MEMORANDUM

TO: Council, SSC and AP Members

FROM: Clarence G. Pautzke
Executive Director

DATE: September 15, 1993

SUBJECT: Gulf of Alaska Rockfish Rebuilding

ESTIMATED TIME
3 HOURS

ACTION REQUIRED

Review Rebuilding Amendment For Pacific Ocean Perch in the Gulf of Alaska, and take action as necessary.

BACKGROUND

Review Rebuilding Plan For Pacific Ocean Perch in the Gulf of Alaska

At the April 1993 meeting, the Council reviewed alternative policy options to rebuild depleted Pacific ocean perch (POP) in the Gulf of Alaska. The EA/RIR/IRFA for POP rebuilding was released for Public Review. Based on the analysis, the optimal fishing rate is about 71% of the rate previously used for setting ABC (F35%). Current estimates of spawner biomass (70,800 mt) are less than half of the desired target level (150,000 mt). Four alternative harvest policies were analyzed, and these were:

Alternative 1. Status quo: harvesting the stock at the F35% fishing mortality rate adjusted by the ratio of the current biomass to the target biomass.

Alternative 2. Harvesting at the optimal fishing mortality rate adjusted by the ratio of the current biomass to the target biomass.

Alternative 3. Harvesting at a fishing mortality rate intermediate to the optimal rate (Alternative 2) and the bycatch only rate (Alternative 4), adjusted by the ratio of the current biomass to the target biomass.

Alternative 4. Harvesting at a fishing mortality rate (0.023) equal to the bycatch only fishing policy, adjusted by the ratio of the current biomass to the target biomass.

For each alternative, the analysis estimated the number of years needed to double current spawner biomass, the number of years needed to rebuild to the target biomass, and the risk of falling below 50% of target level in 20 years. The results are summarized in the following table:

Alternative	Years to Double	Years to Rebuild	Risk
1	30	26	5%
2	20	18	1%
3	15	14	<1%
4	13	14	<1%

The economic analysis concluded that reductions POP harvest rate result in reductions of gross earnings from the POP fishery, which would not likely be recovered within the next 30 years. The difference between present value of income under the status quo and the most restrictive policy amounts to roughly $40 million if future values are not discounted, and $22 million if they are discounted at a rate of 7% per year, based on the assumption that prices remain constant over a 30-year period. Subtracting variable costs would likely reduce the difference between alternatives by an estimated 30-40%.

An Executive Summary of the analysis is attached as Item D-2(a)(1). The GOA groundfish Plan Team reviewed the analysis, and the Team's comments are attached as Item D-2(a)(2). Comments received are included as Item D-2(a)(3).

EXECUTIVE SUMMARY

By the mid 1970's the biomass of Pacific ocean perch (POP) in the Gulf of Alaska (GOA) had been reduced to about 10% of the level during the early 1960's . For the period 1961-1977 the average annual catch of POP was 40,790 tons, thereafter, landings averaged 6,078 tons. Although fishing mortality has been greatly reduced, the stock has shown only modest increases; the current estimate of spawner biomass is between 15-20% of the level observed during the 1960's. This has raised concern that past management measures may have been inadequate to rebuild the stock of POP in the GOA. Consequently, the Council requested that a detailed analysis be performed to: a) identify optimal fishing rates for rockfish species such as Pacific ocean perch; b) identify the biomass level that would achieve an optimum yield; and c) evaluate the effect of alternative fishing policies on rebuilding POP. The purpose of this analysis is to provide the Council with information to assess alternative harvest policies and their effect on rebuilding the stock of POP in the GOA.

Based on re-analysis of spawner-recruit data, the optimal fishing mortality rate for POP in the GOA was determined to be 0.08 rather than the fishing mortality rate of 0.114 used to determine the 1993 ABC. In addition, the corresponding target female spawner biomass is 150,000 mt. This compares with a target of 118,000 mt used in previous analyses. Although the results presented in this study suggest different values for setting POP ABC than in the past, they have not yet been reviewed by the Plan Team or officially incorporated into stock assessment procedures.

Based on the new estimates for optimal biomass and fishing mortality rates, the following alternative fishing policies were developed and evaluated using a simulation model. In all cases the target biomass was taken to be 150,000 tons.

Alternative Policy 1: Status quo: Rebuilding of POP stocks would be attempted by harvesting the stock at the $F_{35\%}$ fishing mortality rate adjusted by the ratio of the current biomass to the target biomass. This adjustment is made until the target biomass is reached.

Alternative Policy 2: Rebuilding of POP stocks would be attempted by harvesting at the estimated optimal fishing mortality rate adjusted by the ratio of current biomass to the target biomass. This adjustment is made until the target biomass is reached.

Alternative Policy 3: Rebuilding of POP stocks would be attempted by harvesting at a fishing mortality rate intermediate to the optimal fishing mortality rate recommendation in Alternative 2 and a fishing mortality rate sufficient to supply POP bycatch needs (Alternative 4). This rate is adjusted by the ratio of current biomass to the target biomass until the target biomass is reached.

Alternative Policy 4: Rebuilding of POP stocks would be attempted by harvesting at a fishing mortality rate estimated to be sufficient to accommodate unavoidable bycatch of POP in the GOA groundfish fisheries based on 1992 bycatch rates. *Once the target biomass is reached the optimal fishing mortality used in alternative 2 would be applied.*

The ability to predict future stock levels with a high degree of certainty is poor. Clearly, the potential for stock rebuilding will be highest under the policy with the lowest fishing mortality rate, although in all cases there is no *guarantee* that rebuilding will occur. Factors that influence rebuilding include the natural and fishing mortality rate, individual growth, and, most importantly, recruitment.

Each policy alternative for rebuilding rockfish results in a different set of projected annual harvest levels, therefore income to industry participants over time varies. Under policy alternatives 3 and 4, harvest is foregone in the near future to achieve the target biomass sooner and to increase future harvest levels. To examine the economic trade-offs associated with these alternatives the present value of gross income over time was calculated. The present values indicate that, from the perspective of the industry members who harvest and sell POP and then reinvest that income, there is a higher value to policies with earlier harvests.

The stock of POP is expected to rebuild at a slow rate. All four policies alternatives are expected to rebuild the stock of POP. Based on an economic analysis that considers only the value of POP to harvesters and processors, policy alternatives that result in foregone catch in the near-term are less valuable.

Over time, policies 2-4 show similar mean rebuilding patterns over alternative hypotheses on the stock-recruitment steepness. Policy 1 shows an expected doubling of the current spawner biomass in about 30 years whereas policies 2, 3, and 4 indicate doubling in about 20, 15, and 13 years, respectively.

Under alternative policy 1 (status quo), the stock is expected to rebuild to the target biomass of 150,000 tons in about 26 years. The level of risk that the spawning stock in 20 years is less than 75,000 tons is 5%.

Alternative policy 2 results in the expectation that the stock would rebuild to the target biomass of 150,000 tons in about 18 years. The level of risk that the spawning stock in 20 years is less than 75,000 tons is about 1%.

Under alternative policy 3 the stock is expected to rebuild to the target biomass of 150,000 tons in about 14 years. The level of risk that the spawning stock in 20 years is less than 75,000 tons is less than 1%.

The impact of adopting alternative policy 4 is very similar to policy 3. The stock is expected to rebuild to the target biomass of 150,000 tons in about 14 years. The level of risk that the spawning stock in 20 years is less than 75,000 tons is less than 1%.

The fleet of offshore vessels that harvests POP in the GOA is relatively small. Although 17 vessels are categorized as having targeted POP in 1991, during either of the past two years, only 6 vessels received more than 3.5% of their overall income from the catch of all species in POP-target weeks. These vessels received between 6% and 17% of their earnings from all species caught while fishing POP. POP accounted for more than 80% of the poundage caught during most of these target weeks, although it was not uncommon for 30-40% of the revenue earned to come from other species. Given available information, it is difficult to assess how the overall amount and composition of catch will change for these vessels, if POP made available to the fishery is reduced.

When viewing the economic projections of this study it should be noted that, even if the biological predictions of the model accurately reflect the true probabilities of occurrences 30 years into the future, the economic values that have been attached to them are extremely speculative. According to the bio-economic simulation model developed for this analysis, adopting more restrictive harvest policies for the GOA POP fishery is expected to reduce the income generated by the fishery in nearly every year of the next thirty years. The difference between the present value of income under the status quo and the most restrictive policy amounts to roughly $40 million if future values are not discounted, and $22 million if they are discounted at a rate of 7% per year. This estimate reflects changes in gross earnings and is based on the assumption that prices remain constant over the 30-year period. Subtracting variable costs would likely reduce the difference between the alternatives by an estimated 30-40%, based on cost formulas developed for other offshore fisheries. The simulation does not address any changes in earnings except for those derived from POP directly. Without considerable additional information and model building, little can be reliably concluded about the net effect on income from other species harvested by POP vessels, or the remainder of the trawl fleet. The economic results projected by the simulation model also do not include any economic benefits that might result from ecosystem enhancement, or any non-market benefits from achieving relatively larger stock sizes.

If some of the POP fleet redirects effort toward flatfish, the PSC caps will be reached at a lower level of groundfish catch, due to the higher halibut bycatch rate in those fisheries. Additionally,

since many species of flatfish are of equal or lesser value, opportunities in those fisheries may not offset reductions in revenues generated from POP harvest. Perhaps most importantly, increased fishing for flatfish may reduce the amount of higher-valued species, such as Pacific cod, that can be taken by all trawl vessels, given the PSC caps.

Although it is not the only objective of accelerating the rebuilding schedule, the simulations suggest that the more restrictive harvest policies are not likely to provide an increase in catch and earnings over the next 30 years that will more than offset the economic sacrifices made in the short term. The only economic conclusion that can be drawn is that under the recruitment scenarios examined, reductions in the POP harvest rate will result in reductions of gross earnings from the POP fishery, which would not likely be made up for by increased gross earnings anytime during the next 30 years. Other important economic considerations were not quantified.

The model used in this analysis assumes that the Gulf-wide stock of POP is harvested uniformly throughout it's geographic range. This is probably not true. There may be areas within the GOA where harvests are significantly out of proportion to the distribution of biomass. That is, fishing mortality may be distributed unevenly with respect to the distribution of the population. The effect this may have on the stock is not known. In the past, the ABC recommendation has been divided among three subareas (the eastern, central and western GOA) in proportion to the biomass estimated from NMFS surveys.

This study represents an analysis based on the current stock assessment. In 1993, there will be another NMFS survey which will provide a new biomass estimate of the Pacific ocean perch population and an estimate of the population age structure. Additional information should improve our ability to analyze the condition of the stock and to make future projections. This indicates that, in developing a specific rebuilding strategy, regulatory flexibility may be required as new information and analyses become available.

September 10, 1993

PLAN TEAM COMMENTS ON POP REBUILDING EA/RIR

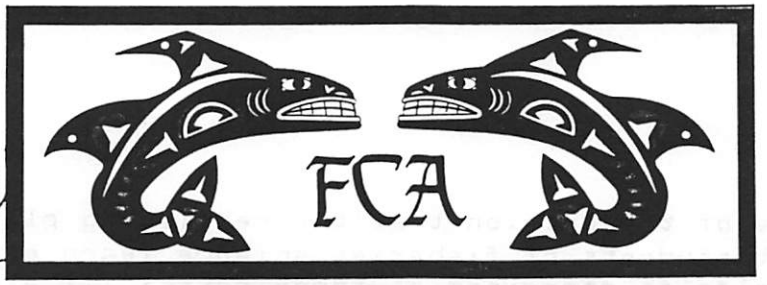
The Team agreed that Pacific ocean perch are below Bmsy, and by virtue of our ABC recommendation we endorse rebuilding of the stock to the Bmsy level. We acknowledge that all alternatives predict rebuilding in various time frames.

1) The Team does not support Alternative 1 as a viable alternative as we have accepted the new optimal fishing mortality rate and target biomass as appropriate for ABC determination.

2) Biologically, the Team could not identify a preferred alternative among Alternatives 2, 3, and 4 based on the rate of rebuilding and the biological risks.

However,

3) Based on the economic analysis, the Team agreed that Alternative 4 is likely to impose the greatest costs in terms of forgone revenue.



August 30, 1993

FAX CONFIRMATION
Sent____ Rec'd 8/30/93

Richard B. Lauber, Chairman
North Pacific Fishery Management Council
P.O. Box 103136
Anchorage, AK 99510-3136

Dear Mr. Chairman:

I have written this letter in response to your request for comments on the draft EA/RIR of Alternative Harvest Policies for Rebuilding Pacific Ocean Perch (POP) in the Gulf of Alaska ("rebuilding plan"). As you are certainly well aware, the Fishing Company of Alaska (FCA) has a long-time history in the Gulf of Alaska rockfish fisheries, and we are currently facing severe economic impacts should the Council and NMFS continue with its current POP harvest policy.

We have testified and written on numerous occasions in the past on the importance of this fishery to our company and the sincere interest we have that this resource be properly managed for the long term.

It was FCA that first sat down with the Council's Plan Teams during the first years of the domestic fishery providing input for rockfish species identification, stock assemblage groups, commercial fishing CPUE data, species composition and bycatch information.

It was FCA that first volunteered to take domestic observers on rockfish vessels providing valuable information to managers and scientists.

It was FCA that first came to the NPFMC in 1988 with an industry funded rockfish ITQ pilot proposal (with majority consensus from the rockfish fleet) to help the Council move more expeditiously through a moratorium and comprehensive rationalization of the fisheries.

It was FCA that spearheaded the Pilot Slope Rockfish Survey With Industry for better stock assessment of the rockfish species in the Gulf of Alaska to be accomplished this month with NOAA scientists and the F/V Unimak Enterprise (Tyson Seafoods).

It is from this perspective and our history, that we recommend that you do not approve the draft rebuilding plan until the following comments have been carefully considered:

The Fishing Company of Alaska, Inc.

200 WEST THOMAS, SUITE 440 • SEATTLE, WASHINGTON 98119
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First, we are of the opinion that the rebuilding plan is flawed. We know that students of fisheries science learn early on that a rebuilding plan is comprised of three parts: (1) a discussion of the need to restore a stock to some desired level and the basis for such determination; (2) a description of the strategy to be followed to achieve the rebuilding objectives; and (3) an integrated and scientifically sound method of measuring the plan's performance and its success in meeting the rebuilding objective. I note that business restructuring plans share these same fundamental components.

(1) PURPOSE AND NEED

What are the Council's goals: to accelerate the rebuilding of POP stocks? Is an accelerated rebuilding schedule necessarily better than a gradual rate? It is clear from the document and the graphs that the POP stocks are rebuilding without policy change.

The Council and SSC can be commended for their previous management of these stocks. Even though stocks were reduced substantially since "pre-fished" levels, spawner biomass and the stocks have increased moderately. In fact, Aleutian stocks **have been rebuilt**, with no change in policy.

The authors of the document address the erroneous perception that most people have: the foreign fishery harvested a large standing stock of older fish. The analysis explained that the foreign harvests were comprised of several strong year classes of relatively young individuals. Therefore, it does not make sense to increase spawning biomass to a "pre-fished" total biomass level. Rather, managers should target a lower spawner biomass level (118,000 mt) and manage to enhance the spawner-recruit relationship. In addition, recent (pre-1993) management of these stocks has allowed for increase in total biomass. This is probably what led to an SSC member's statement: "The fish will die of old age before they are fished out under current management." I don't believe any scientist would argue that favorable environmental conditions will contribute more to increasing the likelihood of a strong year class, than a change in policy.

The Council has stated that POP TAC recommendations are based on information that show POP stocks to be below pre-exploitation levels and due to concerns over the high level of uncertainty associated with stock methodology. We agree that there exists a lot of uncertainty over current stock assessments. However, the Council fails to accept that most scientific experts are of the opinion that the current stock estimates are low and already err on the side of conservatism. Many of these same experts are now wondering why the Council has overreacted to this available information by taking a most extreme, ultra-conservative approach.

Stacking one conservative measure upon another will eventually kill a fishery. Again, we question the motives of those managers who support these extreme measures in light of scientific evidence surrounding current assessments of POP stocks.

The rebuilding plan presents no discussion on how the Council determined that additional rebuilding efforts are necessary. The Secretary's own notice implementing the 1993 POP specifications state that "NMFS agrees that POP are below historic 'unfished' levels and that they may be in need of rebuilding." We contend that no one has made a scientifically defensible determination. We also question if NMFS is now embracing the standard that since POP stocks are below "unfished" levels that we must take drastic efforts to rebuild those stocks at the expense of directed fisheries. If this is indeed the case, every species commercially exploited off Alaska fall into a similar category and those fisheries should be closed also. Most would consider this a ludicrous suggestion. We believe that eliminating the directed POP fishery in the Gulf of Alaska is just as unconscionable.

(2) STRATEGIES TO ACHIEVE REBUILDING SCHEDULE GOAL

Again, FCA contends that the stocks are rebuilding and we question the concern for such stringent policy measures. The author also points to the 1993 Triennial Survey currently being conducted, which will provide new biomass estimates of the POP population and age structure. Because this additional information should improve our ability to analyze the condition of the stock, in developing a specific strategy, regulatory flexibility is required as new information and analyses become available.

The rebuilding plan describes no other management alternatives that would allow for rebuilding other than the four policy alternatives. Regulatory flexibility must be included due to new information forthcoming. Not only will we have additional stock information, but it will soon be made apparently clear the additional economic and biological impacts upon other fisheries from a displaced rockfish fleet will need to be addressed. Quotas in other fisheries will be caught faster and prohibited species bycatch caps in other fisheries will certainly be reached earlier, affecting the entire trawl industry in the Gulf of Alaska.

Are there no viable alternatives to a no-directed fishing policy? Can't exploitation rates be recommended annually by our Plan Teams and SSC to the Council if better information becomes available on population changes of the POP stocks? Can't the Council adjust TACs below ABCs if stronger rebuilding or a threat of overfishing becomes reality?

Is the Council overly pessimistic because of disinformation? The scientists report the stock as stable and increasing in abundance. Even if a form of policy #1 were adopted, in 30 years the stock will be twice the biomass of the current population.

The EA/RIR presents four policy alternatives. The economic analysis is limited, but concludes that the price of the Council's preferred strategy is upward of $90 million. We believe this is a conservative cost estimate. Impacts to other fisheries, market gluts and higher bycatch of PSC species resulting from a displaced fleet moving into other fisheries has not been considered.

The primary focus of the rebuilding plan is biological, and we are presented with four hypothetical rebuilding scenarios with corresponding risk assessments. All four scenarios show a very high probability that in 20 years the spawning stock will be above 75,000 mt. A directed fishing strategy (Alternative 1) would still provide for rebuilding while exhibiting a level of risk of only 5% in terms of meeting the 20-year spawning stock objective.

Maintaining a directed fishing strategy (Alt. 1) would, according to the EA/RIR, achieve the rebuilding objective in 26 years. Alternative policy 2 would achieve this objective in 18 years. A no-directed fishing alternative (Alt. 3 and 4) would provide gains of only 3 to 5 years. We contend that this time-savings is not worth the $90 million+ price tag and putting fishing companies out of business.

(3) SCIENTIFIC AND ECONOMIC MONITORING

The May 20, 1993 rebuilding plan has no discussion whatsoever on measuring the plan's performance. There is no discussion on how adoption of the Council's preferred rebuilding strategy will be monitored. What methods will be employed? At what intervals will measurements be taken? How often will the plan be reviewed and possibly modified to assure that the rebuilding objectives are met? We recommend that this plan not be approved until all three sections of the rebuilding plan are fully developed.

We bring this significant issue to your attention because the EA/RIR describes the enormous cost borne by the U.S. rockfish industry for implementing the Council's rebuilding strategy. How can these costs be justified? Why should the U.S. eliminate a valuable fishery and precious market positions when the EA/RIR itself shows that biological and economic benefits can be realized by adopting the pre-1993 harvest policy? How is NMFS intending to measure the plan's performance and determine whether the real and measurable costs to the U.S. are being compensated by the hypothetical benefits?

The Council's 1993 harvest strategy eliminates a directed fishery on POP and a valuable source of biological information. Adoption of this strategy puts NMFS further into the "black hole" of knowledge on the POP stock without any routine monitoring of stock condition. Reliance on surveys is already highly questionable given current survey methods.

Putting our company and an industry out of business seems counter to the goals the current administration is striving to achieve. We seek a balanced approach to POP management: one that protects the long-term health of the resource while providing economic and market stability which to those dependent on it, can only be accomplished by preserving the POP fishery. Wiping out our fishery cannot be justified by the scientific information at hand. Putting us out of business will only add to our country's economic problems. Please take our comments seriously and take responsible management actions.

Sincerely,

Karena Adler

Ms. Karena Adler, President & CEO
The Fishing Company of Alaska

cc: Ronald H. Brown, Secretary of Commerce
Nancy Foster, Acting Asst. Administrator for Fisheries
Washington Congressional Delegation
North Pacific Fishery Management Council Members

ALASKA MARINE CONSERVATION COUNCIL

Box 101145 Anchorage, Alaska 99510
(907) 277-5357 (kelp) 274-4145 (Fax)

August 28, 1993

Mr. Richard B. Lauber, Chairman
North Pacific Fishery Management Council
Box 103136
Anchorage, Alaska 99510

Dear Mr. Lauber,

The Alaska Marine Conservation Council is a newly formed community-based organization of fishermen and women, biologists, coastal residents, subsistence users and other Alaskans whose way of life and livelihoods depend on healthy marine ecosystems. We are dedicated to protecting and restoring living marine resources and their habitat.

We wish to thank the North Pacific Fishery Management Council for its efforts to begin, in ernest, the long overdue rebuilding of Pacific ocean perch stocks. By reaffirming its decision to keep the Total Allow Catch to 2560 metric tons (bycatch only), the Council demonstrated its concern for this resource and acted in behalf of conservation.

We urge Council members to stay the course and adopt a rebuilding strategy that ensures Pacific ocean perch is viably restored in as short a time as possible.

We remain concerned, however, that strategies for harvesting and rebuilding rockfish will not be successful until more is known about the life histories and reproductive biologies of these long lived species. Current stock assessment approaches contain high degrees of uncertainty and must be reevaluated. We can no longer afford to apply traditional finfish management strategies to rockfish species that live to be 100 years old.

Pacific ocean perch is only one of several species of rockfish whose depressed population is of concern. In particular, shortraker/rougheye and thornyhead rockfish deserve special management attention due to increasing bycatch levels and their susceptibility to overexploitation. In order to restore and protect these unique and long-lived creatures and their habitat, conservation must be our number one priority in any management and rebuilding plans.

Sincerely,

Nevette Bowen

Nevette Bowen
Coordinator

AGENDA D-2(a)
SEPTEMBER 1993

September 21, 1993

Discussion on Pacific Ocean Perch in Gulf of Alaska Fisheries

The National Marine Fisheries Service (NMFS) has identified several issues that relate to implementation of a plan to rebuild Pacific ocean perch (POP) in the Gulf of Alaska (GOA): (1) amounts of POP available for harvest under the current acceptable biological catch (ABC) are insufficient to meet needs of existing fisheries in the Central Regulatory Area (CG); (2) how this shortfall impacts the rebuilding alternatives; and (3) in what manner should any rebuilding alternative be implemented.

1. Existing shortfall. In 1993, POP is closed to directed fishing but the CG POP TAC (=ABC) was exceeded prior to the 4th quarter due to bycatch in rockfish and deep-water flatfish fisheries. As of 9-11-93, 60 percent of pelagic shelf rockfish, 34 percent of Northern rockfish, and 63 percent of deep-water flatfish TACs remain, along with 333 mt halibut mortality (GOA). Management can curtail POP retention in an area when a POP Total Allowable Catch (TAC) is reached; total mortality can be controlled only if the Gulf-wide overfishing level may be reached. Discarded POP catches in excess of the CG TAC (949 mt) and less than GOA-wide overfishing (3,378 mt) are lost to industry and do not contribute to future recruitment. As of 9-11-93, the CG and all-GOA catches of POP were 1,043 mt and 1,997 mt, 31 and 59 percent of the overfishing level, respectively. Because CG POP bycatch needs already exceed TAC, further lowering the GOA POP TAC without limiting POP mortality serves no purpose except to exacerbate deadloss in the CG.

2. Impacts on rebuilding plans. If POP overfishing remains GOA-wide and CG POP bycatch needs are not controlled, CG POP discard mortality would continue, localized depletions may occur, and the CG may not rebuild at the same rate as other areas. If as a result of all GOA fishing activities, overfishing were to occur, all fisheries in any area of the GOA that have bycatches of POP would be subject to curtailment. If overfishing is regionalized, rebuilding would occur at similar rates all over the GOA but moderate to severe curtailment of CG trawl activities may be expected. Under current management, POP mortality can be controlled somewhat by stringent directed fishing standards, by limiting groundfish TACs, or by curtailing fisheries to avoid overfishing. The relative priorities of rebuilding POP and supporting remaining fisheries have not been established, nor have allocative impacts been evaluated.

3. Format of an amendment. Amendment of the Fishery Management Plan (FMP) is not necessary for the Council to adopt a conservative policy and rebuild POP. The current ABC is equivalent to the harvest resulting from Alternative 2 of the rebuilding analysis, which is projected to rebuild POP to the target biomass, with low risk, within 18 years.

If an FMP amendment were developed, NMFS envisions FMP language would:

1. state the problem, goal, and objectives: POP stocks in the GOA are depressed compared to historic, pre-exploitation levels. Current estimates indicate the spawner biomass of POP is between 15 and 20 percent of that in 1960, the reference year just prior to commercial exploitation. The objective is to reduce POP fishing mortality and the goal is to increase depressed POP stocks to a sustainable level, B_{MSY}, within 25-30 years, to provide a long-term higher sustainable yield and value. (Inclusion of nonspecific language such as "within X years" should be avoided as endorsing departure from the preferred alternative);

2. indicate the relative priorities (i) of rebuilding POP in accordance with the preferred alternative and of supporting existing fisheries; and (ii) of rebuilding in GOA-wide as opposed to by regulatory area; and,

3. framework the assessment process by listing and defining parameters to be included, e.g., "stock assessments will use the best available scientific data, including the optimum fishing mortality rate as adjusted by the ratio of current biomass to target biomass. The optimum fishing mortality rate value would be derived empirically each assessment cycle as that rate.... The target biomass is B_{MSY}."

Regulatory language would framework annual specifications and other management measures. For example, it could:

1. specify an optional framework for POP TAC (i.e., "X" percent of the ABC under Alternative 2);

2. specify POP TAC distribution method among regulatory areas, which might be different than the regionalized ABC, to provide bycatch to support existing CG fisheries;

3. specify "bycatch only" management with the appropriate sunset; and,

4. specify additional management measures for reducing POP bycatch needs, such as:

   (a) restrictions on non-POP TACs, halibut bycatch mortality, fishing area limitations;

   (b) "bycatch only" status for fisheries with high POP bycatches or bycatch rates; and

   (c) afford the POP TAC/ABC the status of an overfishing level i.e., provide regulatory authority to curtail non-POP fisheries if POP TACs/ABCs are reached.

Management comparison of the alternatives.

- All four alternatives employ an ABC derived using methods outlined in Alternative 2, and define a GOA TAC based on different fishing mortality rates. Rebuilding would be reflected in stock assessments and resultant ABCs, however, we currently have only triennial survey data to corroborate stock increases.
- None of the alternatives limits future bycatch needs for POP.
- All of the alternatives could be implemented under "bycatch only" management.

Alternative 1 is no longer the "status quo" but results in a TAC that reflects the assessment methodology employed prior to April 1993, and could result in a TAC higher than the ABC. According to the EA, this alternative has the longest rebuilding schedule and the highest risk of having the spawning stock under 75,000 mt in 20 years.

Alternative 2 reflects the "best available scientific information," and is the current status quo assessment method as endorsed by the SSC, AP, and Council at the April 1993 Council meeting and by the Secretary for the 1993 POP ABC. In the EA, biomass and economic projections assume POP mortality (TAC) = ABC. The Council may consider establishing a "framework" relationship between TAC and ABC, especially when ABC = overfishing, although this would alter projections of rebuilding schedule and costs/benefits. This alternative is expected to result in fewer POP discards than Alternatives 3 or 4.

Alternative 3 uses a fishing mortality rate intermediate to Alternatives (2) and (4). Impacts of this alternative are similar to those under (4), except that TAC would be higher so that more POP bycatch could be retained.

Alternative 4 establishes TAC as the amount of POP needed as bycatch to support fisheries at 1992 bycatch rates. Although this alternative has a somewhat faster projected rebuilding schedule, it may not represent the best management alternative for the following reasons: (a) POP bycatch is highly variable and 1992 might not represent a typical "bycatch year;" (b) the 1992 bycatch rate may not have been accurately derived because industry data provided the rate used in projections; (b) the 1992 bycatch rate might be excessively constraining to future fishing and marketing choices, and (c) under current management regimes, this alternative may result in more POP deadloss than do other alternatives. To maintain the 1992 bycatch rate, TACs of POP increase over time only as POP biomass increases. Because TAC is constrained while bycatch needs are not, the most restrictive TAC will simply result in the largest amount of deadloss unless total POP mortality is controlled by restrictive groundfish harvests or additional management measures.

Table 1. Distribution of acceptable biological catches (ABCs), total allowable catches (TACs), estimated bycatch needs and year-to-date-catch for Pacific Ocean perch (POP) in Regulatory Areas of the Gulf of Alaska (GOA) for 1993. The ABC, 3,378 metric tons (mt), is distributed according to current distribution of POP biomass. The TAC, 2,560 mt, is distributed in accordance with (1) POP biomass distribution; (2) estimated bycatch needs; and (3) as limited by ABC. Expected POP bycatch was projected from (1) 1992 fisheries, or (2) 1992 fisheries with 50% expansion in retained flatfishes, slope and pelagic shelf rockfishes. Data are in round metric tons (mt). "Bycatch to date" is through 9/11/93.

	POP Biomass	1993 ABC	TAC based on biomass	1993 FINAL TAC	EXPECTED BYCATCH (1)/(2)	EXPECTED TAC SHORTFALL (1)/(2)	BYCATCH TO DATE	INDIVIDUAL TAC SHORTFALLS TO DATE
WESTERN	.223	753	571	341	43 64	0	543	202[1/]
CENTRAL	.281	949	719	949	1,203 1,629	254 680	1,043	94
EASTERN	.496	1,676	1,270	1,270	252 350	0	411	0
TOTAL:	1.000	3,378	2,560	2,560	1,498 2,043	254 680	1,997	296

1/Bycatch in the Atka mackerel fishery, which exceeds the "other species" TAC by 82%.

Overfishing is 3,378 mt, Gulf-wide

Appendix 1

NMFS/Fish Management
Juneau, Alaska

Prepared: 09/02/93
Based on 1992 BLEND data

APPROXIMATE CATCH OF POP
IN GOA TRAWL FISHERIES, 1992
Data in Round metric tons (mt)

AREA	PROC TYPE	TARGET	RET/ DISC	OPEN mt	BYCATCH mt	PROHIB mt
CG	M	C	D	0	1	0
CG	M	P	D	0	0	0
CG	P	B	D	0	0	2
CG	P	C	D	0	0	1
CG	P	C	R	0	1	0
CG	P	D	D	0	75	129
CG	P	D	R	0	30	0
CG	P	H	R	0	0	0
CG	P	K	D	59	19	688
CG	P	K	R	1605	25	0
CG	P	O	D	0	9	0
CG	P	O	R	0	1	0
CG	P	S	D	0	0	1
CG	P	W	D	2	0	0
CG	S	B	D	1	0	75
CG	S	C	D	4	9	0
CG	S	C	R	1	3	0
CG	S	D	D	0	7	70
CG	S	D	R	0	3	0
CG	S	H	D	0	0	7
CG	S	P	D	0	0	0
CG	S	P	R	0	0	0
EG	P	K	D	47	81	19
EG	P	K	R	1648	424	12
WG	M	B	R	0	1	0
WG	M	C	D	1	0	0
WG	M	C	R	0	0	0
WG	M	P	R	0	7	0
WG	P	B	D	0	0	0
WG	P	B	R	4	0	0
WG	P	C	D	1	0	0
WG	P	C	R	0	0	0
WG	P	K	D	17	28	0
WG	P	K	R	535	35	0
WG	P	O	D	203	116	0
WG	P	O	R	291	20	0

AREA	PROC TYPE	TARGET	RET/ DISC	OPEN mt	BYCATCH mt	PROHIB mt
WG	P	P	D	0	0	0
WG	P	W	D	0	0	0
WG	P	W	R	1	0	0
WG	S	B	D	0	17	0
WG	S	B	R	0	0	0
WG	S	C	D	9	0	0
WG	S	P	D	0	0	0
WG	S	P	R	0	0	0

Amounts are approximate because closures occurred mid-weeks. Each week was included in the category appropriate to the majority of days.

Processor types:

S = shoreside
M = mothership
P = catcher/processor

Targets:

B = bottom pollock
C = Pacific cod
D = deep water flatfish
H = shallow water flatfish
K = rockfish
O = other (includes Atka mackerel)
P = pelagic pollock
W = arrowtooth

Appendix 2

NMFS/Fish Management
Juneau, Alaska

Prepared: 09/02/93
Based on 1993 BLEND data

APPROXIMATE CATCH OF POP IN GOA TRAWL FISHERIES, 1993
Data in Round metric tons (mt)

AREA	PROC TYPE	TARGET	RET/ DISC	OPEN * this is in error mt	BYCATCH mt	PROHIB mt
CG	M	W	D	0	0	0
CG	P	C	D	3	1	0
CG	P	C	R	0	0	0
CG	P	D	D	66	34	0
CG	P	D	R	32	37	0
CG	P	H	D	0	5	0
CG	P	H	R	0	2	0
CG	P	K	D	51	593	0
CG	P	K	R	1	203	0
CG	P	W	D	1	18	0
CG	P	W	R	1	20	0
CG	S	B	D	0	6	0
CG	S	B	R	0	9	0
CG	S	C	D	4	1	0
CG	S	C	R	0	0	0
CG	S	D	D	2	7	0
CG	S	D	R	0	6	0
CG	S	H	D	0	15	0
CG	S	H	R	0	1	0
CG	S	K	D	0	0	0
CG	S	P	D	0	0	0
EG	P	K	D	0	414	0
EG	P	K	R	0	27	0
EG	P	O	D	0	32	0
EG	P	O	R	0	24	0
EG	S	C	D	0	0	0
WG	M	P	D	0	0	0
WG	P	B	D	0	0	0
WG	P	D	D	12	1	0
WG	P	D	R	27	0	0
WG	P	H	D	0	0	0
WG	P	K	D	0	196	13
WG	P	K	R	0	36	0
WG	P	O	D	178	0	0
WG	P	O	R	0	0	0
WG	S	C	D	2	0	0
WG	S	P	D	0	0	0

Amounts are approximate because closures occurred mid-weeks. Each week was included in the category appropriate to the majority of days.

Processor types:
- S = shoreside
- M = mothership
- P = catcher/processor

Targets:
- B = bottom pollock
- C = Pacific cod
- D = deep water flatfish
- H = shallow water flatfish
- K = rockfish
- O = other (includes Atka mackerel)
- P = pelagic pollock
- W = arrowtooth