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June 8, 1995

Mr. Richard B. Lauber, Chairman
North Pacific Fishery Management Council
P.O. Box 103136
Anchorage, Alaska 99501

Re: Vessel Bycatch Account Program

Dear Rick,

Attached is an outline of a proposal a number of industry people have been developing as an alternative to the current method of bycatch management in the North Pacific. We submit it to the Council for discussion purposes and also request the Council task its and NMFS's staff to begin an analysis of this proposal.

We believe that if the Council is intent on recommending a license limitation program for our groundfish and crab fisheries at the June Council meeting, then in order to address one of the major issues originally posed by the Committee of the Whole, that of better management of bycatch, the Council should also recommend analysis of our proposal. Simply put, license limitation does not change the management of bycatch in the North Pacific. Thus it does not address current problem of premature closures of various fisheries because of a few individual vessels' extremely high bycatch rates.

The Vessel Bycatch Account Program (VBAP) proposal grew out of our frustration due to the closures to various Bering Sea fisheries due to attainment of PSC well before attainment of the TAC. The most recent example of this is this years' Zone 1 closure to P. cod trawl fishing due to *bairdi* PSC as well as a total BSAI closure to P. cod trawling with over 30,000 mt of fish left on the table!

Looking at the vessel by vessel PSC data provided by NMFS, we find again and again that a few bad actors' fishing behavior accounting for very high amounts of PSC. Their actions, given the current regulatory framework of time/area closures triggered by a PSC cap, cause the whole fleet, good and bad actors alike, to suffer. We are tired of being impacted by others' actions.

The Current Vessel Incentive Program, after a four year period, just isn't providing the incentive to get individual operators to stay under the established bycatch rate standards. We have testified previously to the Council as to why this is so.

Our proposal focuses on 'real-time' incentives, similar to the original "penalty box" proposal introduced years ago by Captain Barry Fisher. It makes individuals accountable for their own actions, and keeps the effects of their actions at the individual level, thereby allowing the 'clean' actors to receive a benefit for their attempts at fishing with low bycatch rates, allows for a system of achieving OY, and lastly, optimizes the use of PSC.

Please review the attached proposal. It has gained widespread endorsement among the fishing community.

Sincerely,



Brent Paine
Executive Director



Steve Hughes
Technical Advisor

**Options and Issues of a
VESSEL BYCATCH ACCOUNTING PROGRAM**
Prepared by United Catcher Boats Association

I. Principles of a VBA Program

1. **Effective incentive.** Establish a bycatch management system that effectively provides individual vessels the incentive to minimize their bycatch rates. Establish a system that serves as a deterrent to high bycatch rates.
2. **Individual Accountability.** Provide for a system that holds vessels individually accountable for their use of bycatch.
3. **Achievement of Optimum Yield.** Establish a bycatch system that allows for the fleet to harvest up to OY annually.
4. **Optimal use of bycatch.** Establish a bycatch management system that maximizes the achievement of catching the TAC, with the minimal amount of PSC.
5. **Transferability.** To fully achieve OY, VBAs need to be tradable.
6. **Pooling.** Allow for small groups of vessels to work together to maximize their use of their allocated VBAs.

II. VBA Program Options

1. Allocation of VBAs
 - 1.1 Annual allocation of VBAs issued to individual groundfish operations prior to the start of each fishing year based on a formula that would be specified in the FMPs or regulations.
 - 1.1.1 Allocation by
 - a. specific species (directed fishery) and/or a group of species
 - b. one allocation for all BSAI bottom trawl fisheries
 1. Exempt MW pollock
 - 1.1.2 Factors included in the formula
 - a. Three year, rolling average of an individual's catch
 - b. Vessel size categories
 - 1.2 One time allocation of VBAs, or ongoing right, similar to a quota share. Each operation would have an annual 'Vessel Bycatch Account' as determined by a percentage of the allowed PSC.
 - 1.3 VBAs could be sold by the government, either at a set price or at auction
 - 1.3.1 Require individuals to purchase 25% of their allocated VBAs
- (Would require a Magnuson Act amendment)

2. Transferability of VBAs
 - 2.1 VBAs could be fully transferable
 - 2.1.1 restricted or unrestricted to a fishery
 - 2.2 VBAs not allowed to be transferred, what you get is what you use
 - 2.3 VBAs could be "pooled" by a group of vessels
3. Retention of Bycatch (PSCs under a VBA program)
 - 3.1 Retention not allowed
 - 3.2 Retention allowed, with forfeiture at time of landing
 - to address issues of sampling error (accuracy) and observer 'cop' role
 - 3.3 Careful return to sea within a set time period, then retained until counted
4. Monitoring of a VBA Program
 - 4.1 Observer data from current year could be used
 - 4.2 Sampling design of existing Observer Program may need change
 - require whole haul sampling, do away with basket sampling?
 - require daily reporting rather than weekly
 - 4.3 Requiring retention of VBA species may be necessary to have adequate monitoring
5. Species to be considered for a VBA Program
 - 5.1 Halibut, Red King crab, tanner crab (*bairdi*) and herring
6. Total VBAs could be:
 - 6.1 limited to the current PSC limits
 - 6.2 Set allowable PSC limit to a set percentage of the biomass estimate (floating cap)
 - 6.3 option to allow Council to 'ratchet down' PSC limit
7. Current Time/Area/Cap Closures could be:
 - 7.1 retained
 - 7.2 eliminated
8. Current PSC allowances to separate fisheries could be:
 - 8.1 retained
 - 8.2 eliminated
9. Coverage. A VBA program could apply to:
 - 9.1 only groundfish operations with 100% observer coverage
 - 9.2 all groundfish operations during the time there is at-sea observer coverage
 - apply an average rate of observed vessels to vessels with less than 100% coverage
 - 9.3 Vessels that are moratorium/license limitation qualified

- 10. Enforcement
 - 10.1 Need for limiting the issues that are challengeable and
 - 10.2 Placing the burden of proof on the fishing operation
 - Pursue a system of 'Implied Consent'
- 11. Appeals
 - 11.1 Allow for an in-port accounting immediately after a vessel uses its entire VBA
 - 11.2 Establish an industry appeals committee to review all contested bycatch accountings within a specified period of time
- 12. Administration
 - 12.1 Accounting of bycatch by use of the observer program data

III. Key Issues to be Resolved for VBA Programs

Technical/Legal Issues

- 1. A key issue with any program that holds vessels individually accountable for their estimated bycatch is our ability to use observer data for such a program for all vessels without incurring unacceptably high monitoring, enforcement, and legal costs. Can the observer program provide adequate estimates of absolute bycatch or bycatch mortality by operation for a fishing year as a whole for vessels with 100% observer coverage? Such estimates would be extrapolations from sampled hauls. Which of the following may help?
 - A. Use the lower bound of the confidence interval rather than the point estimate of bycatch as the estimate of each vessel's bycatch.
 - B. Use estimates for the year as a whole rather than for a week or month.
 - C. Have the regulations say what will happen on the basis of estimated bycatch as opposed to actual bycatch and have the method of estimation specified clearly.
 - D. Have a backup method for estimating bycatch for a vessel when some of the observer data/methods are not adequate.
 - E. Have an industry advisory body to assist with appeals.
 - F. Use the concept of implied consent as part of the permit process to have people accept being held accountable based on a specified estimation procedure.

- G. Use previous year's data for a vessel to estimate its bycatch rate and let the vessel use current year data to demonstrate it is doing better.
 - H. Use some other method to establish assumed bycatch rate and let the vessel use current year data to demonstrate it is doing better.
 - I. Each vessels with less than 100% coverage could have the option of having 100% observer coverage, although perhaps at its own expense.
 - J. Provide observers with better tools (notebook Pcs, data and communication softwear, calibrated bins, electronic scales).
2. If the procedures for estimating bycatch are specified clearly, is there a limited time during which the procedures can be challenged, after which the only legal challenge is whether the procedures were followed?
 3. Can a vessel with less than 100% observer coverage be held accountable for its bycatch or bycatch mortality based on the best available estimate of its bycatch? The considerations listed for item 1 also apply to this question. Does it matter if each vessel has the option of having 100% observer coverage, although perhaps at its own expense?
 4. Are there specific legal problems for any of the VBA options listed above?
 5. Given the current "Research Plan" regulations governing the observer program, how will additional costs, if necessary, be covered?

Policy/Equity Issues

1. Should vessels be exempted from the VBA program when they do not have observer coverage?
2. Will the size of the PSC limits be addressed?
3. What will be the basis for allocating VBAs?

Implementation Issues

1. What additional monitoring/administration systems and resources are required by an VBA program?
2. What changes in the observer program are required by an VBA program?

3. How long will it take to implement an VBA program?
4. What changes to the Magnuson Act would be requires to allow NMFS to collect funds from the sale of annual VBAs to then be used to fund the VBA program? Can NMFS establish a dedicated fund?

APPENDIX B

THE NATURE AND SOURCE OF THE BYCATCH PROBLEM: AN ANALYTICAL FRAMEWORK

This appendix presents a conceptual framework that can be used to understand the nature and source of the bycatch problem and to evaluate alternative management measures to control bycatch.

The Nature and Sources of the Bycatch Problem

The nature and source of the bycatch problem are explained by the answers to the following five questions;

1. What is bycatch?
2. Why does bycatch occur?
3. When is bycatch a problem?
4. What is the appropriate level of bycatch?
5. Why are there currently excessive levels of bycatch?

What is bycatch?

Bycatch, or more specifically bycatch mortality, is a consumptive use of living marine resources which includes most of the components of total fishing mortality. The components of total fishing mortality include: 1) the retained catch of the targeted species; 2) the retained catch of non-targeted species; 3) the discarded catch that does not survive; 4) mortality resulting from lost fishing gear (i.e., ghost fishing); and 5) mortality resulting from other direct interactions between fish and fishermen, fishing vessels, or fishing gear. Often, it is difficult to obtain good estimates for the amount of retained catch and it is even more difficult to generate good estimates for the other components of fishing mortality. In addition, it is often difficult to differentiate between targeted and non-targeted species.

Bycatch mortality clearly includes the discarded catch that does not survive and excludes the retained catch of the targeted species. Although there is no general agreement concerning whether bycatch mortality should include the other three components of fishing mortality listed above, they are included as bycatch in this report. Therefore, bycatch mortality is defined as the total fishing mortality excluding that accounted for directly by the retained catch of the targeted species. The components of fishing mortality included in this definition of bycatch are byproducts of efforts to catch specific fish that will be retained. That is, the objective of fishermen is to catch and retain specific groups of fish defined by species, size, quality, sex, or usability, but in doing so they also inflict fishing mortality on other groups of fish.

With a narrower definition of bycatch, bycatch could be reduced without decreasing the fishing mortality not accounted for by the retained catch of the targeted species. That is, one of the byproduct components of fishing mortality might simply be replaced by another. The distinction is made between bycatch and bycatch mortality because not all of the former results in fishing mortality. This distinction is important in that it identifies reductions in the handling or discard mortality rates as a potential method of reducing discards as a source of fishing mortality. This distinction is made for the halibut bycatch limits that are used in the BSAI area and GOA groundfish fisheries. The limits, which are in terms of estimated bycatch mortality, have resulted in effective efforts to decrease both incidental catch rates and discard mortality rates. From here on, bycatch mortality will be referred to simply as bycatch.

Why does bycatch occur?

Bycatch occurs because fishing methods are not perfectly selective and because fishermen often have a sufficient incentive to catch more fish than will be retained. Although some methods of fishing are more selective than others, there are few examples of methods that are perfectly selective for species, size, quality, or sex. An

incentive exists to catch more fish than will be retained if the fisherman's cost of the additional catch is less than the expected benefit and the latter depends on the probability that the catch will be retained.

When is bycatch a problem?

When fish are taken as bycatch in a specific fishing operation and fishery, other uses of those fish are precluded. The alternative uses of fish include: 1) retained target catch by that fishing operation; 2) catch and bycatch in the same commercial fishery but by another fishing operation; 3) catch and bycatch in another commercial fishery; 4) catch and bycatch in subsistence and recreational fisheries; and 5) contributions to the stock and other components of the ecosystem.

The value to the Nation of a specific use of fish is determined by the net benefit of that use and the distribution of the net benefit. The net benefit of a use is the difference between the value of the outputs from that use and the value of all the inputs associated with that use. The inputs used in a commercial fishery include fish taken as target catch and bycatch; other living marine resources; the fishing vessels, gear, and bait used in harvesting; the plants or vessels, equipment, and materials used for processing; the fuel and labor used throughout the production process; and all the inputs used to manage the commercial fishery. The cost of each input should be measured in terms of its opportunity cost which is its value in its highest valued alternative use.

Bycatch is a problem if it precludes higher valued uses of fish and if the cost of reducing bycatch is significant. If the former condition is not met, there is not a better use of the fish taken as bycatch; therefore, the bycatch is not excessive and there is not a problem. If the latter condition is not met and if higher-valued uses exist, the solution to the problem is trivial, all bycatch would be eliminated at an insignificant cost.

What is the appropriate level of bycatch?

Basically, it makes sense to reduce bycatch in a cost-effective manner to the level at which further reductions would increase costs more than benefits. Both costs and benefits should be defined broadly from the Nation's perspective to include those that accrue to direct and indirect participants in the fishery as well as to other members of society. Those who harvest or process fish, those who provide support services to the harvesting and processing sectors of the fishing industry, and consumers of the fishery products are examples of direct and indirect participants in the fishery and of other members of society, respectively. "Cost-effective" refers to the lowest cost method of achieving a given reduction in the level of bycatch.

The marginal benefit and marginal cost curves in Figure 1 present graphically the concept of the optimum level of bycatch. The marginal benefit and cost curves, respectively, depict the benefit and cost of reducing bycatch by one unit for a given level of bycatch. For example, when the level of bycatch is 5,000 units, the marginal cost is about \$15 and the marginal benefit is about \$4. One unit would be one fish if bycatch is measured in the number of fish taken as bycatch or one unit would be 1 metric ton if bycatch is measured in metric tons. For the groundfish fisheries, salmon and crab bycatch is measured in numbers of salmon and crab, respectively, but halibut, herring, and groundfish bycatch is measured by weight, usually in metric tons or kilograms.

The following two definitions can be used to ensure that each change in benefits and costs is accounted for in either the marginal benefit or marginal cost curve but not in both. First, marginal benefit equals the sum of the increases in benefits and the decreases in costs of a reduction in bycatch. Second, marginal cost equals the sum of the increases in costs and decreases in benefits of a reduction in bycatch. Other definitions can be used to assure that all benefits and costs are accounted for once, but only once, without changing the conclusions presented below.

Given these two definitions, marginal benefit includes the decrease in the total opportunity cost of using fish as bycatch, the decrease in the cost of sorting the catch, and any other decrease in fishing costs. Marginal cost includes the increase in fishing costs and the decrease in benefits from any reduction in retained catch.

The marginal benefit is expected to increase, but not necessarily steadily, as bycatch increases. At very low levels of bycatch, most of the fishing mortality of the species taken as bycatch is accounted for by other uses and the value of some of the other uses probably are quite low; therefore, the opportunity cost of bycatch and the marginal benefit of reducing bycatch are low. However, at very high levels of bycatch, much of the fishing mortality is accounted for by bycatch and the lower valued uses would have been eliminated; therefore, the opportunity cost of bycatch and the marginal benefit of reducing bycatch are high.

The opposite trend is expected for marginal cost; that is, marginal cost is expected to decrease, but again not necessarily steadily, as bycatch increases. When there are high levels of bycatch and little has been done to control bycatch, there are probably some simple and low-cost actions that can be taken to reduce bycatch. However, eventually, increasingly difficult and costly methods would be necessary and often very costly methods would be required to eliminate the last few units of bycatch.

If the marginal benefit and cost curves include all the benefits and costs to the Nation, the optimum level of bycatch, in terms of total net benefits, is the level at which marginal cost and marginal benefit are equal. In the hypothetical example depicted in Figure 1, marginal cost and marginal benefit both equal \$10 when bycatch equals 10,000 units. At lower levels of bycatch, the marginal cost of reducing bycatch is greater than \$10 and the marginal benefit is less than \$10; therefore, reducing bycatch below 10,000 units would decrease net benefit. However, at higher levels of bycatch, the marginal cost is less than \$10 and the marginal benefit is greater than \$10; therefore, net benefit would be increased by decreasing bycatch.

The implications of not using cost-effective methods of controlling bycatch are depicted in Figure 2. Curves MC1 and MC2 in Figure 2, respectively, are the marginal cost curves when cost-effective methods are and are not used. In this example, the optimum level of bycatch is 10,000 units when the cost-effective methods are used, but it is 15,000 units when they are not used.

Why are there currently excessive levels of bycatch?

A common response to this question is that greed or lack of concern by the fishermen results in excessive bycatch. Perhaps a more productive response is that excessive bycatch is but one symptom of flawed fisheries management which substantially reduces the net benefits generated by the commercial fisheries.

More specifically, excessive bycatch is the result of the following set of circumstances: 1) the level of bycatch and the methods used to reduce bycatch are determined by individual fishermen in response to a variety of incentives and constraints that reflect the economic, social, regulatory, biological, and physical environments in which they operate; 2) an individual fisherman will tend to control bycatch to the point at which further changes would increase his cost more than his benefit; 3) a fisherman will define cost-effective methods of reducing bycatch in terms of the costs he pays; 4) the fisherman's benefit from reducing his bycatch is less than society's; and 5) in an open-access fishery for which there is a quota, the fisherman's cost of reducing his bycatch is greater than society's. These circumstances result in an individual fisherman making inadequate and non-cost-effective efforts to control bycatch. Basically, due to the existence of external benefits and costs, individual fishermen receive the wrong signals or incentives and make the wrong decisions from society's perspective as well as from the perspective of the fishermen as a group. There are external benefits (costs) when there are differences between the benefits (costs) to the fisherman and to society as a whole associated with an action taken by a fisherman.

This set of circumstances and the results are depicted by curves MBF, MBS, MCF and MCS in Figure 3, which are, respectively, the marginal benefit curves for a fisherman and for society at large including the fisherman and the corresponding marginal cost curves. In this case, the marginal cost and benefit are for a one unit reduction in bycatch by a specific fisherman or fishing operation.

The MBS curve includes the reduction in the opportunity cost of using fish as bycatch and the decrease in sorting costs for the fisherman. However, because the fisherman does not pay the opportunity cost of the bycatch, the MBF curve includes principally the reduction in sorting cost. That is, because the opportunity cost of bycatch is an external cost, the MBS curve is above the MBF curve.

In an open-access fishery with a catch quota, the MCF curve is above the MCS curve due to the external cost caused by the race for fish. This externality exists because, although the cost to the fisherman includes a reduction in his catch if his attempts to reduce bycatch decrease his rate of harvest relative to that of the rest of the fleet, the reduction in the fisherman's catch is not a cost to society. For the fleet as a whole, there is a redistribution of catch among fishermen, not a reduction in catch. This externality also results in a fisherman selecting methods to control bycatch that are not cost-effective from society's perspective. The externality does this by creating a bias in favor of methods that do not decrease a fisherman's catch. As a result of non-cost-effective methods being used by fishermen to reduce bycatch, the MCS curve is higher than it would otherwise be.

From the fisherman's perspective, it makes sense to control bycatch to the point at which the MBF and MCF curves intersect. For the hypothetical example depicted in Figure 3, the MBF and MCF curves intersect when bycatch for this one fishing operation is about 285 units. However, the MBS and MCS curves intersect when bycatch is 150 units. Therefore, in this example, the optimum level to the fisherman exceeds the optimum level to society by 135 units and it is the optimum level to the fisherman that determines what bycatch will be. In addition, the fisherman's use of non-cost-effective methods to decrease bycatch results in the MCS curve being unnecessarily high. Therefore, had cost-effective methods been used, the optimum level of bycatch for this fisherman from society's perspective would have been less than 150 units.

Conclusions

The conceptual framework presented above addressed the source and nature of the bycatch problem. This framework can be used to evaluate alternative bycatch management measures even when accurate estimates and projections of all costs and benefits are not feasible. Such an evaluation considers the expected effects of a management measure on the external benefits and costs that result in fishermen making the wrong decisions concerning bycatch from society's perspective.

Based on this conceptual framework, the following conclusions were reached: 1) for society, the optimum level of bycatch is not zero unless the benefit of eliminating the last unit of bycatch equals or exceeds the cost; 2) individual fishermen make the wrong decisions concerning bycatch because they do not pay individually the opportunity cost of using fish as bycatch and because the race for fish in an open-access fishery distorts their choice of methods to reduce bycatch; 3) the contribution of the commercial fisheries to the well-being of the Nation is decreased further by focussing on a narrow set of alternative uses and ignoring the importance of the distribution of fishing mortality among other uses; 4) physical measures of bycatch are of limited use in comparing the magnitude of the bycatch problem among fisheries because neither the benefit nor the cost of reducing bycatch is the same for all species or even for all fish of the same species; 5) bycatch is a multi-species problem because actions to decrease the bycatch of one species can increase or decrease the bycatch of other species and because the bycatch of one species can affect the status of other species through predator, prey, or other biological interactions; and 6) it is highly unlikely that the use of management measures that limit the

choices of fishermen rather than eliminate the externalities will result in cost-effective reductions in bycatch to the optimum levels.

Management measures that eliminate or decrease the externalities that are the source of the bycatch problem have several potential advantages. Often these measures have lower information requirements for fishery management decision-makers and, in fact, provide information that is required by fishery management decision-makers. These measures also provide increased incentives for fishermen to use their knowledge and ingenuity to decrease bycatch effectively and efficiently. These measures tend to encourage technological improvements. Finally, these measures can decrease the need for ongoing regulatory changes when fishery conditions and optimum levels of bycatch change. Unfortunately, enforcement and transaction costs may be substantially greater for a management measure that effectively eliminates the external benefit of reducing bycatch than for a measure that limits the bycatch choices of fishermen.

A careful evaluation of the tradeoffs between these two types of measures is required to identify the appropriate mix of bycatch management measures. In making such an evaluation, it should be recognized that the bycatch problem and many other management problems have a common source and, therefore, the benefit of reducing the bycatch problem could include the benefit of reducing several other management problem. The common sources of these problems is that individual fishermen do not pay the opportunity cost of the fish and other living marine resources they use. In evaluating alternative bycatch management measures, it is also important to recognize that, in the fishery management decision-making process, the effects on the distribution of net benefits can be at least as important as the effects on the magnitude of net benefits. However, failure to take advantage of the conclusions drawn from this conceptual model can result in unnecessarily high costs to some groups to provide a given increase in benefits to another group.

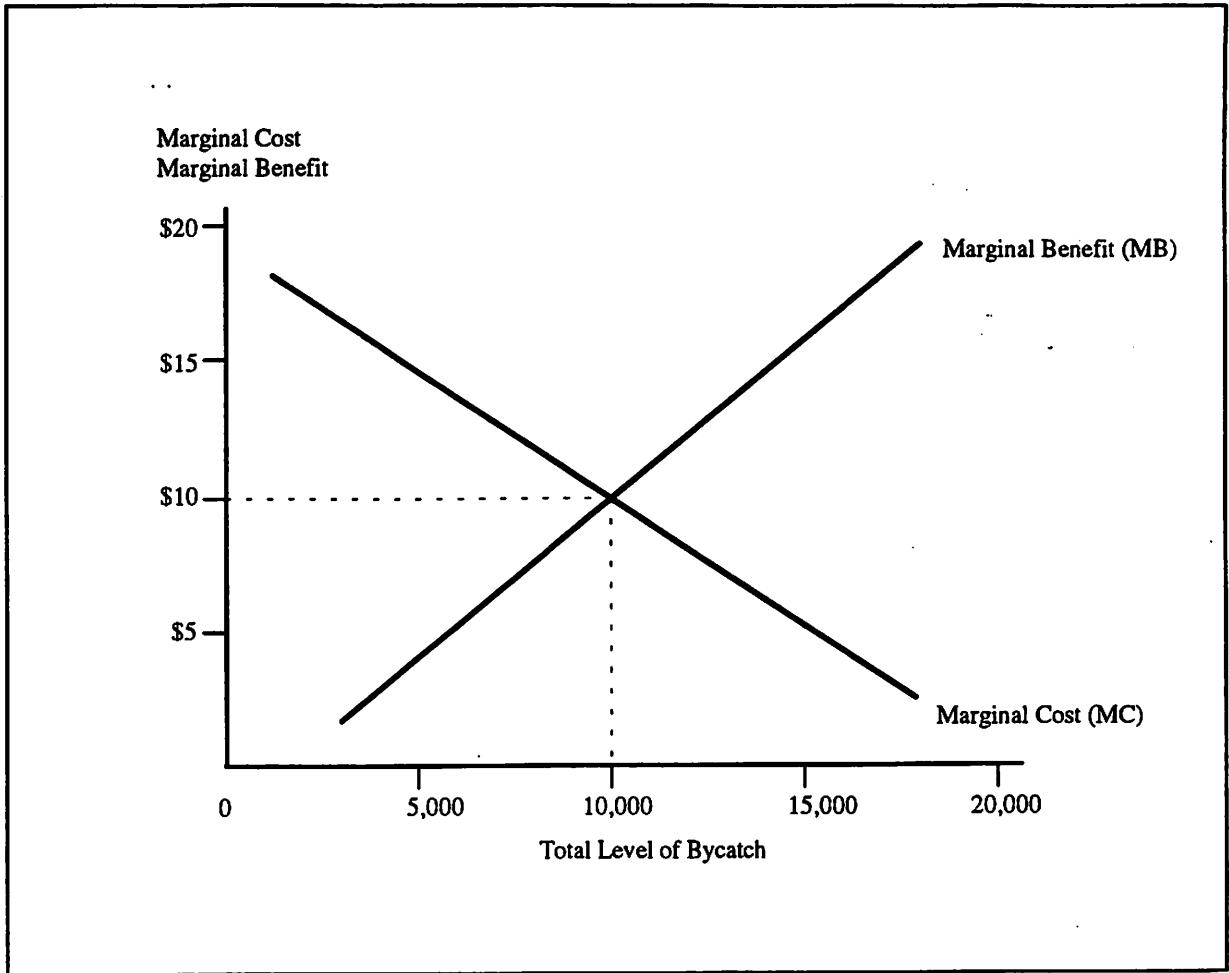


Figure 1. The marginal benefit and marginal cost of reducing bycatch and the optimum level of bycatch.

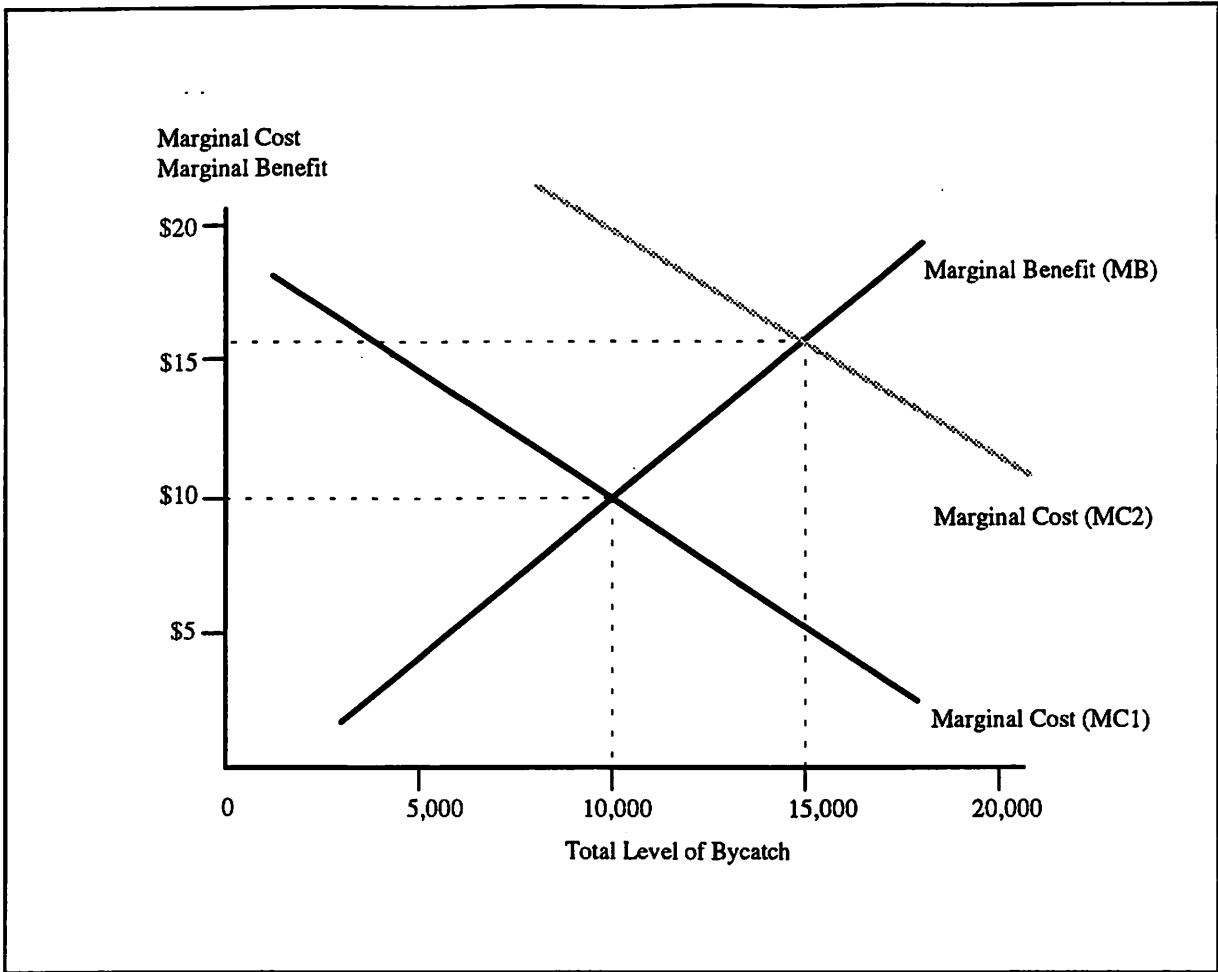


Figure 2. The marginal benefit, marginal cost of reducing bycatch with cost-effective methods (MC1), marginal cost of reducing bycatch without cost-effective methods (MC2), and the optimum levels of bycatch with and without cost-effective methods of reducing bycatch.

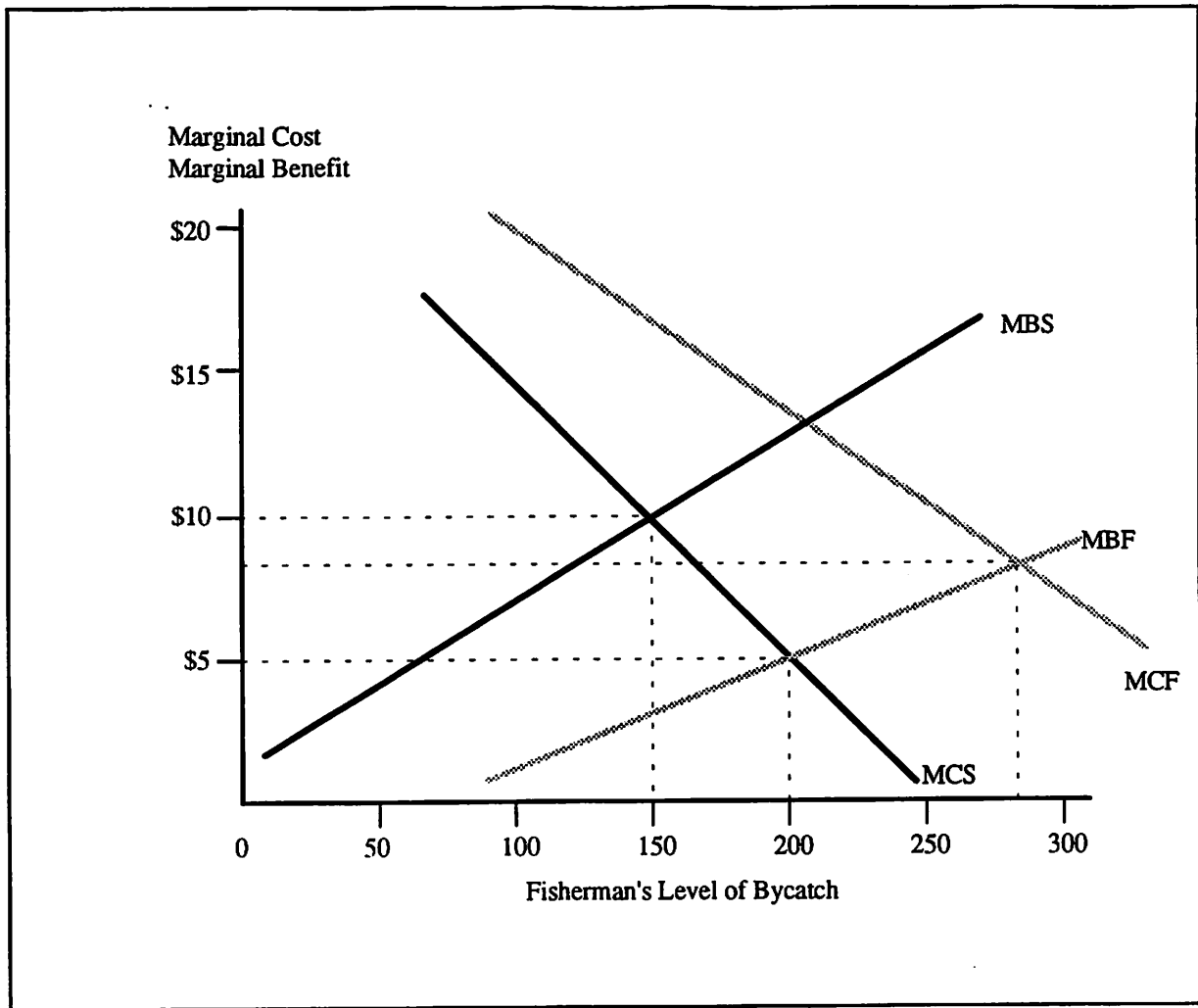


Figure 3. The marginal benefit to the fisherman (MBF), marginal benefit to society including the fisherman (MBS), marginal cost to the fisherman (MCF), marginal cost to society (MCS) of reducing bycatch, and the optimum levels of bycatch, respectively, for the fisherman and for society.

C-4 Individual Bycatch Quotas/Comprehensive Rationalization

The SSC notes that there is a symmetry in impacts that the analysis should fully recognize. The directed fisheries for bycatch species also can be viewed as imposing costs on the groundfish fisheries, to the extent that bycatch caps prevent attainment of OY for groundfish stocks or cause the groundfish fisheries to fish on less productive grounds. The SSC noted that Appendix B (this material is also presented in Processed Report 95-07, pp. 5-8, Figure 1-3.) explaining the analytical framework for the bycatch problem, while correct, is written in a non-standard way and could be confusing. The SSC gave suggestions for modifications to the analysts and recommends it be rewritten before being circulated widely for review. The SSC commends the analysts for drawing on experience with other commodities where quota-like systems have been used, as in the NMFS Processed Report 95-03, and encourages them to continue doing so in the development of the analysis.

The following observations on the analytical outline were made:

- The SSC recommended that staff working on this proposal communicate regularly with staff working on the IR/IU proposal because of the common elements of both analyses.
- A clear rationale for excluding salmon from the definition of VBA species should be provided.
- The SSC noted that transferability of individual bycatch quotas is likely to be an important factor in determining the net social benefits of an IBQ system, because it will not be possible for management authorities to determine a priori what the efficient levels of bycatch for individual vessels are. The analysis should also consider the ways in which the alternatives identified in Item 4 of the analysis differ with respect to their monitoring and enforcement requirements.
- In the spirit of full utilization, Item 5 (Retention of VBA species) should also consider the alternative of retention and use of VBA species. Item 10 should also consider the option of allowing vessels in the fleet to "opt in" to the VBAP if they are not originally part of the program; that is, what are the individual-vessel benefits of doing so traded off against higher observer/management/enforcement costs.
- Item 12 needs to consider the implications of deviations greater than 10% from a vessel's VBA. The analysis should consider potential biological impacts in addition to the management requirements.
- Item 13.2 appears to be redundant with Item 2.3.
- The restrictions on VBA ownership in Item 16.1 need to be specified.

Processed Report 95-07 contains a comparison of the CDQ and open access pollock fisheries in the Eastern Bering Sea and should be useful for the IBQ analysis. The SSC recommends that the analysts take the analysis one step further and develop standard error estimates for the point estimates of bycatch rates. The assertions of "significant differences" in bycatch rates of herring and Tanner crab between the two fisheries (e.g., pp. 16, 17, 18, 20) imply statistical significance. The SSC notes that the term "significant" as used in the text was not meant to imply that the differences observed were significant in the statistical sense.

Lastly, it is noted in the Analytical Outline that in the absence of adequate monitoring and enforcement, there would not be accountability of the vessel level and the three objectives of a VBAP would not be met. It was also indicated that NMFS has initiated efforts to determine how these two issues might be addressed. **Given the complexity of the program outline and the outstanding monitoring and enforcement issues, the SSC recommends that serious thought be given to the design and implementation of a small pilot program.** Such an approach would supply information that would assist in the design of a full scale program.

(Excerpted from AP Minutes, December 8, 1995)

C-4 Individual Bycatch Quotas (IBQs)/Comprehensive Rationalization

The AP recommends that the Council endorse the analytical outline for a VBA plan as presented by Joe Terry with the exclusion of the following elements:

1. 3.4, 4.1.3, and 4.2.3 which deal with converting VBAs to IFQs;
2. 17. which deals with allowing target catches above the 2 million mt BSAI cap; and
3. 19. which relates to the pollock IFQ program.

Further, the AP encourages timely development of work on sampling problems, legal problems, enforcement issues related to implementation on a parallel track, with final action delayed until monitoring and enforcement issues are resolved. (There was a motion to suspend continued analysis of the IBQ program until such time that an adequate monitoring and enforcement plan could be developed that would be accepted by NOAA GC for an individual vessel accountability program, which failed 7/7.)

The AP notes the clarification under section 3, and recommends adding a section 3.5 on initial allocation with sub-options of allocation to:

- 3.5.1 vessel,
- 3.5.2 natural person (e.g., skippers)
- 3.5.3 legal person (e.g., corporation)
- 3.5.4 to U.S. citizens as defined by 1916 shipping act (section 2)

Other changes:

- 1.1 VBA Species: *include salmon*
- 3.1.1 (a & b) add: *"analyze with and without option of pelagic trawl"*
- 3.1.2 Factors included in the formula (add):
 - 3.1.2.d. *discount vessel catch in those weeks which exceeded the VIP rate*
- 3.3.1 Delete reference to purchase from IFQ owners so that it reads as follows:
 - 3.3.1 *Require individuals to purchase 25% of their allocated VBAs (this would require a Magnuson Act amendment or the use of a third party foundation.*
- 3.3. Add *"to a third party foundation"*
7. Current Time/Area/Cap Closures(add):
 - 7.3 *Modify*
9. Seasonal Apportionment of PSC Allowances (add):
 - 9.3 *Modify*
10. VBA Participants (add):
 - 10.4 *Only moratorium qualified or license limitation trawl vessels.*
11. Balancing VBAs and Estimated PSC (add):
 - 11.4 *Analyze reconciliation at 50% and/or 75% of the total VBA or pool*
15. Funding (add):
 - 15.3 *A third party foundation*

The main motion carried 11/5.

Joe Terry

Agenda C-5 (b)
January 1996

SELECT ALTERNATIVES FOR A VESSEL BYCATCH ACCOUNT PROGRAM (VBAP)

A major deficiency with the current bycatch management regime is that there is not sufficient accountability for bycatch at the vessel level. This deficiency results in the following:

1. The levels of bycatch of prohibited species and groundfish species are unnecessarily high.
2. The cost of controlling bycatch is unnecessarily high.
3. The distribution of the cost of bycatch is highly inequitable.

A VBAP with adequate monitoring would provide accountability at the individual vessel level and, therefore, eliminate the source of this three-part bycatch problem.

The following alternatives for a VBAP are a subset of the alternatives presented in December. They include some of the alternatives added by the AP and SSC.

If adequate monitoring at the individual vessel level is not possible at an acceptable cost or if there are other reasons why a VBAP is not a viable solution, bycatch accountability at the vessel group or pool level may be at least a viable short-term solution. Therefore, elements and options that would establish a vessel pool bycatch account program are included.

Select elements and options for vessel and vessel pool bycatch account programs are outlined below.

1. VBA Fisheries
 - 1.1 All BSAI trawl fisheries
2. VBA Species (Choose one)
 - 2.1 Excluding salmon, all species with trawl fishery PSC limits (i.e., halibut, red king crab, Tanner crab (bairdi), and herring)
 - 2.2 All species with trawl fishery PSC limits including salmon (Currently for salmon, there are bycatch levels that trigger time/area closures but not PSC limits that are apportioned among the trawl fisheries.)

3. Total VBAs

3.1 For each VBA species, the sum of the VBAs would equal the PSC limit for that species. The BSAI trawl fishery PSC limit for halibut would be reduced by 10% in each of the next five years. The other PSC limits would remain at their current levels until changed by a regulatory amendment.

4. Allocation of VBAs (Choose 4.1 or 4.2)

4.1 Annual Disbursement: Prior to the start of each fishing year, VBAs would be issued to individual vessel owners based on a formula that would be specified in the FMP or regulations. The VBAs would not be fishery-specific. (Choose one sub-option for each of the two sub-elements of option 4.1)

4.1.1 Disbursements would be:

- a. by fishery (e.g., pelagic pollock, bottom trawl pollock, cod, rock sole, etc) or group of fisheries or
- b. for the BSAI trawl fishery as a whole

Note: Even if the disbursements are by fishery, the VBAs would not be fishery-specific and their use would not be monitored by fishery. Therefore, a vessel owner who receives VBAs based on participation in one trawl fishery could use the VBAs in any trawl fishery.

4.1.2 Factors included in the annual disbursement formula

- a. three-year rolling average of the groundfish catch by the person's vessels
- b. vessel size categories
- c. both a and b

4.2 A One-Time and Formula-Based Disbursement of Multi-Year Entitlements: There would be ongoing VBAs and the resulting annual VBAs which would be the counterparts of Qs and IFQs in the halibut and sablefish IFQ program. The annual VBAs would not be fishery-specific. (Choose one sub-option for each of the three sub-elements of option 4.2)

4.2.1 Issue ongoing VBAs for 5 years to vessel owners

4.2.2 Disbursements would be:

- a. by fishery (e.g., pelagic pollock, bottom trawl pollock, cod, rock sole, etc) or group of fisheries or
- b. for the BSAI trawl fishery as a whole

Note: See the note after 4.1.1 b.

4.2.3 Factors to be included in the disbursement formula?

- a. three-year average of the groundfish catch by the person's vessels
- b. vessel size categories
- c. both a and b

5. Transferability of VBAs (Choose one of the following three options)

5.1 Fully transferable among all persons

5.2 VBAs could be "pooled" by a group of vessel owners prior to the start of a fishing year

5.3 Nontransferable VBAs (If this option is selected, choose one sub-option)

5.3.1 no exceptions

5.3.2 specified hardship exceptions would be defined

6. Retention of VBA Species

6.1 Retention permitted only if required for adequate monitoring, in which case the retained PSC would be forfeited at the time of landing and measures to ensure product quality would be established

7. Current Time/Area Closures

7.1 Retained (status quo)

8. Seasonal Apportionment of PSC Allowances

8.1 Eliminated

9. VBAP Participants (Coverage) (Choose one)

9.1 All moratorium/license limitation qualified trawl vessels

9.2 Voluntary participation by any moratorium/license limitation qualified trawl vessel, the VBAs for vessels that do not participate fully in the VBAP for a fishery would be pooled and closures would be imposed collectively on that group of vessels when their pooled VBAs are exhausted. The choice would be made by a vessel owner for a vessel prior to its participation in the relevant trawl fisheries.

10. Balancing VBAs and Estimated PSC (Choose one or more)

10.1 A vessel owner would have until the end of the year to obtain sufficient VBA to cover the estimated PSC of the owner's vessels. If transferability is permitted, this would mean that a vessel owner would not have to have enough VBA before the vessel starts a trip to cover its PSC for that trip. Any deficit could be made up by acquiring additional VBA prior to the end of the year.

10.2 Reconciliation would also occur when 50% and/or 75% of a vessel owner's (or pool's) VBA has been used

10.3 The reconciliation would be at the pool level not the vessel owner level.

11. Underages and Overages (Choose one or more)

11.1 For each vessel owner (or pool), a VBA overage of up to 10% would result only in a comparable reduction in the VBA for the next year. For larger overages, civil penalties also would be used.

11.2 For each vessel owner (or pool) a VBA underage of up to 10% would be compensated for with a comparable increase in the VBA for the next year.

11.3 If VBAs are not transferable, an underage in excess of 10% would be compensated for with a less than comparable increase in the VBA for the next year. The specific compensation schedule would have to be determined.

12. PSC Limit Induced Fishery Closures

12.1 Each individual vessel owner or pool would be held accountable for its bycatch of VBA species but a fishery would not be closed when a PSC allowance or limit was reached for a fishery. Therefore, if each individual VBA is exceeded, the total PSC limit would be exceeded. This is similar to sablefish and halibut IFQ fishery TAC monitoring and closure regulations.

13. Funding (Choose one or more)

13.1 All additional observer coverage costs would be paid for directly by the vessels (i.e, pay as you go)

13.2 A VBA fee would be used to cover the cost of administering and enforcing the VBAP (this would require a Magnuson Act amendment)

13.3 Research Plan fees would be collected based on PSC and the fees would be used to fund part of the cost of the Observer Program (the Magnuson Act may provide this authority now)

14. Monitoring, Enforcement, and Appeals

The monitoring, enforcement, and appeal elements will be critical in determining whether a VBAP can meet its objectives and do so at an acceptable cost. These elements and options are expected to be developed by late 1996. The monitoring program for the expanded CDQ fisheries is scheduled to be completed by mid-1996. Although the efforts to develop the CDQ monitoring program will assist in the development of a VBA monitoring program, it is not known whether the CDQ and VBA monitoring programs will be identical.

15. Pool Rules (Choose several to all)

15.1 Participation in other than the default pool would be voluntary.

15.2 The vessels of a vessel owner who is not a member of a voluntary pool would be part of the default pool.

15.3 The rules for membership of each voluntary pool would be established by the vessel owners who form the pool.

15.4 A closure would be imposed collectively on the vessels in a pool when the pool's collective VBAs are exhausted.

- 15.5 NMFS would enforce the closure for the vessels in a voluntary pool but not the specific rules of that pool, those rules would be enforced by the members of the pool in part through the use of contracts among pool members.
- 15.6 Acceptance of a NMFS approved method for estimating the bycatch of a pool would be a requirement for membership in a voluntary pool.
- 15.7 Prior to the start of a fishing year, each voluntary pool would notify NMFS concerning its membership and NMFS would confirm membership and place all other vessels in the default pool.
- 15.8 A vessel would not be allowed to change pools during the year.
- 15.9 NMFS would not establish minimum pool size limits.

SUMMARY OF CANADA'S IBQ PROGRAM

The following summary is based on information provided by Bruce Turris (DFO) January 24 and 25, 1996. That information includes corrections to the first draft of this summary. Some changes could occur before the Canadian individual bycatch quota (IBQ) program is implemented in early 1996.

1. Transferability: The IBQs are not transferable.
2. IBQ Species: The IBQ species are halibut, sablefish, Pacific cod, and petrale sole.
3. IBQ Disbursement: Each year the IBQs will be distributed equally among all active bottom trawl vessels. There is a license limitation program for the trawl fishery and not all of the licensed vessels participate in the bottom trawl fishery. Differences in catch history and vessel size will be ignored.
4. Observer Coverage: With relatively few exceptions, trawlers will have 100% observer coverage which will be paid for by each vessel. The exceptions are trawlers that are too small physically or fiscally to carry an observer. The IBQs for such vessels will be pooled and the fishery will be closed to that pool of vessels when its IBQs are estimated to be exhausted.
5. Sampling: To the extent possible, whole haul sampling will be used. Bycatch estimates for unsampled hauls for a vessel with an observer will be based on the bycatch for sampled hauls. That is, there will be an extrapolation from sampled bycatch to total bycatch.
6. Discard Mortality Rates: The IBQ will be monitored in terms of estimated bycatch mortality. The IPHC condition factors will be used to estimate the halibut discard mortality rate by vessel. The discard mortality rate estimates for the other IBQ species will be based on haul duration. The coefficients used to estimate mortality will be generous. That is, they are expected to underestimate actual discard mortality. This was done to reduce the possibility that trawl fishermen will argue that discard mortality is being overstated.
7. Sablefish ITQs and IBQs: The sablefish IBQ of a vessel can be increased by purchasing sablefish ITQ from a sablefish fisherman. Such purchases cannot exceed the amount of a vessel's initial IBQ for sablefish. It was decided not to have a similar provision for halibut at this time.
8. Implementation Date: The 1996 bottom trawl fishery will not start until the IBQ program is in place. Mid-February is the tentative target.
9. Closures: The sablefish IBQs are not area-specific; therefore, once a vessel exhausts its sablefish IBQ, including any it has purchased from a sablefish fisherman, it is prohibited from further participation in the bottom trawl fishery that year. Halibut IBQs will be issued for two areas. The bottom trawl fishery in an area will be closed to a vessel that has used all of its halibut IBQ for that area. When a vessel has exhausted its Pacific cod or petrale sole IBQ, depth and period bottom trawl fishery closures will be imposed on the vessel. The depth closure for Pacific cod (petrale sole) is for shallow areas where Pacific cod (petrale sole) bycatch is likely to occur.
10. IBQ Program Development: The trawl fleet was given the choice of fleet-wide bycatch limits (similar to those used in the Alaska groundfish fishery) or IBQs. There was a consensus among the members of the trawl advisory group in support of IBQs. The group and DFO jointly developed the IBQ program specifics.
11. Retention: The non-halibut IBQ species can be retained in which case the mortality rate is 100%.

Notes: The term ITQ is used instead of IVQ (individual vessel quota) which is used in Canada.

Prepared by Joe Terry on January 26, 1996.

Chris B. For
BRENT PAINE

January 23, 1996

Mr. Richard B. Lauber
North Pacific Fishery Management Council
604 W. 4th Ave., Suite 306
Anchorage, AK 99501-2252

RE: Vessel Bycatch Accountability Program

Dear Chairman Lauber,

A number of industry organizations and companies support the North Pacific Fishery Management Council's continued goal of better management of species taken as bycatch in our directed fisheries. To this end, we have supported efforts to scope out and analyze possible options of a Vessel Bycatch Accountability (VBA) Program. During the June 1995 Council meeting in Dutch Harbor, many of us presented a letter (Lauber, June 15, 1995) requesting the Council begin review of such a program for a number of reasons.

The VBA proposal grew out of the industry's frustration of premature closures of directed fisheries due to attainment of PSC well before attainment of the TAC and secondly, the negative effects of a few bad actors' fishing behavior on the entire fleet. We are also frustrated by the evident failure of the Vessel Incentive Program as a tool to influence individual operation's behavior.

The VBA proposal focuses on 'real-time' incentives. It makes individuals accountable for their own actions and keeps the effects of their actions at the individual level, thereby allowing the 'clean' actors to receive the benefits of fishing with low bycatch rates. The end goal is to achieve OY and optimize the use of allocated PSC.

The outline of the analysis of a VBA program as developed by NMFS and reviewed by the AP at the December 1995 Council meeting is a step in the right direction. We understand that the monitoring and enforcement requirements of a bycatch program at the individual level are the same requirements of bycatch and quota management for the Council recommended all-species CDQ program.

For these reasons, the undersigned industry representatives request that the Council expeditiously continue its efforts to develop and analyze viable options of such a program. There are number of issues, such as transferability, enforcement, monitoring and initial allocation, that are undefined at this time. This is why our recommendation of a range of options for these issues was proposed. The pros and cons of options can be ferreted out in the analysis.

Sincerely,

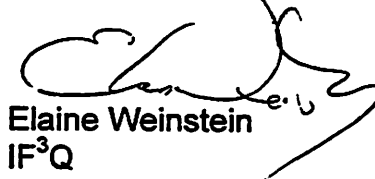


Brent Paine & Steve Hughes
United Catcher Boats

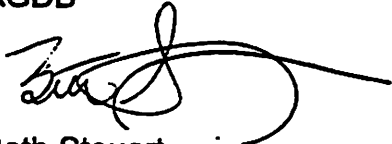
Jay Stenson
Alaska Druggers Association



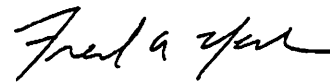
Chris Blackburn
AGDB



Elaine Weinstein
IF³Q



Beth Steuart
Aleutians East Borough



Fred Yeck
Midwater Trawlers Cooperative



David Benson
Tyson Seafood Group



Arnie Thomson
Alaska Crab Coalition



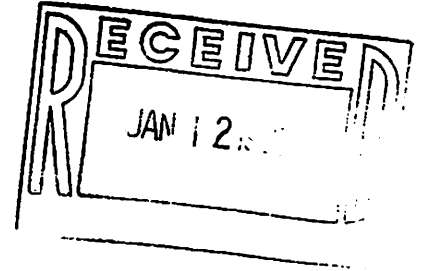
UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

AGENDA C-5(b)
JANUARY 1996
Supplemental

January 8, 1996

Clarence G. Pautzke
Executive Director
North Pacific Fishery Management Council
605 West 4th Avenue
Suite 306
Anchorage, Alaska 99501-2252



Dear Clarence:

During October, 1995, we wrote a letter to Steve Hughes, Natural Resources Consultants, summarizing reasons why we did not consider Experimental Fishing Permits to be an appropriate mechanism to implement a pilot project that would demonstrate the feasibility of catcher vessel "bycatch pools" reducing prohibited species catches. At the North Pacific Fishery Management Council's December 1995, meeting, I was asked by a Council member to provide the Council with a copy of our letter. Enclosed is a copy of the letter for distribution to Council members.

Sincerely,

Steven Pennoyer
Director, Alaska Region





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

COPY

October 18, 1995

Steve Hughes
Natural Resources Consultants
4055 21st Avenue West, Suite 100
Seattle, Washington 98199

Dear Steve:

We have considered the feasibility of a pilot project which would apportion part of the 1996 prohibited species catch (PSC) limits for the Bering Sea and Aleutian Islands Area trawl fishery for Pacific cod to a bycatch pool comprised of catcher vessels.

An experimental fishing permit (EFP) does not appear to be an appropriate way to develop the pilot project idea. EFPs generally involve allowing something that is otherwise prohibited (e.g. salmon retention) or an additional apportionment of total allowable catch (TAC) and PSC amounts outside the regular fishery season. Your proposal is to apportion PSC limits for the existing cod fishery. In addition, EFPs should not be used to allocate TAC or PSC among various user groups. Your proposal could be construed as doing so, particularly if the pilot project involved only catcher vessels.

We recommend that efforts to develop bycatch pools, individual bycatch quotas (IBQs), or the Vessel Bycatch Account (VBA) proposal be pursued through the traditional Fishery Management Plan (FMP) amendment process rather than through a pilot project for two reasons. First, most of the monitoring and enforcement issues that NMFS has identified would need to be resolved in advance of implementation regardless of how many vessels were involved, or whether we were implementing a pilot project or an FMP amendment. Second, the FMP amendment proposal would include all participants in the fishery. The allocation of PSC limits to either bycatch pools or individual vessels is likely to be a contentious issue that will require thorough discussion before the North Pacific Fishery Management Council. Neither a pilot project or an FMP amendment could be implemented in 1996 due to the time necessary for analysis, Council consideration, and rulemaking.

We have initiated analysis of bycatch pools and IBQs with the discussion paper "Monitoring Individual Vessel Performance" which was presented at the September, 1995 Council meeting. In that discussion paper, we identified several issues that need to be resolved prior to implementation of many of the individual vessel accountability proposals, including the VBA. These implementation issues include (1) development of observer



sampling procedures appropriate for estimating catch and bycatch on individual vessels, (2) standards for electronic transmission of data, (3) estimates of the additional observer coverage that will be required, and (4) identification of the additional NMFS and NOAA GC staff that will be required to implement the proposal. Recommendations about appropriate observer sampling procedures will be made through an independent review of the Observer Program and are not expected until late 1996.

Bycatch pools could provide an interim step towards individual vessel accountability programs if a group of vessels could be managed with the same data that currently are used to manage fleetwide PSC limits. However, if extensive review of observer sampling procedures or resolution of the other implementation issues mentioned above would be needed to implement bycatch pools, we may not be any closer to bycatch pools than we are to implementing IBQs or VBAs.

The next step in analysis of bycatch management programs will be the preparation of a discussion paper evaluating the legal and monitoring issues of bycatch pools versus individual vessel accountability programs. We request your input on the elements and requirements of a bycatch pool in order to prepare this discussion paper. I will be available on either November 6 or 7 if you or any of your members would like to come to Juneau to discuss specific proposals.

Sincerely,



Steven Pennoyer
Director, Alaska Region

MEMORANDUM

TO: Council, SSC and AP Members

FROM: Clarence G. Pautzke
Executive Director



ESTIMATED TIME

6 Hours

DATE: January 3, 1996

SUBJECT: CRP - Individual Bycatch Quotas (IBQs/Vessel Bycatch Accounts (VBAs))

ACTION REQUIRED

Review analytical outline, review list of elements and options to be analyzed, and provide further direction to staff.

BACKGROUND

During discussions on staff tasking in September, the Council identified development of a system of individual bycatch accountability as one of the top priorities for staff resources. Staff with the NMFS' Alaska Fisheries Science Center developed an analytical game plan, and initial list of alternatives to be analyzed, for presentation at the December 1995 meeting in Anchorage. The list of alternatives (elements and options for such a system) was based primarily on a proposal for VBAs submitted by United Catcher Boats (UCB). At that meeting the Council decided to postpone further discussion of this agenda item until January 1996, so that they would have more time to review the materials presented in December and to be able to devote the time necessary for meaningful discussion of this issue.

The schedule proposed by the analysts would allow for initial review of the analysis in April, with a final decision possible in June, dependent upon the Council finalizing the elements and options for analysis. As with previous "IFQ type" management programs, a variety of options may be examined with regard to: initial allocations; use and transferability; ownership; monitoring; and, other components of the system. The briefing materials from the December meeting are included here under Item C-5(b)(1), with the draft list of alternatives (elements and options) contained on pages 4-8 of that document. The December reports from the SSC and AP are included under Item C-5(b)(2).

AGENDA C-5(b)(1)
JANUARY 1996

**ANALYTICAL OUTLINE
FOR THE EVALUATION OF A VESSEL BYCATCH ACCOUNT PROGRAM**

Prepared by Joe Terry

Socioeconomic Assessment Task
Resource Ecology and Fisheries Management Division
Alaska Fisheries Science Center
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
7600 Sand Point Way N.E., BIN C15700
Seattle, Washington 98115-0070

INTRODUCTION

In response to concerns about the levels of bycatch in the Bering Sea/Aleutian Islands area (BSAI) and Gulf of Alaska (GOA) groundfish fisheries, the North Pacific Fishery Management Council (Council) has recommended and the Secretary of Commerce has approved and implemented a variety of management actions that were intended to help control the bycatch of Pacific halibut, crab, Pacific herring, and Pacific salmon in the groundfish fisheries. Recently, the bycatch of groundfish in the groundfish fisheries and the bycatch of crab in the BSAI crab fisheries have also received increased attention. Of the 34 amendments to the BSAI groundfish fishery management plan (FMP) that have been considered by the NPFMC since 1982, 13 addressed primarily bycatch issues and 9 additional amendments addressed some aspect of bycatch management. Although many of the management measures that have been taken to control bycatch in the BSAI groundfish fishery have decreased bycatch, the three-part bycatch problem remains. The problem is as follows:

1. The levels of bycatch of prohibited species and groundfish species are unnecessarily high.
2. The cost of controlling bycatch is unnecessarily high.
3. The distribution of the cost of bycatch is highly inequitable.

The lack of bycatch accountability by individual fishing vessels has been identified as the principal source of the problem and over the last few years there has been increased interest in management measures that would increase individual accountability. The most recent example is the vessel bycatch account program (VBAP) proposed by United Catch Boats (UCB). In September, the Council asked staff to prepare by the December 1995 meeting an analytical outline for developing and evaluating a VBAP proposal.

This report was prepared in response to that request. The report identifies the issues to be addressed in developing a VBAP, presents an initial set of alternatives for such a program, provides information concerning the nature and source of the three-part bycatch problem, and describes the types of analyses that would be conducted to assist in the development and evaluation of such a program. Two Alaska Fisheries Science Center processed reports were prepared in anticipation of further Council consideration of VBAPs to address the three-part bycatch problem. They are: 1) Using economic incentives in environmental management: The case for marketable permits for pollution control, and 2) Community development quota (CDQ) and open access pollock fisheries in the eastern Bering Sea: A comparison of groundfish utilization and prohibited species bycatch. Copies of both processed reports were reproduced by Council staff for the December 1995 meeting.

The UCB proposal is used as a starting point in this report for several reasons: 1) it was presented to the Council; 2) it is reported to have widespread support within the fishing industry; and 3) to date, it is the most complete proposal. The UCB VBAP proposal that was submitted to the Council June 8, 1995 is included in Appendix A.

The term "vessel bycatch account" is taken from the UCB proposal. It is one of several terms that could be used to describe a program in which each fishing vessel is held individually accountable for its own bycatch by establishing prohibited species catch (PSC) allowances at the vessel level. Currently, the PSC allowances are at the fishery level with fisheries defined by gear group and target species.

ISSUES

The three principal issues to be addressed are as follows:

1. the problems being addressed and the objectives of a VBAP proposal;
2. the technical feasibility and cost of adequate monitoring and enforcement; and
3. the alternatives for the elements of a VBAP including the allocation rules for vessel bycatch accounts (VBAs), transferability, VBA species, the retention of VBA species, restrictions on the ownership and use of VBAs, the inclusion of small vessels with limited or no observer coverage, the retention of other bycatch management measures, and sources of funding for VBAP costs.

Problems and Objectives

As noted above, bycatch in the BSAI groundfish fishery is a three-part problem in that the levels of bycatch of prohibited species and groundfish species are unnecessarily high, the cost of controlling bycatch is unnecessarily high, and the distribution of the cost of bycatch is highly inequitable. Each part of this problem is discussed briefly in this section. A more complete discussion of the nature and source of the bycatch problem is presented in Appendix B. Although the following discussion of the problem of bycatch is applicable to the bycatch of all species in all groundfish fisheries, the VBAP alternatives identified in this paper are limited to the bycatch of prohibited species in the BSAI trawl fisheries.

High levels of bycatch Because individual fishing vessels do not pay the full cost of using fish as bycatch, they tend to take too much bycatch from the perspectives of both society and the fishing industry as a whole.

High bycatch control costs The PSC limits for the BSAI trawl fisheries have resulted in lower levels of bycatch for some prohibited species than would have otherwise occurred, but often at the cost of a significant reductions in trawl catch, employment, and earnings. Typically, reducing groundfish catch is a high cost method of reducing bycatch but it is a method that is used because, when fishermen are not held accountable individually for their bycatch, individual fishermen do not have a sufficient incentive to use lower cost methods. In some cases, the losses to trawlers have been offset at least partially by increased catch, employment, and earnings by fixed gear fishermen who were able to catch groundfish that would have been taken by trawlers in the absence of the PSC limit induced closures of trawl fisheries. This has been the case in the cod trawl fishery in recent years.

Inequitable distribution of bycatch costs The cost of bycatch includes bycatch impact costs which are the foregone net earnings of fishermen who target on the species taken as prohibited species bycatch in the groundfish fishery. It also includes bycatch control costs which are the cost borne by groundfish fishermen as the result of efforts to control bycatch. The bycatch control costs include increased harvesting costs and decreased earnings. In the absence of individual accountability for bycatch, the groundfish fishermen who do more to control their bycatch tend to have higher bycatch control costs. Conversely, those who do the least to control their bycatch and are, therefore, most responsible for the PSC limit induced closures of trawl fisheries tend to have the lowest bycatch control costs. This is generally thought to be an inequitable distribution of bycatch costs.

Given these three aspects of the bycatch problem, the objectives of a VBAP would be as follows:

1. Decrease the bycatch of prohibited species.

2. Decrease the cost of the controlling bycatch and specifically increase the ability of the groundfish fleet to take the groundfish TACs without exceeding the PSC limits.
3. Produce a more equitable distribution of bycatch costs.

Adequate Monitoring and Enforcement

In the absence of adequate monitoring and enforcement, there would not be accountability at the vessel level and the three objectives would not be met. A combination of interdependent technical sampling, legal, enforcement, and cost issues need to be addressed to determine whether adequate monitoring and enforcement are feasible. Four elements required for an effective VBAP monitoring system were identified in a NMFS discussion paper presented to the Council in September (Agenda C-3(c), Monitoring individual vessel performance). They are:

1. the development of observer sampling procedures to estimate the total catch of each species [and perhaps halibut discard mortality rates] for individual vessels;
2. standards for timely and accurate transmission of data between vessels or processors and NMFS;
3. the identification of additional observer coverage requirements; and
4. funding for additional staff required to administer, monitor, and enforce VBAs.

Three additional requirements are:

1. the development of an adequate compliance monitoring program;
2. the identification of changes in vessel and processing plant operating practices that increase the effectiveness of the sampling procedures and the compliance monitoring program; and
3. meeting the above requirements at a cost that is not prohibitive.

NMFS has initiated three separate efforts to address the monitoring and enforcement issues. First, a contract was awarded to a consultant who will conduct a comprehensive review of observer sampling procedures. Second, a working group consisting of Alaska Region, Alaska Fisheries Science Center, Enforcement, and General Counsel staff has been established to: 1) identify the compliance monitoring requirements of proposed individual vessel monitoring programs, 2) identify the specific reasons why the existing observer program will not meet those requirements, and 3) identify alternative methods for meeting those requirements. Third, additional methods for providing information concerning the monitoring and enforcement issues are being explored.

The NMFS efforts to address the monitoring and enforcement issues are not expected to be completed until late 1996. Therefore, given the tentative schedule that includes final Council action by June 1996, these critical issues will not be addressed fully in either the draft EA/RIR that is expected to be reviewed by the Council in April 1996 or the revised EA/RIR that would be available prior to final action by the Council in June 1996. Although this is not the optimal situation, it is similar to the situation last June in which the Council took final action on expanding the CDQ program to all BSAI FMP groundfish and crab species without addressing the individual vessel monitoring systems that would be required to implement effectively the expanded CDQ program. The Secretarial review of the expanded CDQ program or any VBAP recommended by the Council would be expected to be delayed until an adequate monitoring system is identified and analyzed in a final EA/RIR.

Alternatives for the Elements of the VBAP

The alternatives to be considered are the status quo and various VBAP alternatives. Although an ITQ program for all groundfish and prohibited species is technically an alternative to a VBAP, it is probably not a feasible alternative at this time. Therefore, an ITQ program will not be included as an explicit alternative.

The UCB VBAP proposal contains a number of elements and several alternatives for most of the elements. The UCB proposal was the starting point for the elements and alternatives outlined below. The outline is intended to define but not justify or evaluate any of the alternatives. Many of the elements are linked. For those elements, the relevant alternatives are also linked. Therefore in some cases, the choice of an alternative for one element is expected to reduce the number of relevant alternatives for some other elements. For some individual elements, not all of the alternatives are mutually exclusive, in which case, a combination of alternatives could be selected.

1. VBA Species

- 1.1 Excluding salmon, all species for which there are currently PSC limits (i.e., halibut, red king crab, Tanner crab (bairdi), and herring)

2. Total VBAs

- 2.1 Current PSC limits
- 2.2 Flexible PSC limits equal to a set percentage of the biomass estimate (floating caps)
- 2.3 Scheduled reductions from current PSC limits

3. Allocation of VBAs

- 3.1 Annual allocation of VBAs issued to individual groundfish operations prior to the start of each fishing year based on a formula that would be specified in the FMPs or regulations.

3.1.1 Allocation by

- a. fishery (e.g., bottom trawl pollock, cod, rock sole, etc) and/or a group of fisheries with the option to exempt the pelagic pollock fishery
- b. one allocation for all BSAI bottom trawl fisheries and exempt the pelagic pollock fishery

3.1.2 Factors included in the formula

- a. three year, rolling average of a vessel's catch
- b. vessel size categories
- c. both a and b

3.2 One time allocation of entitlements to receive VBAs annually (similar to the one time allocation of quota share with the halibut and sablefish IFQ program) Each operation would have an annual VBA which would be a percentage of the total PSC limit or allowance. The terms "ongoing VBA" and "annual VBA" would be the counterparts of QS and IFQ in the IFQ program.

3.3 Ongoing or annual VBAs could be sold by the government, either at a set price or at auction (Magnuson Act amendment required)

3.3.1 Require individuals to purchase 25% of their allocated VBAs (with the exception of halibut VBAs that could be purchased from halibut-QS or IFQ owners, this would require a Magnuson Act amendment)

3.4 Require all annual halibut VBAs to be purchased from halibut IFQ owners

4. Transferability of VBAs

4.1 Fully transferable VBAs

4.1.1 among all trawl fisheries

4.1.2 within the fishery for which they were issued

4.1.3 to halibut fishermen who can use them as IFQs (halibut VBAs only)

4.2 Nontransferable VBAs (what you get is what you use)

4.2.1 no exceptions

4.2.2 specified hardship exceptions

4.2.3 transferable to halibut fishermen who can use them as IFQs (halibut VBAs only)

4.3 VBAs could be "pooled" by a group of vessels

5. Retention of VBA Species

5.1 Retention not allowed (status quo)

5.2 Retention allowed but with forfeiture at time of landing

5.3 Retention requires but with forfeiture at time of landing

5.4 Careful return to sea within a set time period, then retained until counted

6. Monitoring of a VBA Program

The following are only examples of monitoring alternatives. A more definitive list of alternatives will be one of the products of NMFS efforts to determine if an adequate monitoring program is feasible and, if it is, to identify alternatives for a feasible monitoring program.

- 6.1 Observer data from current year could be used
- 6.2 Sampling design of existing Observer Program and vessel operating procedures may need change
 - 6.2.1 require whole haul sampling (do away with basket sampling)
 - 6.2.2 require daily reporting rather than weekly
 - 6.2.3 specify fishing vessel or processing plant operating conditions and procedures required to allow observer to provide adequate estimates
- 6.3 Require retention of VBA species but with forfeiture at time of landing
- 6.4 Estimate of discard mortality rate for halibut bycatch
 - 6.4.1 estimate by vessel
 - 6.4.2 estimate by fishery

7. Current Time/Area/Cap Closures

- 7.1 Retained (status quo)
- 7.2 Eliminated

8. PSC Allowances by Fishery

- 8.1 Retained (status quo)
- 8.2 Eliminated

9. Seasonal Apportionment of PSC Allowances

- 9.1 Retained (status quo)
- 9.2 Eliminated

10. VBAP Participants

- 10.1 Only trawl fishing vessels with 100% observer coverage
- 10.2 All trawl fishing vessels during the time there is at-sea observer coverage
- 10.3 All trawl fishing vessels (apply an average rate of observed vessels to vessels during period they have no observers)

11. Balancing VBAs and Estimated PSC

- 11.1 The VBA on a vessel at the beginning of a trip must be adequate to cover its PSC during a trip
- 11.2 A vessel would have up to 30 days after the end of a trip to acquire sufficient VBAs to cover the PSC of the trip
- 11.3 There would be an annual reconciliation of VBAs and PSCs by vessel (or pool)

12. Underages and Overages

- 12.1 An overage of up to 10% would result only in a comparable reduction in the VBA for the next year
- 12.2 An underage of up to 10% would be compensated for with a comparable increase in the VBA for the next year

13. PSC Limit Induced Fishery Closures

- 13.1 Individual vessels would be held accountable for their bycatch of VBA species but a fishery would not be closed when a PSC allowance or limit was reached for a fleet (similar to sablefish and halibut IFQ program)
- 13.2 The VBAs for a species could be set below its PSC limit to provide a reserve or buffer

14. Appeals

- 13.1 Allow for an in-port accounting immediately after a vessel uses its entire VBA
- 13.2 Establish an industry appeals committee to review all contested bycatch accountings within a specified period of time

15. Funding

- 15.1 All additional observer coverage costs would be paid for directly by the vessels (i.e. pay as you go)

- 15.2 A VBA fee would be used to cover the cost of administering and enforcing the VBAP (this would require a Magnuson Act amendment)

16. VBA Ownership and Use Restrictions

- 16.1 Restrictions on the persons who can own and use VBAs
- 16.2 No restrictions on the persons who can own and use VBAs
- 16.3 Restrictions on the quantity of VBAs that can be owned or used by a person or used on a vessel
- 16.4 No restrictions on the quantity of VBAs that can be owned or used by a person or used on a vessel

17. Adjusting TACs below ABCs to Stay within the 2 million mt OY Cap

- 17.1 The current process would continue to be used
- 17.2 The halibut PSC limit would be set annually to limit the total catch in the bottom trawl fisheries but the catch of each TAC species would be limited by its ABC and the willingness of fishermen to use their VBAs to catch that species.

18. Monitoring and Enforcement

As noted above, the monitoring and enforcement elements will be critical in determining whether a VBAP can meet its objectives and do so at an acceptable cost. The monitoring and enforcement elements and alternatives are expected to be developed by late 1996. It would be premature and potentially counterproductive to present specific elements and alternatives now.

19. Other Elements

- 19.1 Include no other elements
- 19.2 Add some of the elements for the IFQ program that is being considered for the BSAI pollock fishery

ANALYSIS

Until viable alternatives have been identified for the monitoring and enforcement systems for the VBAP, the analysis will be limited to the other elements of the program. A VBAP would allow significant changes in the operations of the trawl fisheries. Those changes would affect both the magnitude and the distribution of net benefits from the BSAI groundfish fishery. The actual differences in bycatch performance among vessels operating in a specific trawl fishery probably provide the best but yet limited information on how the fishery would change and the effects of those changes on net benefits and their distribution.

A combination of qualitative and quantitative analyses can provide a basis for formulating expectations concerning the potential effects of a VBAP and the different effects of various alternatives. Qualitative analysis can identify the nature of potential effects. The theoretical framework of the nature and source of the bycatch problem that is presented in Appendix B will be the basis for much of the qualitative analysis.

The linear programming model initially developed for the Alaska Fisheries Science Center by Doug Larson and Brett House provides a systematic method for using actual differences in bycatch performance among vessels to estimate some of the effects of a VBAP. The model uses weekly catch, bycatch, product value, and cost data by fishing vessel to estimate the optimal distribution of effort among vessels for various halibut PSC limits. The constraints can be varied to estimate both the short-term and long-term adjustments that would be made if vessels were individually held accountable for their bycatch. The model would have to be expanded to include data for the vessels that deliver fish to on-shore processors and the input data sets would have to be updated. Providing improved estimates of harvesting and processing costs is expected to be difficult.

The bycatch model that has been used in the analysis of many bycatch management measures provides an alternative but potentially less effective method for estimating the effects of a VBAP. The principal disadvantage of the bycatch model are that it provides very limited estimates of how the behavior of fishermen would change and it was designed to estimate the effects of changes in bycatch constraints on a fishery as a whole rather than changes in constraints on individual fishermen.

Accurate projections of the effects of a VBAP on the cost of bycatch are alone not sufficient to select among the alternatives that will be considered because the objectives include both decreasing the cost of bycatch and producing a more equitable distribution of the cost of bycatch. Value judgements are required both to define and value an improvement in the distribution of bycatch costs. Therefore, a unique index of the relative merits of the various alternatives can not be developed.

The change in the distribution of net benefits is particularly difficult to project because it will be heavily dependent on the ability of various fishing operations to respond to the opportunities provided by a VBAP and information on the ability to respond is not readily available.

The two aforementioned Alaska Fisheries Science Center processed reports will be used as a basis for both the quantitative and qualitative analysis of the VBAP alternatives.

APPENDIX A

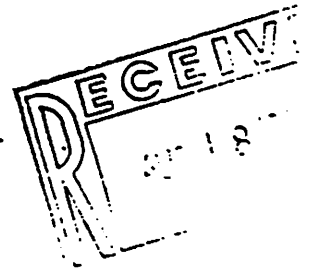
**DRAFT VESSEL BYCATCH ACCOUNT PROGRAM (VBAP) PROPOSAL
SUBMITTED TO THE COUNCIL BY UNITED CATCHER BOATS**

**Groundfish Plan Amendment Proposal
North Pacific Fishery Management Council**

RE: Vessel Bycatch Accounting Program (VBA)

Submitted By:
United Catcher Boats
1900 W. Emerson, Suite 212
Seattle, WA 98119
206-282-2599

Date: August 15, 1995



Fishery Management Plan: BSAI Groundfish FMP

Nature of Proposal

This proposal would establish a new bycatch management program for the BSAI trawl fisheries. The program is based on an allocation of PSC (halibut, *bairdi* and red king crab) to individual vessels. Once a vessel's PSC allotment is reached, it not longer would be allowed to fish in the directed fishery, unless it obtained additional bycatch.

What follows is a broad outline of the various options to consider in analyzing our proposal.

1. Allocation of VBAs
 - 1.1 Annual allocation of VBAs issued to individual groundfish operations prior to the start of each fishing year based on a formula that would be specified in the FMPs or regulations.
 - 1.1.1 Allocation by
 - a. specific species (directed fishery) and/or a group of species
 - b. one allocation for all BSAI bottom trawl fisheries
 1. Exempt MW pollock
 - 1.1.2 Factors included in the formula
 - a. Three year, rolling average of an individual's catch
 - b. Vessel size categories
 - 1.2 One time allocation of VBAs, or ongoing right, similar to a quota share. Each operation would have an annual 'Vessel Bycatch Account' as determined by a percentage of the allowed PSC.
 - 1.3 VBAs could be sold by the government, either at a set price or at auction
 - 1.3.1 Require individuals to purchase 25% of their allocated VBAs
- (Would require a Magnuson Act amendment)
2. Transferability of VBAs
 - 2.1 VBAs could be fully transferable
 - 2.1.1 restricted or unrestricted to a fishery

- 2.2 VBAs not allowed to be transferred, what you get is what you use
- 2.3 VBAs could be "pooled" by a group of vessels
- 3. Retention of Bycatch (PSCs under a VBA program)
 - 3.1 Retention not allowed
 - 3.2 Retention allowed, with forfeiture at time of landing
 - to address issues of sampling error (accuracy) and observer 'cop' role
 - 3.3 Careful return to sea within a set time period, then retained until counted
- 4. Monitoring of a VBA Program
 - 4.1 Observer data from current year could be used
 - 4.2 Sampling design of existing Observer Program may need change
 - require whole haul sampling, do away with basket sampling?
 - require daily reporting rather than weekly
 - 4.3 Requiring retention of VBA species may be necessary to have adequate monitoring
- 5. Species to be considered for a VBA Program
 - 5.1 Halibut, Red King crab, tanner crab (*bairdi*) and herring
- 6. Total VBAs could be:
 - 6.1 limited to the current PSC limits
 - 6.2 Set allowable PSC limit to a set percentage of the biomass estimate (floating cap)
 - 6.3 option to allow Council to 'ratchet down' PSC limit
- 7. Current Time/Area/Cap Closures could be:
 - 7.1 retained
 - 7.2 eliminated
- 8. Current PSC allowances to separate fisheries could be:
 - 8.1 retained
 - 8.2 eliminated
- 9. Coverage. A VBA program could apply to:
 - 9.1 only groundfish operations with 100% observer coverage
 - 9.2 all groundfish operations during the time there is at-sea observer coverage
 - apply an average rate of observed vessels to vessels with less than 100% coverage
 - 9.3 Vessels that are moratorium/license limitation qualified
- 10. Enforcement
 - 10.1 Need for limiting the issues that are challengeable and
 - 10.2 Placing the burden of proof on the fishing operation
 - Pursue a system of 'Implied Consent'

11. Appeals
 - 11.1 Allow for an in-port accounting immediately after a vessel uses its entire VBA
 - 11.2 Establish an industry appeals committee to review all contested bycatch accountings within a specified period of time
12. Administration
 - 12.1 Accounting of bycatch by use of the observer program data

Need of the Plan Amendment

The current method of bycatch management (PSC caps, time/area closures, VIP violations) is broken and does not achieve its stated objective. Under the present system, there is a race for the PSC species along with the race for the directed fishery species, resulting in not achieving OY, poor use of PSCs and providing the opportunity for a few "bad actors" to prematurely close fisheries.

Objectives of the Proposal

A VBA bycatch management system will achieve the following objectives:

1. **Effective incentive.** Establish a bycatch management system that effectively provides individual vessels the incentive to minimize their bycatch rates. Establish a system that serves as a deterrent to high bycatch rates.
2. **Individual Accountability.** Provide for a system that holds vessels individually accountable for their use of bycatch.
3. **Achievement of Optimum Yield.** Establish a bycatch system that allows for the fleet to harvest up to OY annually.
4. **Optimal use of bycatch.** Establish a bycatch management system that maximizes the achievement of catching the TAC, with the minimal amount of PSC.

Are There Other Alternatives

Yes, the Council could move toward an ITQ system of management for the trawl and crab fisheries within which the bycatch species could be bundled and allocated to individual vessels.

Who Wins, Who Loses

If the harvest of OY is viewed as a benefit, then the public benefits when the TACs which cannot be harvested due to PSC time/area closures are harvested under a better bycatch management system. Fishermen who fish "clean" benefit by having the opportunity to fish for the entire TAC. Fishermen who fish "dirty" will lose by being excluded from fisheries in which they used up their allotted PSC amounts.

Supportive Data

NMFS observer data, NMFS catch records, and NPFMC bycatch analyses for previous amendments