MEMORANDUM

TO: Council, SSC and AP Members

FROM: Clarence G. Pautzke
Executive Director

DATE: September 30, 1998

SUBJECT: Total Catch Measurement

ESTIMATED TIME
8 HOURS
(for all D-1 Items)

ACTION REQUIRED

Review new information and discuss.

BACKGROUND

At the February 1998 meeting the Council had a lengthy discussion regarding compliance with various Magnuson-Stevens Act mandates, particularly the provisions for total catch and bycatch measurement, and whether our current management program satisfies those requirements. The SSC spent nearly two days on this issue and made several specific recommendations, as well as an overall statement as follows... *"...the SSC agrees with the Executive Director's suggestion in the cover memo that existing measures for observer, reporting, and monitoring requirements provide for a reasonable system of total catch and bycatch estimation. In many respects, the system in place is better than any found around the world..."*

Council discussion pointed out that the Act nevertheless calls for improvements in catch and bycatch management, and you requested further information, in the form of a matrix, which more specifically addressed the adequacy of measures by specific fishery. You also passed a motion to begin analysis (when staff became available) of scales and certified bins as additional measures for the pollock and yellowfin sole fisheries. At that time NMFS indicated that a report could be provided for this meeting, but not a formal analysis. At some point we need to provide a report to Congress on how we view our compliance with the Act, and update them on what additional measures we may be taking. NMFS staff will provide a status report at this meeting.

Adequacy of Catch Accounting for Groundfish and Prohibited Species

Discussion Paper

Background. Assessment of the adequacy of accounting for fishing mortality in fisheries under the jurisdiction of the North Pacific Fishery Management Council is required by the Magnuson-Stevens Act. The Act uses the terms "accuracy" and "enumeration." For purposes of this discussion, we assume the meaning of this language in the Act refers to the adequacy, for fishery management purposes, of the accounting for fishing mortality.

The only fishing mortality data in many fisheries, perhaps most fisheries in the world, are landing statistics. These statistics certainly under-represent fishing mortality. For non-target or bycatch species that are discarded at sea, landings data are useless to assess fishing mortality.

Compared to this norm, catch accounting in the North Pacific groundfish fisheries is much better. The program combining weekly reports from groundfish processors, and from observers aboard many catcher and processor vessels, collects data which enables estimation of fishing mortality for both target and bycatch species. A report, titled "Determination of Catch Quantity and Composition in the Federal Groundfish Fisheries off Alaska," was presented by NMFS to the NPFMC in February 1998, and documents the current information collection system.

This discussion paper presents a table, supplemental to the February report, which shows the percentage of each target species accounted for using the several different data sources that make up the current system. In addition, it discusses some of the structural gaps in the current system resulting in fishing mortality that is not counted in the current system.

Deficiencies. One objective of the catch accounting system is to account for all fishing mortality of groundfish species in the North Pacific. Another objective is to account for mortality of prohibited species catch (PSC) in groundfish fisheries.

Some deficiencies exist in the current system with regard to the first objective. Groundfish recordkeeping and reporting regulations, and the observer program, apply to the groundfish fishery. Mortality of groundfish in other fisheries is not well accounted for. Two examples of this deficiency are groundfish mortality in the IFQ halibut fishery, and in crab fisheries. Mortality of Pacific cod, in particular, may be significant in magnitude and needs to be accounted for to ensure that stocks are not overfished. Another significant problem in catch accounting may result in fixed gear fisheries where marine mammals depredate the catch as it is retrieved. Reports from the longline Greenland turbot fishery that in some cases, up to 70 percent of the catch may have been

depredated, indicate a potentially large gap in our ability to account for fishing mortality. In the extreme, overfishing could result from such a gap.

Accounting for PSC in the groundfish fisheries is completely dependent upon observer sampling data. The way in which deployment of observers is tied to vessel length results in inadequate data in some fisheries – particularly those where a large portion of the catch is taken by vessels under 60 feet in length.

Percentage of Catch by Data Source. The attached table lists six sources of data, and the percentage of the catch of each species that comes from that source. A brief description of the methods is given here. Additional information is in the aforementioned report on determination of catch.

Shoreside WPR. Landings at shoreside processors are accounted for using the weekly production reports submitted by the processors. No program exists to assess the accuracy of these data, or to independently estimate catch. The data are often considered adequate because of the State certified scale program, and the buyer-seller relationship between fisherman and processor.

Catcher Vessel Discards. These data are estimated by extrapolating groundfish discard reports from observers to the entire fishery. They are considered a better estimate than the industry reported logbook data.

At-sea Observed Hauls. The blend program selects either the observer report or WPR for each at-sea processor. When the observer report is selected, the data in this column are from hauls where the observer estimated the haul weight.

At-sea Unobserved Hauls. This portion of the catch comes from the observer data set, but these weights are not actually estimated by the observer. For these hauls or sets, the observer records the vessel estimate of catch from the logbook. No standard method exists for determination of these estimates, and no verification of their accuracy is possible.

WPR from Observed At-Sea Vessels. The data in this column are from observed vessels, where the blend program selected the WPR as the data source. This occurs if the total catch from the two sources is within 5 percent, or if the WPR catch is significantly higher than the observer report.

WPR from Unobserved At-Sea Vessels. These data are from WPR, with no observer data available for comparison. Weights of retained catch are calculated from reported products using standard product recovery rates, and weights of discards are those estimated and reported by the vessel.

Some conclusions from examination of the matrix are:

1. Catch accounting in the GOA groundfish fisheries comes predominately (78%) from shoreside WPR. In the BSAI, a higher proportion comes from observer estimates on processor vessels.
2. A relatively high percentage of flathead sole and rex sole catch in the GOA comes from WPR from unobserved vessels.
3. The GOA has a higher percentage than the BSAI of catch from catcher vessel discards. The accuracy of accounting for 'other species' catch may be affected by the large amounts that are discarded at sea. NMFS has relatively low confidence in the accuracy of these discard estimates, though no better data is available.
4. Greenland turbot and flathead sole in the BSAI have over half of the catch accounted for using unverified industry reports – the combination of at-sea unobserved hauls and WPR from unobserved vessels.
5. In the BSAI groundfish fisheries overall, 36 percent of the catch is accounted for using observer estimates of catch.

Improving Accounting for Fishing Mortality. A rigorous quantitative assessment of the accuracy of catch measurement is not possible except in controlled experimental situations. One example of this is the study conducted by the Alaska Fishery Science Center aboard the **F/T American Triumph,** which compared several methods of determining total catch weight. These results provide insight into the best methods to use, but do not provide an answer to the question of accuracy of accounting in the commercial fishery.

The most productive, practical approach to improving accounting for fishing mortality consists of two initiatives.

> First, identify all sources of fishing mortality and institute appropriate data collection programs to estimate and account for the mortality.
>
> Second, continually work to improve the collection of data, and procedures for using the data to account for fishing mortality. Improved methods and tools for data collection, coupled with improved verification and monitoring programs for all the data sources, can be expected to improve the accuracy of catch accounting.

Conclusion. The fishery management system for North Pacific groundfish fisheries attempts to make comprehensive estimates of target catch and bycatch, including fish landed or retained for processing, and fish discarded at sea. The data collection system is, by and large, successful in achieving that goal. We should carefully examine gaps in the current system, and find ways to improve the comprehensive accounting for fishing mortality. Confidence in the catch accounting system can be increased by correcting gaps in the comprehensive program, improving data collection methods, and by increasing verification and monitoring of catch accounting and reporting.

D-1(b)
Total catch measurement: Matrix summary by species

Blend data through 9/12/98, No CDQ included

Percentage of catch by source of data

1998 Bering Sea and Aleutian Islands Species	Total Metric tons	Shoreside WPR	Catcher Vessel Discards	Observer Reports for At-Sea Observed Hauls	Observer Reports for At-Sea Unobserved Hauls	WPR from Observed At-Sea Vessels	WPR from Unobserved At-Sea Vessels	
Atka mackerel	46,845	0%	1%	55%	25%	19%	0%	100%
Arrowtooth Flounder	10,262	0%	8%	31%	26%	21%	14%	100%
Other Flatfish	12,220	1%	1%	38%	28%	24%	8%	100%
Flathead sole	20,649	0%	3%	27%	26%	19%	25%	100%
Greenland turbot	7,862	5%	2%	19%	41%	18%	13%	100%
Other Species	18,262	0%	8%	28%	41%	16%	8%	100%
Pacific cod	148,031	27%	0%	24%	35%	9%	5%	100%
Pollock	651,147	32%	0%	37%	14%	16%	1%	100%
Pacific ocean perch	9,269	1%	0%	62%	15%	22%	0%	100%
Other rockfish	387	10%	4%	50%	8%	22%	6%	100%
Rock sole	32,275	0%	7%	34%	30%	18%	11%	100%
Sablefish	889	43%	2%	11%	21%	9%	13%	100%
Squid	290	22%	5%	63%	2%	6%	1%	100%
SCNO/SRRE	3,584	0%	1%	55%	23%	21%	0%	100%
Yellowfin sole	68,187	0%	0%	44%	32%	19%	5%	100%
Total	1,030,159	24%	1%	36%	21%	16%	3%	100%

1998 Gulf of Alaska Species	Total Metric tons	Shoreside WPR	Catcher Vessel Discards	Observer Reports for At-Sea Observed Hauls	Observer Reports for At-Sea Unobserved Hauls	WPR from Observed At-Sea Vessels	WPR from Unobserved At-Sea Vessels	
Atka mackerel	290	0%	52%	26%	10%	0%	13%	100%
Arrowtooth Flounder	11,505	4%	32%	15%	18%	16%	16%	100%
Black/blue rockfish	212	100%	0%	0%	0%	0%	0%	100%
Demersal Shelf rockfish	541	78%	14%	2%	3%	2%	0%	100%
Deep water Flatfish	2,393	80%	2%	2%	9%	3%	3%	100%
Flathead sole	1,600	44%	7%	4%	9%	8%	28%	100%
Northern rockfish	3,033	50%	3%	17%	11%	18%	1%	100%
Other Species	3,357	16%	64%	3%	3%	5%	8%	100%
Pacific cod	58,964	84%	3%	2%	3%	3%	5%	100%
Pelagic shelf rockfish	3,070	22%	2%	31%	20%	24%	0%	100%
Pollock	90,457	98%	1%	0%	0%	0%	0%	100%
Pacific ocean perch	8,736	25%	1%	29%	16%	26%	2%	100%
Rex sole	2,544	8%	1%	9%	13%	21%	48%	100%
Sablefish	11,402	77%	4%	5%	8%	4%	2%	100%
Shallow water flatfish	2,961	78%	16%	1%	2%	1%	3%	100%
Slope rockfish	653	2%	1%	32%	37%	30%	0%	100%
Shortraker/rougheye rockfish	1,516	21%	18%	27%	8%	25%	1%	100%
Thornyheads	934	45%	10%	29%	0%	11%	5%	100%
Total	204,168	78%	5%	4%	4%	5%	3%	100%