area and then applying it to best estimates of available habitat within the 100 fathom curve in S.E. Alaska. The lower bound of the 90% confidence interval of the biomass estimate is used, as was done for thornyheads. This yields an ABC estimate of 800 mt. Of this, it is now estimated that about 200 mt of unreported mortality occurs in the halibut fisheries (10% of the total halibut catch). Taking this amount off the top, during in-season management of this fishery, results in an effective ABC only slightly higher than that recommended last year. It was noted that other sources of unreported mortality may be occurring, such as in the salmon troll fishery.

It was noted that submersible surveys which detect adult yelloweye (the predominant species) rarely detect juvenile yelloweye. DSR live to about 95 years then show a very precipitous natural mortality function after that point, rarely living beyond 100 years. Fecundity as a function of age does appear to be exponential and age at maturity is about 12-15 years. They are not fully recruited to the fishery until age 25 however.

The highest catch of DSR occurred in 1987 at around 1,100 mt, including estimates of unreported catch, compared to the current total removal recommendation of 800 mt. It was noted that bycatch of these species as well as thornyheads has been occurring for many years in the halibut fisheries.

Stock Assessment Conclusions

The Committee reached the following conclusions based on the previous discussion: rockfish in general are long-lived species vulnerable to overexploitation and many of the species groups are way below historical levels of abundance. The need for conservatism is paramount due to this and the lack of available knowledge of these species. Long-term management strategies, from both a biological perspective and an in-season management perspective should be sought. Scientists have recognized this uncertainty and have been conservative in their exploitation strategies for rockfish species. However, no explicit rebuilding goals or schedules have been identified and some of the stocks are very low in abundance. Some Committee members felt an even more conservative approach was warranted and specific rebuilding schedules should be identified so that stock assessment scientists could incorporate these schedule into their work and make some future recommendations on exploitation strategies necessary to achieve this rebuilding. Staff noted the formation and progress of the Rockfish Working Group established within the AFSC.

Gear Discussions

The Committee then received a brief overview of gear types used in the S.E. Alaska fisheries from industry reps on the Committee. Dave Benson described 'high-rise' trawl gear used with 8" mesh at the front going down to 4 1/2" mesh, with 40 mt cod ends. Catches of POP (110-180 fm) were generally pure with little bycatch of other species. Shortraker/roughey are taken at greater depths (150-280 fm) while northern rockfish are shallower (80-120 fm). Bobbins, tires, or other roller gear is typically used. The footrope may be 140 feet long, but due to the 'U' shape it takes, the effective swath is 1/3 that wide. He also noted that trawlers typically attempt to avoid coral areas. It was also noted that this description was for only 1 type of net used.

Dan Falvey gave an overview the use of LL gear describing a 5/16" groundline with a typical set up to two miles long, with gangions of around 300# test. Hook spacing varies with the fishery and may be from 3-12 feet apart. DSR is usually targeted away from coral areas but may be near coral areas. The preferred retrieval position for this gear is to move down the line and stay directly over the section being retrieved, as opposed to dragging the entire line from a fixed point. Some fishermen grapple or set across lost gear in an attempt to retrieve it.

Habitat Issues

The staff summarized the habitat section from the Supplemental Information document for the Committee. The question arose as to the degree and duration of impacts across depth zones. It was noted that any impacts which occur will likely be similar in deep water and perhaps longer lasting. George Anderson reported that a recent industry effort, in cooperation with AFSC scientists, took 2,000 mt of groundfish while only noting 4 kg of coral.

There was few observances of coral in the domestic observer data base, but the Committee noted that this could underestimate the magnitude of occurrences. There are conflicting conclusions that can be drawn from the habitat studies. The Committee notes the need for studies and data collection on habitat impacts from all gear types. The Committee also concurred the need to focus on Rockfish habitat needs. Committee members also noted that the lack of observed coral occurrences may be due to decreased abundance of corals resulting from previous and repeated fishing of an area by all gear types.

Allocation/gear conflict issues

Staff summarized the rationale behind previous amendment to the Gulf FMP which dealt with gear conflicts and allocations to specific gears (Amendment 10 and 14 for example). The Committee noted that the gear conflicts occurring in the days of the foreign trawl fisheries were probably greater due to a greater number of vessels operating in the areas where LL effort existed. In 1977, trawls vessels reported 519 days on grounds in S.E. Alaska. In 1978, the number of days was 192, and in 1979, it was 359.

There are common reports of gear conflicts between longline gear during derby style sablefish and halibut fisheries. The Committee discussed gear conflicts in the days of foreign fisheries and also discussed the citing of gear conflicts from logbook information which was presented at the recent Council meeting in Sitka. Some Committee members wanted more definite evidence. NMFS staff advised that NMFS logbook database was not useful in examining this issue.

The possible effects of an IFQ program were discussed in the context of LL effort being much more spread out in time and area. There were mixed views predicting reduction or exacerbation of gear

conflicts due to the IFQ program in the LL fisheries. The Committee felt that a formalized communication system between vessels of different gear types should be pursued in an attempt to reduce gear conflict.

Information was presented to the Committee on the importance of S.E. fisheries to various gear segments of the industry (prepared by LGL Research). This information was useful to the Committee in generating a feel for the importance of rockfish fisheries to trawl vessels and of the importance of other fisheries to the LL vessels participating in S.E. Alaska fisheries. The information on trawl vessels contained catch information which was not translated to monetary values due to the lack of reliable information on prices received. Further information was requested by the Committee on the breakdown of DSR fisheries by directed vs. non-directed fisheries and by inside vs. outside waters. Estimated values were provided by ADF&G.

Management Concerns

Staff summarized the information contained in the Supplemental Information document and the Committee began discussion on this issue. NMFS staff summarized current issues surrounding in-season management of rockfish noting measures which have recently been taken to alleviate bycatch and aid in-season management of these species. The Committee was very concerned that the overfishing level for POP has been exceeded (by about 100 mt) in the Gulf of Alaska. Questions arose regarding the implications of the overfishing definition and how the 602 guidelines defined overfishing. Staff responded that the context of the overfishing definition was referenced as that level of fishing mortality which would jeopardize the long-term productivity of a stock. In other words, exceeding the overfishing level slightly in one year was not as dangerous as exceeding it repeatedly over a long period of time. It was noted that the recently adopted overfishing definitions in the North Pacific do, in fact, refer to an overfishing number in any one given fishing year.

The Committee discussed the concept of TACs and whether a TAC represented a maximum or minimum desirable harvest level. Ron Berg responded that it represents a specific target level of catch and therefore is managed so that we attempt to bump right up against the TAC level, which posed obvious problems for in-season management. The Committee discussed the possibility of re-thinking our TAC/ABC setting strategies in terms of providing a buffer. The 15% operational reserve in the BS/AI fisheries was discussed as a potential way to avoid this problem. Staff noted that even in the BS/AI fisheries the single species rule still holds true; i.e., that species are still managed separately to attempt to achieve the TACs for each species or species complex.

The issue was brought up as to the ability of fishermen and observers to accurately identify rockfish species in the context of possible misreporting. Due to market sensitivities, industry feels they are able to accurately ID rockfish species. On-site training of observers by NMFS is also being done currently to help in the ID process. Consistent ID codes in all management areas would be beneficial and are planned for 1993.

Monday - September 21, 1992

Committee Chair Linda Behnken reiterated that the Committee would be concentrating mainly on rockfish management rather than specifically on Amendment 26 issues. The Committee reviewed information on Amendment 26, but made no specific recommendations. Some Committee members were uncomfortable with the decision not to pursue further recommendations on Amendment 26 at this time. The Committee subsequently met to specifically address this issue.

Committee members expressed the need to do everything possible to get better information on rockfish. Some felt that effort should be concentrated on that goal rather than pursuing conservative exploitation rates without the necessary information. Better information on total removals of rockfish are needed. Committee members strongly support a daily reporting by observers and processors as well as expanded observer coverage. Some Committee members suggested that check-in/check-out procedures for catcher vessels in S.E. Alaska would lead to better data for management purposes.

Discussion of Management Options

Alternative 1: Conservative Exploitation Strategies

Using the lower end of a 90% confidence interval on biomass estimates for all rockfish species was suggested (as is recommended by the Plan Team for DSR and thornyheads), however there was not Committee consensus on this suggestion.

Some felt that the scientists should make this decision; the Committee should simply reiterate need for conservatism. The Committee might suggest rebuilding schedules and goals and let the scientists decide how to get there.

Some Committee members prefer not to make specific recommendations to the Council, but to make general recommendations as to the goals of the Committee for management of the stock.

It was pointed out that there is a difference between what is needed for the current year and what could be accomplished for the long-term. Technical staff could be asked to return later with information on what a "healthy" population is, and different options for achieving and maintaining that level.

Committee members discussed the definition of a "healthy" stock and some felt that the technical staff should try to provide information on current stock condition versus what they would define as a "healthy" level.

Committee discussed need for better information on rockfish. In the meantime, conservative exploitation strategies should be used, but, some Committee members were not entirely comfortable with having to do so because of a lack of knowledge.

Members discussed the concept of management for the greatest common denominator. The Committee were in favor of endorsing this concept for DSR; however, they felt that they should wait for better stock assessment data before applying it to other species.

The Committee also discussed the "least common denominator" concept. It was pointed out that this would be the most conservative approach. Committee members suggested that in the case of a least abundant species becoming a target, the group should be managed for that species, or it should be broken out of the group.

Alternative 2: Explicit Rebuilding Schedules

Rebuilding will be on the agenda for the next Committee meeting; the Committee noted that, on the West Coast, POP TACs are set at 0 (designated bycatch only), based on explicit rebuilding objectives set by the Pacific Council.

Alternative 3: Time/Area Closures

One Committee member suggested that, regardless of the Amendment 26 decision, the concept of Marine Fishery Reserves should be considered in context of protecting rockfish stocks. It was also pointed out that there are other alternatives to a total closure, such as effort limitation. Support was also voiced by some members for a S.E. trawl closure. It was also suggested that observer coverage be reviewed to facilitate data gathering on rockfish for all vessels.

Amendment 26 was discussed under this alternative. There was no agreement on proposed overall trawl closures. The Committee was in agreement, however, that studies of rockfish biology and habitat by submersibles off Southeast Alaska should continue.

Depth Restrictions

It was noted by the Committee that there are enforcement problems for this option. Ron Berg summarized discussions within NMFS that suggest that enforcement might be possible using overflight observations. Some Committee members questioned the necessity and usefulness of depth restrictions. It was suggested that such a restriction could concentrate effort and add to the possibility of localized depletion. The Committee agreed that depth restrictions are not feasible.

General Discussion

As a short-term measure, it was suggested that there be a buffer between the ABC and TAC for all rockfish species. The Committee agreed to suggest to the Council that TACs be set such that ABCs will not be exceeded. It was noted that directed fishing standards could be used in conjunction with this to achieve better in-season management. Ron Berg explained to the Committee how this concept would work, noting that such a measure would have to be frameworked so it could be changed inseason without any 30-day public comment period. Immediate management action would be required to manage under this measure.

One Committee member suggested that, for 1993, the Council be asked to task staff to develop a comprehensive rockfish management program which includes effort limitation/moratorium in all rockfish trawl fisheries. This would be fast-tracked, ahead of the comprehensive rationalization program in priority. Some committee members felt these types of measures don't adequately address more immediate biological concerns.

It was suggested that NMFS should be again asked to require some percentage of the 30% LL vessels to carry their observers during the first week of the season. It was pointed out that this is probably a subject for consideration by the Observer Oversight Committee. Committee members felt that better information on rockfish could be obtained if this suggestion were implemented, including better estimates of total rockfish mortality. Full retention of all rockfish was also discussed, although not adopted by the Committee.

Another suggestion was that the Committee ask the Council to address priorities for alternatives for achieving TACs for different species. NMFS concerns for inseason management should be taken into consideration. The Council needs to identify what the ultimate objectives are for this fishery.

The Rockfish Committee re-convened at 6:00 pm (September 22, 1992) to review the second draft of minutes from the meeting (Harold Thompson absent). Staff present were Jessie Gharrett, Barry Bracken, Earl Krygier and Chris Oliver (for the first half of the meeting).

The Committee agreed on a number of points relevant to the issue. At the close of the meeting, alternatives were purposed to the Committee for consideration. The Committee reconvened briefly Wednesday evening.

MEMORANDUM

TO: Council, SSC and AP Members

FROM: Clarence G. Pautzke
Executive Director



DATE: September 18, 1992

SUBJECT: Bycatch Management Planning

ACTION REQUIRED

- (a) Receive report from the Bycatch Cap Committee.
- (b) Review various bycatch management proposals.

BACKGROUND

Bycatch Cap Committee

The Bycatch Cap Committee was appointed to review the issue of halibut bycatch caps, halibut mortality, the validity of data used in setting the caps and mortality rates, and the equity of caps. The Committee met in Seattle on September 11 and will meet again in Anchorage on Tuesday evening (Sept. 22) to finalize its report to the Council. The report will include comments concerning steps that might be taken to help industry operate better within the halibut PSC caps for both fixed and trawl gears. The Committee also will need guidance from the Council on its tasking, and future scope of activity.

Bycatch Management Proposals

I have received several proposals recently regarding the management of bycatch in the groundfish fisheries. Item D-8(b)(1), from the IPHC, is a proposal suggesting two ways to accomplish reductions in bycatch rates and discard mortality rates. Their first proposal would implement a mandatory requirement to release halibut by cutting gangions at the hook. You considered this proposal earlier under agenda item D-6(d). The second proposal is to require sorting of halibut on the deck of factory trawlers, for quick return to the sea.

In addition, as mentioned in the 1993 SAFE appendix on halibut discard mortality, the IPHC is currently conducting analysis to determine if condition and discard mortality rates differ between target fisheries, especially the trawl fisheries. The IPHC will finish this research in November 1992 and have a report for the Council at the December meeting. This research could be useful if the Council desires to establish different discard mortality rates for target fisheries.

Item D-8(b)(2) is a letter from the Midwater Trawlers Cooperative on this same topic. They request that fishery specific bycatch mortality rates be applied to the 1993 cod fisheries and, if possible, other fisheries.

Item D-8(b)(3) has two proposals from Alaska Groundfish Data Bank. The first is a proposal to calculate bycatch rates on the basis of retained catch, rather than against overall catch. The second is a proposal to assess retainable bycatch for shorebased vessels on a running average over the most recent four deliveries.

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INTERNATIONAL PACIFIC HALIBUT COMMISSION

ESTABLISHED BY A CONVENTION BETWEEN CANADA
AND THE UNITED STATES OF AMERICA

AGENDA D-8(b)(1)
SEPTEMBER 1992

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September 8, 1992

Dr. Clarence Pautzke
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Dear Clarence:

Halibut bycatch and bycatch limits in the groundfish fisheries seem to have reached a new level of controversy. We have heard increasing dissatisfaction with the current limits, and requests for raising the limits. An agreement between the U.S. and Canada at a special meeting on the Halibut Commission recommended a 10% per year bycatch cap reduction, starting in 1993. The Halibut Commission staff continues to believe that open access management and the Olympic system cause fishermen to fish in ways that drive bycatch to much higher levels than necessary to harvest the groundfish resource. An effective in-season management program such as an individual incentive program will allow increased groundfish harvest for less halibut bycatch.

Until such an incentive program can be developed that would encourage voluntary reductions in bycatch rates and discard mortality rates, we propose changes in regulations that would move to accomplish the reductions. We have previously avoided recommending mandatory actions in the belief that fishermen can get around them too easily if it is in their individual best interest to do so. However, the need for measures to reduce halibut mortality rates is clear.

Our proposal has two parts: 1) would focus on discard mortality rates and could go into effect in 1993; 2) would focus on bycatch rates and could go into effect in 1994 if analysis shows adequate benefits.

Part 1. Research by IPHC shows that halibut discard mortality decreases when the fish are quickly put back into the sea. Survival also increases as handling decreases. Part 1 of our proposal emphasizes these concepts.

For longline vessels, we propose a mandatory requirement to release halibut by cutting gangions at the hook. Gangion-cutting could reduce discard mortality from 16% (the recently revised discard mortality rate, as estimated from 1991 observer data, is approximately 20%) to between 5-11%, depending on how fishermen react. A 5% discard mortality rate would be the equivalent of increasing the PSC cap by a factor of three from the current cap, or a factor of four from the recommended new rate. However, discard mortality rates under a gangion cutting rule should not be set in advance of the fishing year. We recommend setting a 1993 discard mortality rate for cut gangions by obtaining preliminary condition factor data from

observers for the first several months of 1993. Analysis of the condition factor data would set a new rate to be applied retroactively to the beginning of the year. Carefully releasing the halibut by rolling out the hook offers excellent survival potential, but we did not include this in our proposal because "careful release" requires subjective judgement from the observer.

For trawl vessels, we propose a regulation change to allow sorting of halibut on deck of factory trawlers, under supervision of an observer, for quick return to the sea. Forcing the vessel to send halibut through the factory before discard greatly increases mortality. The decrease in discard mortality rate from on-deck sorting is hard to predict, and will depend on the type of fishery and the diligence of the fishermen. We expect to have more idea of benefits from on-deck sorting after the IPHC-NMFS-industry bycatch sorting experiment scheduled for October 1992. However, the 75% discard mortality rate in the Bering Sea might well be reduced. Reduction to a 50% rate, for example, would be equivalent increasing the PSC by one-third compared to the current rate. We recommend setting the 1993 discard mortality rate from the first several months of observer data applied retroactively to the beginning of the year, as was recommended for the longline vessels.

Part 2. Recent analyses by IPHC and others indicate that bycatch rates change with time and area. Reduction of bycatch rates will occur if fishing occurs during the lowest bycatch periods or area.

For the 1994 fishing year, we plan to complete in 1993 the time-area analysis and to propose times and areas for trawl and longline fishing. The proposal could include a prohibition on night-time trawling. We cannot yet predict what improvements will result from time-area management, but predict substantial bycatch rate reductions and correspondingly higher groundfish harvest. Implementing these changes may require a plan amendment, and may be done through a regulatory amendment, or may be achieved by apportioning PSC, depending on what form the Council wishes the changes to take. Our staff will be pleased to work with NMFS and Council staffs to better define this concept, and to help prepare the EA/RIR should that be necessary.

The staff of the IPHC continues to support our previous recommendations to allocate groundfish (or halibut PSC) to gears with the lowest mortality rates and to schedule a 10% per year reduction in halibut bycatch mortality limits. We are pleased to see preferential allocation on the agenda for the September Council meeting. We believe that the actions we have proposed to reduce discard mortality rates for 1993 will benefit the groundfish fishery, and allow the scheduled PSC limit reduction.

Sincerely,



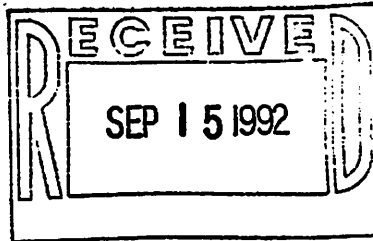
Donald A. McCaughran
Director

cc. Commissioners

Midwater Trawlers Cooperative

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September 11, 1992

MEMBER VESSELS

AJ
AMBITION
BAYISLANDER
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CAPE FALCON
CAPE KIWANDA
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EXCALIBUR
EXCALIBUR II
HAZEL LORRAINE
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PERSEVERANCE
PERSISTENCE
PIONEER
RAVEN
ROSELLA
ROYAL AMERICAN
SEADAWN
SEEKER
VANGUARD
WESTERN DAWN

Mr. Richard B. Lauber
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Alaska Region
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Mr. Clarence Pautzke
Executive Director
North Pacific Fishery Management Council
605 West 4th Avenue
Anchorage, AK 99501

Dear Rick, Steve, and Clarence:

This letter addresses a September 1992 publication by Williams and Wilderbuer of the IPHC/NMFS on discard condition and mortality of halibut in Alaska groundfish fisheries, and provides some simple calculations by yours truly showing that the halibut mortalities in the 1991 trawl codfish fishery were 52.5% in the Gulf of Alaska and 58.3% in the Bering Sea. By comparison, assumed halibut mortality rates were 50% for "Gulf trawl fisheries (including cod)" in 1991, and 65% in 1992. Bering Sea/Aleutian Islands halibut mortality rates for trawl fisheries were assumed to be 100% in 1991, and 75% for 1992.

It is requested by MTC that the NPFMC recommend and that the NMFS implement, procedures for 1993 which will 1) manage the BS/AI and GOA halibut bycatch taken in these respective codfish fisheries areas as separate entities, and 2) assign halibut mortality rates in these two fisheries consistent with the IPHC/NMFS analysis of the 1991 observer data from codfish fisheries reported by Williams and Wilderbuer.

BACKGROUND

As all three of you are aware, I have stated before the council many times, that the use of 100% then 75% assumed halibut mortality rates for many trawl fisheries was total nonsense and inconsistent with data collected. Unfortunately, the first proof of this has just become available to the public via Williams's and Wilderbuer's September 1992 document which analyzed halibut discard condition fishery by fishery. While MTC had asked that this be done in prior years, it was not done, and as a result BS/AI and GOA codfish fisheries and all other trawl fisheries were simply assigned a generic halibut mortality rate for the BS/AI and another one for the Gulf. Although this practice has probably not cost GOA trawlers and processors substantial monetary losses, the cost to BS/AI trawlers and processors has conservatively exceeded 100,000 MT of cod valued at \$50 million in round weight and \$125 million at the wholesale level, just during the past 2-3 years. It is indeed a shame that a couple of NMFS biologists couldn't complete a fishery by fishery analysis using the observer data which the trawl industry so dearly pays for.

1991 HALIBUT CONDITION DATA

Williams and Wilderbuer reported the following conditions of halibut caught in GOA and BS/AI trawl fisheries for cod:

Area	Number of tows sampled	Condition of Halibut Bycatch		
		% Excellent	% Poor	% Dead
GOA	1213	34	33	34
BS/AI	2331	27	31	42

As you probably know, halibut viability used to be judged on a 5 category scale which has since been reduced to the three above categories, i.e. excellent, poor, and dead. Because of the merging of 5 categories into 3, not all halibut judged to be in excellent condition survive, and not all halibut judged to be dead, stay dead.

Dr. Trumble of the IPHC reports that the percentages of trawl caught halibut which actually survive that are judged to be excellent, poor, and dead are 83%, 46%, and 12% respectively.

1991 MORTALITY RATES

Following Williams's and Wilderbuer's reported GOA and BS/AI halibut conditions when discarded from codfish fisheries, and Dr. Trumble's reported survival noted for each condition, the following survival and mortality rates resulted from 1991 cod trawl fisheries:

Area	Discard Condition %	Survival Rate	Survive (%)
GOA	34% Excellent	.83	28.2
	33% Poor	.46	15.2
	34% Dead	.12	4.1
	TOTAL		47.5

% Mortality = 100 - Survival = 100 - 47.5 = 52.5%

BS/AI	27% Excellent	.83	22.4
	31% Poor	.46	14.3
	42% Dead	.12	5.0
	TOTAL		41.7

% Mortality = 100 - Survival = 100 - 41.7 = 58.3%

ACTIONS FOR 1993 MANAGEMENT

Both GOA and BS/AI cod fisheries are extremely important to shore based trawlers, factory trawlers, shoreplants, and the health of the domestic cod marketing system, through the consuming public. Cod trawlers have clearly been getting a bum rap by NMFS here to fore by failure to calculate fishery specific halibut mortality rates, even though the data existed, by using halibut mortality rates which were excessive for cod fisheries and by allowing cod trawl fisheries to be prematurely closed leaving millions of dollars of cod uncaught.

To ensure an end to this predicament, we ask that the following actions be taken:

1. This letter be provided to the SSC and the IPHC for peer review and further analysis if deemed appropriate.
2. That the practice of assigning generic halibut mortality rates to GOA and BS/AI trawl fisheries end in favor of assigning fishery specific rates, or assigning rates to groupings of similar fisheries as recommended by Williams and Wilderbuer.
3. That halibut mortality rates applied against halibut bycatch caps in trawl codfisheries for 1993 be 52.5% for GOA and 58.3% for BS/AI.
4. That Williams and Wilderbuer be complimented on their work and that their attached document be updated annually for public review and council consideration, during the September-December period.

In conclusion, I am providing copies of this letter and the attached study to industry components who have been impacted by past halibut bycatch management practices, and who may be interested in joining with MTC in testifying on this subject during the September/December meetings. Our goal will be to ensure that fisheries specific halibut bycatch mortality rates be applied to the 1993 cod fisheries as a priority, and other fisheries as a second priority. Your comments, ideas, and support for implementing these changes in the NMFS management system are appreciated.

Sincerely,

MIDWATER TRAWLERS COOPERATIVE

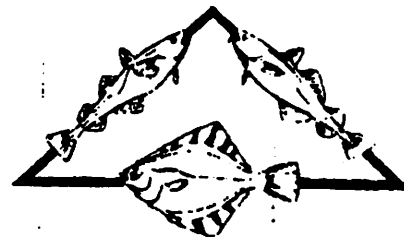


Steven E. Hughes
Technical Advisor

cc: MTC membership
Joe Blum, AFTA
John Iani, PSPA
Kate Graham, AHSFA
Chris Blackburn, ADB
Al Burch, ADA
Dick Pace, UniSea
Rich White, UniSea
Alex Brindle, Alyeska
Greg Baker, Westward
Chuck Bundrandt, Trident
Phil Chitwood, Arctic Alaska
Ron Jensen, Arctic Alaska
Rudy Petersen, North Pacific
Dave Stanchfield, Aleutian Speedwell
Stan Simonson, Golden Age
Bob Breskovich, Golden Alaska
Beth Stewart, Peninsula
Wally Pereyra, ProFish
Stan Hovik, Arctic Storm
Kjell Rokke, American Seafoods
Steve Finley, Emerald Seafoods
Bob Watson, Bering Sea Marketing Assn.
David Galloway, Premier Seafood
Jim Salisbury, Supreme Alaska Seafoods
Bob Trumble, IPHC
Gregg Williams, IPHC
Tom Wilderbuer, NMFS Sand Point
Rich Marasco, NMFS Sand Point

Alaska Groundfish Data Bank

SUBMITTED SEPTEMBER 10, 1992



PROPOSAL TO CALCULATE BYCATCH RATES ON THE BASIS OF RETAINED CATCH

PROPOSAL

Bycatch rates will be calculated by dividing the weight or number of bycatch animals by the weight of the retained catch.

EXISTING REGULATIONS AND PROBLEMS

Currently bycatch is calculated against the overall catch, including discards. This has created three problems:

1. Assessing discards is difficult and has made implementation of the Vessel Incentive Program difficult.
2. Vessels can reduce their bycatch rates by targeting and discarding species which can be taken with low bycatch of other species.
3. The bycatch rates now used do not reflect "what we got for the halibut." In at least one fishery the overall halibut bycatch rate was one-third that of the bycatch rate calculated against retained catch.

PRECEDENT

This is the method used by the State of Alaska in the 1980s to overcome the difficulty of assessing discards and expanding observed rates over landed catch from observed vessels.

OTHER CHANGES

Calculating bycatch rates against retained rather than overall catch will require revising the vessel incentive program rates. For comparison purposes historic data should also be recalculated, but this is not immediately critical.

Alaska Groundfish Data Bank

SUBMITTED SEPTEMBER 10, 1992



PROPOSAL TO ASSESS RETAINABLE BYCATCH ON SHOREBASED VESSELS OVER FOUR DELIVERIES INSTEAD OF DELIVERY BY DELIVERY

PROPOSAL

For shorebased vessels during each quarter retention percentages for retainable bycatch will be calculated as a running average over the most recent four deliveries.

The intent is that when a vessel makes a landing, the percentage of the retained bycatch would be calculated in aggregate for the current landing and the three prior landings. At the end of the quarter a vessel would have to be in compliance with the percentage requirements for retained bycatch, whether the vessel had made one or fifteen landings.

BACKGROUND

Retainable bycatch is actually a trip limit defined as a percentage against other species onboard rather than in pounds. The intent is to allow retention and avoid waste.

In the Gulf of Alaska the concept has worked well overall: at the end of 1991 there was still Pacific cod quota left and black cod quota for trawlers left.

However, on a trip by trip basis vessels are not always able to stay within the retention limits and must either discard fish or face citations and fines if the fish are delivered. The biggest problems staying within the retention limits on a delivery by delivery basis appear to be Pacific cod and pollock bycatch.

PRECEDENT

The Pacific Council, which manages on a trip limit basis for many species, has wrestled with this same problem and in January 1992 implemented cumulative accounting for trip limit species.

According to the Jan. 15, 1992, Federal Register Notice:

- "Cumulative trip limits are expected to . . .
- 1) Reduce trip-limit induced discard . . .
 - 2) Increase operating flexibility . . .
 - 3) Enhance compliance . . .

We feel these same advantages will accrue to the Alaska fisheries if retention percentages are calculated on a cumulative four delivery basis rather than delivery by delivery.

In Alaska the trip or bycatch limits are close enough to the natural bycatch rates in most instances that we do not expect any increase in overall catch of bycatch-

RETAINABLE BYCATCH ENFORCEMENT - PAGE 2 OF 2

only species, only a reduction in discards since one trip may encounter very little of a bycatch species, but a tow in the next trip may pick up excessive amounts of the bycatch species. The fisherman can and does move, but he can't undo the tow.

ENFORCEMENT

We suggest this be implemented on a vessel basis, not a skipper basis. Vessels could be required to keep their fish tickets onboard for inspection, though it should be noted that the fish ticket for the last delivery is usually not available until the vessel returns with the next delivery.

**Bycatch Committee Report
List of Attachments**

- Attachment 1** Agenda from September 11, 1992 Committee meeting.
- Attachment 2(a)** "Summary of Foreign and Domestic Regulations Implemented to Minimize the Bycatch of Pacific Halibut in the Alaska Groundfish Fisheries," prepared by S. Salveson, NMFS-Alaska Region.
- Attachment 2(b)** "Report of the Halibut Bycatch Work Group," IPHC Technical Report No. 25.
- Attachment 2(c)** IPHC bycatch concerns, derivation of mortality estimates, recommended research and management measures.
- Attachment 2(d)** Report from Bycatch Plan Team
- Attachment 2(e)** Tables prepared by NMFS-Alaska Region summarizing halibut bycatch mortality by fishery and fishery closures.
- Attachment 2(f)** Table: Estimated Costs of the Halibut Bycatch Problem in the 1990-91 Alaska Groundfish Fisheries."
- Attachment 2(g-h)** Tables prepared by NMFS-Alaska Region showing halibut bycatch and bycatch rates in various fisheries and gears in 1990.
- Attachment 2(i)** Methodology and data used by NMFS to estimate bycatch and manage the fisheries.
- Attachment 2(j)** "Information on the Discard Condition of Halibut in the 1991 Groundfish fishery off Alaska and Implications on Discard Mortality Rates," prepared by IPHC and NMFS staff.

Draft Agenda
BYCATCH CAP COMMITTEE
September 11, 1992

I. Overview of Bycatch Management Regime

- A. Brief history of bycatch regulations and current regime.
- B. Review objectives of current bycatch management program.
- C. IPHC concerns with non-directed halibut mortality.
 - 1. Biological and economic effects of bycatch on target halibut fisheries in U.S. and Canada.
 - 2. IPHC objectives for control of non-directed mortality.
- D. Impacts of bycatch caps on groundfish fisheries and economic costs.

II. Review of Bycatch Patterns

- A. Regional and seasonal patterns of bycatch rates and identification of high rate areas, viewed in terms of overall catch and retained catch of target species.
- B. Restrictions of PSC closures on fleet activities and how much of the target fisheries was foregone.
- C. Distribution of total bycatch and mortality by fishery, gear and area.
- D. Consideration of the amount of target species that could be taken at various bycatch rates, the amount of halibut needed to harvest groundfish TACs, and halibut savings that could be achieved by restructuring the fisheries.

III. Summary of Bycatch Data and Estimation Procedures

- A. Flow of data from fleet to manager and how it is used for closures and VIP.
- B. Estimation of catch and bycatch rates.
 - 1. Use of PRRs in estimating catch.
 - 2. Data from observers and from unobserved vessels.
 - 3. Differences between basket and whole haul sampling.
 - 4. Expansions to total bycatch.
- C. Derivation and use of halibut mortality estimates.
- D. Differences between relating bycatch to total catch and to retained catch.
- E. Recommended cooperative research to improve bycatch information.

IV. Identify Areas of Particular Concern and Recommend Management Changes

- A. Information needs of the industry to improve bycatch performance.**
- B. Equity and efficiency issues involved with apportioning PSC caps to specific fisheries.**
- C. Recommendations for time/area closures and seasonal allocations of groundfish TACs or bycatch allowances that may improve the fisheries.**

V. Future Committee Needs and Direction

- A. Additional data and analysis needed from staff.**
- B. Future topics for consideration.**
- C. Schedule of future meetings.**

Prepared by S. Salveson
National Marine Fisheries Service
Alaska Regional Office
March 19, 1991- updated September 9, 1992

**SUMMARY OF FOREIGN AND DOMESTIC REGULATIONS IMPLEMENTED
TO MINIMIZE THE BYCATCH OF PACIFIC HALIBUT IN
THE ALASKA GROUND FISH FISHERIES**

**General regulations on minimizing and handling
of prohibited species**

Each foreign and domestic fishing vessel is directed to minimize its catch or receipt of halibut and other prohibited species and regulations require that the groundfish catch be sorted for prohibited species as soon as possible after retrieval or receipt. To comply with this regulation, some vessel operators required their deck crews to sort out and discard the prohibited species. Such sorting can take a considerable amount of time and effort, thereby providing some incentive for vessel operators to minimize their bycatch of prohibited species.

**Time/area restrictions for foreign vessels (not joint ventures)
prior to the implementation of the Magnuson Act.**

During the early to mid 1970's, numerous actions were taken under negotiated bilateral fishery agreements to protect the Pacific halibut resource from foreign trawl and longline operations in the Bering Sea and Gulf of Alaska. The following actions were implemented prior to extensive observer coverage. It is difficult, therefore, to determine what effect the closures had on prohibited species bycatch. The closure of the Bristol Bay Pot Sanctuary probably prevented the development of a foreign rock sole fishery, because commercial quantities of rock sole outside of that area are uncommon.

- (1) In March of 1974, the Canadian and U.S Sections of the INPFC concurred with measures taken or proposed by Japan to implement 1973-1974 time\area closures of trawl fisheries in the eastern Bering Sea to reduce the incidental catch of young halibut.
- (2) The December 1974 U.S.-Japan and the July 1975 U.S.-U.S.S.R. agreements on fishery restrictions included closures of large parts of the Gulf of Alaska and the eastern Bering Sea to longliners and trawlers during winter or early spring months. The closures were among an array of time\area restrictions that were proposed by the U.S. to provide as much protection as possible for halibut from Japanese and Soviet fishing activities.

Additional INPFC negotiations in late 1974 led to Japan's agreeing to take further steps to protect halibut from trawling in the eastern Bering Sea beginning December 1, 1974. Negotiations in 1975 resulted in additional restrictions on Japanese and Soviet trawl fisheries.

Halibut Bycatch Management Measures Under the Magnuson Act

The Magnuson Act called for the preparation of two forms of fishery management plans. First were the preliminary fishery management plans (PFMPs). The PFMPs covered only foreign fisheries and were prepared and implemented by the Department of Commerce. They were implemented March 1, 1977 until such time that the applicable regional fishery management council developed appropriate fishery management plans (FMPs), which covered domestic as well as foreign fisheries.

The halibut bycatch management measures implemented under the Bering Sea and Aleutian Islands area (BSAI) groundfish PFMP and the Gulf of Alaska groundfish PFMP reflected time\area closures carried over from agreements reached through the INPFC or from bilateral fisheries agreements that the U.S. had negotiated with various foreign nations in earlier years.

BERING SEA AND ALEUTIAN ISLANDS AREA (BSAI) FMP

MANAGEMENT MEASURES UNDER THE BSAI FMP AND SUBSEQUENT RULEMAKING THAT ADDRESSED HALIBUT BYCATCH MANAGEMENT MEASURES.

Regulations implementing the FMP (effective January 1, 1982)

Foreign Regulations:

- (1) Maintained year-round trawl prohibition in the Bristol Bay Pot Sanctuary;
- (2) Maintained December 1 through May 31 trawl prohibition in the Winter Halibut Savings Area;
- (3) Trawling was prohibited in the Longline Sanctuary at all times;
- (4) Longline vessels were prohibited from fishing in water less than 500 meters deep in the Winter Halibut Savings Area.

Domestic regulations:

The following restrictions were implemented to reduce the mortality of juvenile halibut while still allowing

the fishing of groundfish for crab bait and some development of domestic fishery:

- (1) Domestic trawling in the Bristol Bay Pot Sanctuary is allowed only during the open season of the U.S. Bering Sea crab fisheries;
- (2) Domestic trawling in the Winter Halibut Savings Area is allowed from December 1 through May 31 until the domestic trawl catch reaches 2,000 mt;
- (3) Domestic longlining in the Winter Halibut Savings Area is allowed landward of the 500 meter isobath until the total U.S. longline catch (excluding Pacific halibut) reaches 2,000 mt.

Amendment 1 (effective January 1, 1984).

Modified domestic fishing restrictions that were implemented under the FMP to reduce the mortality of juvenile halibut. The following modifications were implemented to accommodate protests from domestic fishermen that existing FMP provisions unreasonably hindered further development of the domestic groundfish fishery.

- (1) Eliminated the "Misty Moons" grounds south of the Pribilof Islands from the Winter halibut Savings Area;
- (2) Allowed year-round domestic trawling in the Bristol Bay Pot Sanctuary and the Winter Halibut Savings Area.

[This amendment also closed Petrel Bank to foreign trawling from 7 days prior to U.S. king crab fishery through June 30 to mitigate gear conflicts and king crab mortality during spring molting season.]

Amendment 3 (effective July 4, 1983).

Restricted bycatch of halibut in the foreign trawl fisheries by implementing bycatch limits based on a scheduled reduction of allowable bycatch incidence rates. The restrictions governing the incidental catch of Pacific halibut applied to the entire Bering Sea/Aleutian Islands region and were based on incidental catch rates which were reduced each year. A nation's current allowance for halibut was proportional to the sum of that nation's current groundfish allocations.

nation's current allowance for halibut = incidence rate for halibut for that year x that nation's current groundfish allocation

The incidence rates for Pacific halibut (metric ton halibut per metric ton of groundfish) established for 1982-1987 are shown below:

Year	Incidental catch rate (R)	
<u>Base Catch Rates</u>		
1977-80	<u>3,182</u>	
Average	1,301,250	
	base R = 0.00245	
<u>Rate Reduction Schedule, R</u>		
1982	R = .00220	90%
1983	R = .00196	80%
1984	R = .00171	70%
1985	R = .00147	60%
1986	R = .00122	50%
1987	R = .00122	50%

Amendment 7 (effective August 31, 1983).

Modified restrictions on foreign longline operations in the Winter Halibut Savings Area which forbade foreign longline vessels to fish landward of the 500 meter isobath from December 1 through May 31 to protect juvenile halibut. Under Amendment 7, foreign longline fisheries could operate in the Winter Halibut Savings Area until the total incidental catch of halibut by foreign longline vessels in the BSAI reaches 105 mt during the 12-month period of June 1 through May 31. At that time or on December 1, whichever came later, the 500 meter depth restriction on foreign longline vessels in the Winter Halibut Savings Area was reimposed.

Emergency Rule (effective March 15, 1989 through Sept. 11, 1989)

Closed Area 512 to prevent excessive bycatch of halibut and crab in a biologically critical area until a more permanent bycatch regulatory regime was implemented.

Amendment 10 (effective April 16, 1987 through December 31, 1988).

- (1) Closed BSAI area 512 to all trawl fisheries.
- (2) Specified a halibut PSC limit of 828,000 halibut for the joint venture yellowfin sole/other flatfish fisheries, attainment of which triggered a closure of Zone 1 to the JV flatfish fisheries.
- (3) Provided for discretionary authority to allow a continuation or resumption of domestic fishing for flatfish in a area that would otherwise be closed due to a PSC limit to allow the domestic industry to use groundfish resources more fully.

Amendment 12a (Effective Sept. 3, 1989 through Dec. 31, 1990).

- (1) Specified PSC zones and limits for Pacific halibut, red king crab, and C. bairdi Tanner crab (Table 1).
- (2) Provided for annual determinations of PSC limit allocations (bycatch allowances) to specified fisheries (DAP flatfish, DAP "other," JVP flatfish and JVP "other").
- (3) Closed the BSAI or portions thereof to a fishery when that fishery reaches a bycatch allowance. When the DAP or JVP "other" fisheries reaches a bycatch allowance, only the directed fishery for Pacific cod and pollock with bottom trawl gear was prohibited.

Table 1. BSAI PSC limits and bycatch zone closures established for trawl fisheries under Amendment 12a.

C. bairdi	1,000,000 crabs in Zone 1 for Zone 1 closure
Tanner crab:	3,000,000 crabs in Zone 2 for Zone 2 closure
Red king crab:	200,000 crabs in Zone 1 for Zone 1 closure
Halibut:	4,400 mt catch in BSAI for Zones 1 and 2H closure
	5,333 mt catch in BSAI for BSAI closure

Amendment 13 (effective January 1, 1990).

Established the authority for a domestic observer program.

Regulatory Amendment (effective January 1, 1991).

Delayed the DAP and JVP flatfish fisheries until May 1 to reduce halibut and crab bycatch rates that are typically high in these fisheries during the first part of the calendar year. The DAP rock sole roe fishery is exempted from the season delay; however, separate bycatch allowances have been established for this fishery under regulations implementing Amendment 16.

Amendment 16 (effective January 18, 1991).

- (1) Maintained 12a PSC limits for Pacific halibut, red king crab, and C. bairdi Tanner crab (Table 1).
- (2) Provided for annual determinations of PSC limit allocations (bycatch allowances) to five specified fisheries (DAP rock sole, Greenland turbot, flatfish, and "other" fisheries and to the JVP flatfish fishery).
- (3) Provided the authority to apportion bycatch allowances on a seasonal basis.
- (4) Closes the BSAI or portions thereof to a fishery when that fishery reaches a [seasonal] bycatch allowance. When the DAP "other" fishery reaches a bycatch allowance, only the directed fishery for Pacific cod and pollock with other than pelagic trawl gear is prohibited.
- (5) Established a new definition for pelagic trawl gear that constrained the pelagic trawl fisheries for groundfish to a trawl gear configuration intended to enhance escapement of halibut and crab during trawl operations.

Revised Amendment 16 (interim final rule) effective May 6, 1991.

Established a vessel incentive program to reduce (1) halibut bycatch rates in the BSAI flatfish and Pacific cod trawl fisheries, and (2) red king crab bycatch rates in the Zone 1 flatfish fisheries.

Amendment 16a (effective July 12, 1991)

- (1) Established Pacific herring bycatch management measures
- (2) Established "hot spot" closure authority for the BSAI
- (3) Authorized the Regional Director, in consultation with the Council, to limit the amount of pollock taken with non-pelagic trawl gear to reduce crab and halibut bycatch in the BSAI pollock fishery.

Emergency rule effective August 7, 1991

Implemented interim regulations to further limit the bycatch of halibut once closures of directed groundfish fisheries were triggered by attainment of halibut bycatch allowances.

Emergency rule effective March 30, 1992

- (1) Reduced the 1992 Pacific halibut prohibited species catch (PSC) limit for BSAI trawl gear from 5,333 metric tons (mt) to 5,033 mt;
- (2) Revised the management of the BSAI trawl fisheries that are eligible to receive prohibited species bycatch allowances under § 675.21(b);
- (3) Revised Gulf of Alaska (GOA) and BSAI directed fishing standards to limit more effectively the bycatch amounts of prohibited species and groundfish for which directed fishery closures have been implemented.

Emergency rule effective May 21, 1992

- (1) Included the BSAI pollock fishery under the vessel incentive program to reduce halibut bycatch rates in this fishery when directed fishing for pollock with non-pelagic trawl gear is prohibited; and
- (2) Prohibited the use of non-pelagic trawl gear by vessels participating in the directed fishery for BSAI pollock.

Amendment 19 (effective September ?, 1992)

- (1) For 1992, reduced the Pacific halibut prohibited species catch (PSC) limit established for BSAI trawl gear from 5,333 metric tons (mt) to 5,033 mt, but retained the primary halibut PSC limit at 4,400 mt;
- (2) For 1992, established a 750 mt Pacific halibut bycatch mortality limit for BSAI fixed gear; and
- (3) Established FMP authority to develop and implement regulatory amendments that provide for time/area closures to reduce prohibited species bycatch rates.

Regulatory amendments (effective September ?, 1992)

- (1) Revised BSAI fishery definitions for purposes of monitoring fishery specific bycatch allowances and assigning vessels to fisheries for purposes of the vessel incentive program;
- (2) Revised the definition and accountability of BSAI trawl fishery categories that are eligible to receive prohibited species bycatch allowances;
- (3) Expanded the vessel incentive program to address halibut bycatch rates in all trawl fisheries;
- (4) Delayed the season opening date of the BSAI and GOA groundfish trawl fisheries to January 20 of each fishing year to reduce chinook salmon and halibut bycatch rates; and

- (5) Changed directed fishing standards to further limit halibut bycatch associated with bottom trawl fisheries.

Bycatch management measures adopted by the Council for the 1993 BSAI groundfish fisheries under Amendment 21

- (1) Use halibut mortality rather than bycatch as the basis for monitoring and managing trawl bycatch allowances;
- (2) Establish halibut bycatch limits in regulations, rather than the FMP; and
- (3) Implement a trawl fishery mortality limit of 3,775 mt; recommendation for a non-trawl mortality limit is deferred until the Council's September 1992, meeting.

GULF OF ALASKA

**MANAGEMENT MEASURES UNDER THE GULF OF ALASKA GROUND FISH FMP
AND SUBSEQUENT RULEMAKING THAT ADDRESSED
HALIBUT BYCATCH MANAGEMENT MEASURES**

Regulations implementing the FMP (effective December 1, 1978).

Foreign Regulations:

- (1) The following areas were closed to foreign trawling during the period specified to reduce halibut bycatch. (Other areas were closed to reduce gear conflicts and grounds preemption problems between domestic fixed gear and foreign trawls).
 - (a) 140° - 147° W. from January 1 - February 15, and November 1 - December 31.
 - (b) 147° - 157° W. from February 16 - June 1.
- (2) During the 6-month period of December 1 through May 31, only pelagic trawls, with recording net-sonde devices functioning properly during each tow, could be used throughout the Gulf of Alaska during the time-area units not otherwise closed to trawling. (A "pelagic trawl" was defined as one in which neither the net nor the otter boards operate in contact with the bottom. The net-sonde read-out shall clearly indicate that during no more than 10 percent of any tow was the footrope of the

net in contact with the bottom. No chafing gear, rollers, or bobbins were permitted).

Domestic Regulations:

- (1) If during the period between December 1 and May 31, the Regional Director determined that the estimated total catch of halibut in any fishing area by domestic groundfish vessels reached the amount listed below, further groundfish fishing with trawl gear was prohibited in that fishing area until June 1.

Fishing area and halibut bycatch amount

Shumagin	29 mt	
Chirikof	18 mt	
Kodiak	34 mt	
	Yakutat	17 mt
	Southeast	14 mt

- (2) During the period from December 1 through May 31, only off-bottom trawls may be used by domestic trawl vessels
- (3) The duration of individual tows of fishing vessels using off-bottom gear shall not exceed 1 hour.

Amendment 4 (Effective August 22, 1979).

- (1) Removed a restriction which allowed only 25% of the TALFF to be taken from December 1 to May 31. This restriction, after experience, was considered unnecessary, because the requirement that foreign vessels use pelagic trawls in the winter adequately protected halibut stocks.
- (2) Allowed foreign longlining for sablefish seaward of 400 meters (instead of 500 meters) from May 1 to September 30 in the area between 140° and 170° W. longitude. Because incidental halibut catch by longliners was low during the summer, this change increased areas for foreign nations to catch sablefish while retaining adequate protection for halibut stocks.
- (3) Permitted a directed longline fishery for Pacific cod between 140° and 157° W. longitude (in additions to the authorized fishery between 157° and 170° seaward of 12 miles except during the U.S. halibut season. By encouraging foreign longliners rather than foreign trawlers, to take Pacific cod TALFF, the incidental mortality of halibut was reduced.

- (4) Removed the domestic one-hour tow restriction. After experience, the Council judged this an unnecessary management measure given the separate incidental catch quota on halibut for domestic fishermen.
- (5) Removed the domestic requirement for the use of off-bottom trawls from December 1 to May 1. As above, this measure was considered redundant for the protection of halibut.

Amendment 10 (Effective June 1, 1982).

Limited foreign trawl operations to pelagic trawl gear in the area between 140° and 147° W to "eliminate" high incidental catches of halibut (the remainder of the Eastern area also was closed to all foreign fishing to eliminate gear conflicts with U.S. longline fishermen).

Amendment 11 (Effective October 16, 1983).

Authorized the imposition of inseason time and area restrictions on foreign fisheries to protect stocks of Pacific halibut and other groundfish (Similar authority for the domestic fishery already existed).

Emergency rule (effective December 10, 1984 until May 31, 1985).

Increased domestic halibut PSC limits because of an increase in the abundance of halibut in the Gulf of Alaska since the FMP was first implemented and the likelihood that existing bycatch limits would be reached early in the 1985 fishing year. If trawl vessels reached the following limits during the period between December 1 and May 31, further fishing with bottom trawls was prohibited in the associated regulatory area:

Western Regulatory Area	270 mt halibut
Central Regulatory Area	768 mt halibut
Eastern Regulatory Area	31 mt halibut

Amendment 14 (effective November 13, 1985).

A framework procedure was established for the setting the PSC limits for halibut in the joint venture and domestic fisheries. The attainment of these limits will result in a ban on the use of bottom trawl gear for the remainder of the fishing year. Gulf-wide halibut PSC limits established under this authority for 1986-1989 follow:

Year	JVP ¹ (mt)	DAP ² (mt)	Total Catch	Total Mortality
1986	322	1,885	2,207	1,265
1987	47	3,005	3,052	1,353
1988	240	4,240	4,480	2,047
1989	515	1,485	-----	2,000

1/ JVP PSC limits assumed 100 percent trawl mortality

2/ DAP PSC limits monitored on total catch during 1986 - 1988, however, in 1989, DAP PSC limit monitored based on assumed mortality limits of 50 percent for trawl gear and 25 percent for hook-and-line gear.

Amendment 18 (effective January 1, 1990).

- (1) Provided authority to establish separate halibut PSC limits for fixed gear and trawl gear. For the 1990 fishing year only, PSC mortality limits for fixed and trawl gear were 750 and 2,000 metric tons, respectively.
- (2) Provided authority for domestic observer program.

Amendment 21 (effective January 18, 1991).

- (1) Authorized the establishment of separate halibut bycatch limits for trawl, hook-and-line, and pot gear. Proposed mortality limits for 1991 are 2,000 mt, 700 mt and 50 mt, respectively.
- (2) Authorized seasonal [quarterly] allocation of halibut PSC limits, attainment of which will close the GOA to further fishing with the applicable gear type for the remainder of the [quarter].
- (3) Specified gear restrictions to reduce bycatch or bycatch mortality of prohibited species. Restrictions include (a) requiring biodegradable panels on groundfish pots, (b) requiring halibut exclusion devices on groundfish pots, and (c) revised specifications for pelagic trawl gear that constrains the pelagic trawl fisheries for groundfish to a trawl gear configuration designed to enhance escapement of halibut and crab during trawl operations.

Regulatory amendment effective April 1, 1991

Delayed the opening for the hook-and-line fishery for sablefish from April 1 until May 15 to reduce halibut bycatch rates in this fishery.

Revised Amendment 21 (interim final rule) effective May 6, 1991.

Established a vessel incentive program to reduce (1) halibut bycatch rates in the GOA rockfish and Pacific cod trawl fisheries.

Emergency rule effective August 7, 1991

Implemented interim regulations to further limit the bycatch of halibut once closures of directed groundfish fisheries were triggered by attainment of halibut bycatch allowances.

Emergency rule effective March 30, 1992

- (1) Delayed the GOA rockfish trawl fishery to June 29, 1992, to reduce bycatch amounts of chinook salmon and revise directed fishing standards for GOA rockfish to support the season delay; and
- (2) Revised GOA and BSAI directed fishing standards to limit more effectively the bycatch amounts of prohibited species and groundfish for which directed fishery closures have been implemented.

Regulatory amendment effective July 23, 1992

Established separate halibut bycatch allowance for the demersal shelf rockfish fishery in the southeast outside district of the GOA.

Amendment 24 (effective September ?, 1992)

- (1) Established FMP authority to develop and implement regulatory amendments that provide for time/area closures to reduce prohibited species bycatch rates.

Regulatory amendments (effective September ?, 1992)

- (1) Expanded the vessel incentive program to address halibut bycatch rates in all trawl fisheries;
- (2) Delayed the season opening date of the BSAI and GOA groundfish trawl fisheries to January 20 of each fishing year to reduce chinook salmon and halibut bycatch rates;
- (3) Further delayed the season opening date of the GOA trawl rockfish fishery to the beginning of the weekly

- reporting period closest to July 1 to reduce halibut and chinook salmon bycatch rates; and
- (4) Changed directed fishing standards to further limit halibut bycatch associated with bottom trawl fisheries.

1992 PSC limits

BSAI - The 1992 halibut bycatch limit established for BSAI trawl gear fisheries (5,033 mt) is apportioned among fisheries and seasons as follows:

<u>Fishery</u>	<u>Seasonal bycatch allowance</u> <u>(mt halibut)</u>
Yellowfin sole	
May 01 - Aug.02	424
Aug.03 - Dec.31	425
Total	849
Rock sole/"other flatfish"	
Jan.01 - Mar.29	566
Mar.30 - Jun.28	95
Jun.29 - Sep.27	94
Sep.28 - Dec.31	remainder
Total	755
Turbot/arrowtooth flounder/sablefish	
Jan.01 - Dec.31	0
Rockfish	
Jan.01 - Mar.29	20
Mar.30 - Jun.28	60
Jun.29 - Sep.27	120
Sep.28 - Dec.31	remainder
Total	200
Pacific cod	
Jan.01 - Jun.28	1,301
Jun.29 - Sep.27	236
Sep.28 - Dec.31	remainder
Total	1,537
Pollock/Atka mackerel/"other species"	
Jan.01 - Apr.15	1,221
Apr.16 - May.31	0
Jun.01 - Dec.31	471
Total	1,692
TOTAL 1992 Halibut Bycatch Limit	5,033

Gulf of Alaska

Halibut mortality limits of 2,000 mt for trawl gear and 750 mt for hook-and-line gear have been specified for 1992. The hook-and-line mortality limit is further apportioned to the demersal shelf rockfish fishery (10 mt) and all other hook-and-line fisheries. Groundfish pot gear is exempted from halibut bycatch restrictions in 1991 because (1) halibut mortality associated with this gear type is lower; (2) existing pot gear restrictions are intended to further reduce halibut bycatch mortality; and (3) the North Pacific Fishery Management Council desires to encourage the development and use of groundfish pot gear in recognition of the low halibut bycatch mortality associated with this gear type.

- Halibut mortality limits are apportioned on a seasonal basis to provide longer opportunity for groundfish harvests and to allow more effective monitoring of bycatch amounts and projection of associated fishery closures. The 1992 seasonal apportionments of halibut mortality limits are as follows:

Metric tons (MT) halibut mortality

TRAWL 2,000 mt	HOOK-AND-LINE OTHER THAN DSR 740 mt	DSR H&L 10 mt
1st Qtr: 30% - 600 mt	1/1 - 5/14: 26.7% - 200	6/29-12/31
2nd Qtr: 30% - 600	5/15 - 8/31: 66.7% - 490	
3rd Qtr: 20% - 400	9/1 - 12/31: 6.7% - 50	
4th Qtr: 20% - 400		

* Assumed mortality rates for 1992 are .65 for trawl gear, .16 for hook-and-line gear and .10 for pot gear.

INTERNATIONAL PACIFIC HALIBUT COMMISSION

**ESTABLISHED BY A CONVENTION BETWEEN
CANADA AND THE UNITED STATES OF AMERICA**

Technical Report No. 25

Report of the Halibut Bycatch Work Group

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**SEATTLE, WASHINGTON
1992**

IPHC Bycatch Concerns

U.S.-Canada bycatch reduction agreement--U.S. fisheries

- Goal: use bycatch performance of foreign fleets during mid 1980's (3,700-4,500 mt off Alaska) as target for DAP bycatch limits
- Action: 10% per year reduction in caps starting in 1993, based on individual incentive programs

Biological and economic effects of halibut bycatch

- Reduced reproduction of halibut resource--1:1 reduction in catch limit
- Reduced yield to halibut fishery--1.6:1 reduction in yield
- Bycatch in western areas cause reductions in eastern areas
 - Bering Sea bycatch impacts GOA, Canada, and WA-OR
 - GOA bycatch impacts Canada and WA-OR
 - Canada bycatch impacts WA-OR
- Bycatch is double the amount taken in the mid 1980's for same GF harvest
- Bycatch causes GF closures--Olympic system causes higher bycatch rates

IPHC objectives for bycatch control

- The primary goal: the design of a program to identify and work toward restriction of halibut bycatch in groundfish fisheries to levels that would allow each nation to reasonably harvest its groundfish resources while minimizing halibut bycatch mortality.
- Management philosophy
 - Individual vessel incentive programs to control halibut bycatch rates
 - Mandatory programs to reduce bycatch rates if necessary
 - Use savings to increase groundfish harvest and reduce halibut PSC limits

Derivation and use of halibut discard mortality rate estimates

Condition factor--excellent, good, fair, poor, dead

Canadian trawlers

- 1970's tagging--Hoag study
- Mortality by condition factor and size

Halibut Length (cm)	Mortality Rate (%) By Condition Factor					Average
	Excellent	Good	Fair	Poor	Dead	
≤80	52	48	72	74	97	72
≥80	8	26	50	57	82	45

Domestic trawlers--Alaska

- Condition factor and size distributions from mandatory observers
- Mortalities from Hoag study
- IPHC-NMFS results from 1990 data

Mortality Rate (%) by Condition			
Length (cm)	Excellent	Poor	Dead
≤80	50	73	97
>80	17	53	82