Marine Conservation Alliance
promoting sustainable fisheries to feed the world

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Mr. Michael Payne
Chief, Marine Mammal Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
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Dear Mr. Payne:

These comments are submitted by the Marine Conservation Alliance ("MCA") in response to the request by the National Marine Fisheries Service ("NMFS") for comments on the 2005 draft Stock Assessment Reports ("SARs"). 70 Fed. Reg. 37091 (June 28, 2005).

MCA was established in 2001 by fishing associations, communities, Community Development Quota groups, harvesters, processors, and support sector businesses to promote the sustainable use of North Pacific marine resources by present and future generations – based on sound science, prudent management, and a transparent, open public process. MCA supports research and public education about the fishery resources of the North Pacific, and seeks practical solutions to resource use questions to protect the marine environment and to minimize adverse impacts on the North Pacific fishing community.

In these comments, MCA will focus principally on five stocks of marine mammals, the eastern North Pacific Alaska resident stock of killer whales, eastern North Pacific transient stock of killer whales, central North Pacific stock of humpback whales, western North Pacific stock of humpback whales, and western U.S. stock of Steller sea lions. However, before proceeding to a review of individual stock assessment reports, MCA will focus on a critical issue of general applicability regarding the manner in which NMFS is overestimating marine mammal bycatch.

The formula NMFS uses to estimate bycatch in a given fishery employs a ratio estimate. The ratio, Rhat, is the number of marine mammal deaths and serious injuries per ton of fish caught. Thus, Rhat = m/t where "m" is the number of marine mammals of a given species killed or seriously injured in fishing sets observed by NMFS observers and "t" is the total catch of fish in the same observed sets. However, the ratio alone is insufficient to determine the total incidental bycatch of marine mammals since fisheries generally do not have 100% observer coverage. The missing component is the total effort in the fishery. Thus, to estimate total marine mammal bycatch (B), NMFS employs the formula B = Rhat x T where "T" is the total observed and unobserved harvest from the fishery.

This formula produces a bycatch estimate for the observed and unobserved parts of the fishery because it multiplies the ratio of marine mammals seriously injured or killed per ton of fish caught times the total number of tons of fish caught. However, NMFS does not stop here. If there were marine mammals killed or injured in non-observed sets (i.e., reported in logbooks or otherwise known), NMFS adds these takes to the previously computed bycatch. So doing artificially inflates the bycatch estimate. For example, assume a fishery takes 100,000 mt of fish in observed sets and 300,000 mt in unobserved sets. Assume further that the observed portion of the fleet had two marine mammal mortalities. Thus, Rhat = 2/1000,000 or 0.00002 and B = 0.00002 x 400,000 or 8. The ratio of marine mammal bycatch per ton of fish caught in observed sets has been multiplied by the total tonnage of fish caught in the entire fishery in order to estimate the total take for the entire fishery.

However, if three marine mammals were reported killed in unobserved fishery sets, NMFS adds these three mortalities to the fishery-wide total of eight and declares the fishery has a bycatch of eleven marine mammals. By so doing, NMFS double counts unobserved but reported bycatch thereby artificially and incorrectly exaggerating the number of takes with a procedure that is biased and scientifically unsound.

A second issue, related to the first, further demonstrates the flaws in the formula and model by which NMFS estimates bycatch. NMFS calculates confidence limits for the estimate of marine mammal bycatch. Some of these estimates include negative numbers (e.g., Perez 2004, at 64). This is not a reasonable result. There cannot be a negative bycatch of marine mammals. The fact that NMFS' model produces confidence limits showing negative bycatch indicates that the model used to estimate bycatch is fundamentally flawed and that the confidence intervals are not of the stated size.

Eastern North Pacific Alaska Resident Stock of Killer Whales

The SAR notes that in previous SARs the Alaska and northern resident populations were considered one stock. However, in this SAR, NMFS asserts these are discrete populations based on acoustic and genetic data. Draft Alaska Marine Mammal Stock Assessment 2005 ("Draft Assessment") at 97. NMFS fails, however, to provide the appropriate and necessary analyses to support this determination.

In calculating N_{min}, the SAR notes that NMFS is using photo-identification techniques to assign killer whales to the various resident population groups NMFS has identified. However, the SAR states that approximately 600 killer whale photographs were not included in the overall population counts because the photographs have not been matched for population grouping. Draft Assessment at 98. In addition, NMFS has excluded 68 animals because the data are ten years old. Draft Assessment at 98. These exclusions call into question NMFS' calculation of N_{min}. Killer whales routinely live to 30 years and excluding 68 whales because the data is ten years old arbitrarily reduces N_{min}. Simply ignoring as many as 600 whales is equally arbitrary.

Further, the SAR states the population has been increasing by 3.3% annually for 18 years. Draft Assessment at 100. Then, NMFS states it lacks the data to determine if the population is increasing or decreasing and classifies the stock as status uncertain, assigning it a recovery factor of 0.5. Draft Assessment at 100. Eighteen years of annual population increases is sufficient evidence of a population trend. This species should be assigned a recovery factor of 1.0

The SAR asserts the mean annual total mortality rate for all fisheries for 1999-2003 was 2.5 animals. Draft Assessment at 100. However, it is unclear how this number was calculated. For example, NMFS does not appear to be using the formula discussed above because, in some instances, the observed mortality and estimated mortality numbers are identical, even when the observer percentage is well below 100%. Thus, it is unclear how effort data is accounted for. Indeed, the entire set of calculations of fishery related marine mammal mortality and serious injury in Table 30, and in all similar tables throughout the Draft Assessment, appear to be incorrect. For the BSAI pollock trawl fishery, four estimated mortalities over five years translates to a mean annual mortality of 0.61 animals according to NMFS. Draft Assessment at 101. But the BSAI Greenland turbot longline fishery has fewer mortalities, three, over the same five year interval and is assigned a mean annual mortality of 0.60. It is statistically not possible for fewer total mortalities to translate into the same mean annual mortality rate. And the four total mortalities over five years in the BSAI Pacific cod longline fishery translate into a different mean annual mortality than the four mortalities in the BSAI pollock trawl fishery. This is not possible. NMFS' calculations of fishery related mortality are clearly erroneous.

The SAR admits that the animals taken incidental to commercial fisheries have not been identified genetically and, therefore, it is impossible to determine if they belong to the eastern North Pacific resident or transient stocks of killer whales. Draft Assessment at 101. "Accordingly," states the SAR, these mortalities are assigned to both killer whale stocks. Draft Assessment at 101. In other words, they are double counted. The SAR counts one dead or injured animal as if it were two, thereby doubling the number of fishery mortalities and injuries. The SAR engages in this dubious process while simultaneously claiming that these two stocks are genetically distinct and it is scientifically impossible for one whale to belong to both stocks.

Because of this double counting, the SAR should be amended to reduce the estimated fishing mortality by 50%. If NMFS persists in retaining the incorrect procedure of double counting dead and injured animals, then, when assessing the impact of fisheries, the populations of the resident and transient stocks of killer whales should also be combined. If it is considered scientifically invalid to do that, it is also scientifically invalid to combine the mortalities and injuries. Further exaggerating the estimate of total mortalities and serious injuries is the fact, noted above, that NMFS calculates the total of such injuries and mortalities for the entire fishery and then adds unobserved but reported injuries and mortalities, thus effectively counting these mortalities and injuries twice.

Eastern North Pacific Transient Stock of Killer Whales

The Draft Assessment notes the existence of three different transient stocks based on the presence of one or two different mtDNA haplotypes, acoustic differences and nuclear (mircrosatellite) DNA. Draft assessment at 110-111. Again, NMFS fails to provide adequate scientific explanation and justification for this conclusion. Serious questions exist regarding the extent of genetic variability and space time separation.

Regarding the N_{min} calculation, the SAR admits the population of this stock has been increasing 7% - 10% annually for many years. Draft Assessment at 184. This clearly establishes that NMFS' population estimates are low and should be increased to include admitted population increases. Indeed, if the population increased 7% - 10% for just give five years, the population is 1.4 – 1.6 times the size of the early 1990s population. Thus, the N_{min} value for this stock is severely underestimated.

As discussed above, when calculating fishery induced mortality and injury, the SAR considers the death of one killer whale to be the death of two, counting one mortality as a death in both the Alaska resident stock and the transient stock. Draft Assessment at 113. Such a methodology is scientifically unsound. In addition, the same statistical errors and anomalies infecting Table 30 also infect Table 32. Draft Assessment at 113. Thus, once again, NMFS' calculations of incidental marine mammal mortalities and serious injuries cannot be correct. And, as noted above, NMFS' method of estimating total bycatch for the entire fishery and then double counting unobserved but reported bycatch further artificially inflates the bycatch estimate.

Central North Pacific Stock of Humpback Whales

The SAR notes there are three stocks of humpback whales recognized within the U.S. Exclusive Economic Zone ("EEZ") of the North Pacific. The Draft Assessment also notes there may be as many as six subpopulations of humpback whales on the wintering grounds. Draft Assessment at 181. Finally, the SAR states that NMFS is "considering whether the southeast Alaska feeding area, and possibly other feeding areas in the North Pacific, should be formally designated as separate stocks under the MMPA." Draft Assessment at 182. Although absent from this SAR, in the SAR for the western North Pacific stock of humpback whales, NMFS admits there is "considerable overlap" between the western and the central North Pacific humpback whales. Draft Assessment at 175. This admission raises serious questions about NMFS' division of these stocks and particularly about NMFS' methodology and conclusions about assigning whales as members of one stock or the other. Indeed, NMFS admits the agency is unable to determine to which stock a sighted whale should be assigned. Draft Assessment at 175-176. If NMFS is unable to determine to which stock a sighted whale should be assigned, how can the stock be divided and how can NMFS arrive at any defensible population estimates of the individual stocks?

Regarding the mortality calculations, the same questions raised above regarding Table 30

and the computation of fishery induced mortality and injury arise here regarding Tables 42 and 44. Draft Assessment at 186, 189-190. For example, the BSAI pollock trawl fishery and the Bering Sea sablefish pot fishery each have one estimated mortality over the past five years but NMFS' methodology results in the same number of mortalities over five years having a different mean annual mortality rate. Such a result shows the flaws in NMFS methodology and conclusions.

NMFS estimates minimum fishery induced mortality for the northern portion of the stock at 2.6 humpback whales annually and for the southeast Alaska portion of the stock at 2.7 humpback whales annually. Draft Assessment at 190. However, Tables 42, 43, and 44 simply do not provide any way to arrive at those numbers. Further, these numbers include mortalities and injuries in Hawaii. Given that the animals resident in Hawaii come from various stocks, NMFS cannot be certain that the Hawaiian mortalities and injuries are from the central North Pacific stock. Adding to the confusion, Table 42 appears to claim that the whales are from the central North Pacific stock while Table 44 admits that the summer feeding area is unknown. Moreover, the Draft Assessment at 190 attributes the same mortality from Hawaii (0.8 + 0.25) to both the northern portion of the stock and to the southeast Alaska portion of the stock. NMFS is again double counting the same animals. And this double counting issue is compounded by the fact that NMFS does not know from which stock the animals come and by the fact that NMFS is using the flawed formula for calculating bycatch discussed above.

Western North Pacific Stock of Humpback Whales

The same questions that are presented in the preceding section arise regarding how NMFS assigned whales to different subgroups. And for these same reasons, NMFS' conclusions are suspect. Indeed, for this stock, the discussion of the minimum population estimate states that N_{min} is conservative because the mark-recapture estimates to the west of Kodiak show the existence of 410 animals and the results of summer surveys in the Bering Sea indicate the presence of over 1,000 animals. Given that, the N_{min} calculation cannot be correct. Further compounding the problem, NMFS asserts that a trackline survey showed an estimated abundance of 1,175 humpback whales in the central Bering Sea during the summer. Draft Assessment at 175-176. The simple truth is that NMFS has severely underestimated the population level of this and other north Pacific humpback whale stocks.

Furthermore, in the last seven years for which data are available, this stock has increased 7% annually. Draft Assessment at 176. Again, this provides further evidence that the NMFS population estimates are low and should be increased to reflect admitted reproduction rates. Indeed, if the population increased at this rate for only the last five years, the population is at least 1.4 times the size of the early 1990s population. Thus, the N_{min} value for this stock is a severe underestimate.

Regarding fishery interactions, NMFS notes that the average annual mortality for the observed fisheries was 0.49 humpback whales "from the stock." However, the SAR admits that

stock identification is uncertain and, therefore, "this mortality is assigned to both the central and western stocks." Draft Assessment at 177. Once again, NMFS is double counting mortalities. Double counting of mortalities is scientifically and statistically inappropriate. Although the SAR for the central North Pacific stock does not contain this admission of double counting, Tables 41 and 42, Draft Assessment at 177 and 185, are identical and it is clear that NMFS is double counting mortalities and serious injuries. Thus, the same defects noted above regarding the interactions attributed to the central North Pacific stock are equally applicable here. And this double counting is compounded by NMFS' process of estimating total bycatch for the entire fishery and then adding unobserved but reported bycatch, thus double counting the estimated bycatch on unobserved sets.

Steller Sea Lion – Western U.S. Stock

The SAR asserts that the minimum population estimate of the western U.S. stock of Steller sea lions is 38,513. Draft Assessment at 2. The SAR also admits that Steller sea lions in Russia "are, at this time, part of the western stock." Draft Assessment at 1. Nevertheless, NMFS excludes the Russian portion of this stock from the population estimate "because preliminary results of genetics data indicates that the Russian animals may constitute a separate stock…." Draft Assessment at 1. Unless and until these animals are, in fact, designated as a separate stock, it is arbitrary, capricious, and scientifically invalid to deliberately exclude a portion of the stock when determining that stock's population level. Indeed, the Canadian portion of the killer whale populations is included in the estimate of N_{min} for those species.

The SAR asserts that the mean annual mortality from all fisheries equals 30.7 animals. Draft Assessment at 6. Not only are the computations in Table 2, Draft Assessment at 4-6, not clear, but the same issues raised above regarding Table 30 are applicable here. For example, the estimated mortality for 5 years for the BSAI flatfish trawl fishery is 14 animals over the 5 year period. The average is 2.8 yet the NMFS chart asserts the mean annual mortality is 3.35. There are similar mathematical discrepancies in virtually every computation. Furthermore, NMFS states that California sea lions within the Gulf of Alaska represent "only 2.2% of all interactions" in the Gulf of Alaska. Despite admitting that not all interactions are with Steller sea lions, NMFS classified each and every unknown injury and mortality as an injury to or mortality of a Steller sea lion. Draft Assessment at 6. If California sea lions represent 2.2% of interactions, the overall mortality and injury rate should also be reduced by 2.2%. Finally, the largest component of the total mean annual mortality for all fisheries is the Prince William Sound salmon drift gillnet fishery. This one fishery is assigned 14.5 mean annual mortalities, almost 50% of the total. Draft Assessment at 5. However, the 14.5 mean annual mortalities are based on data that is 14 years old. Not only is such data suspect because fishing practices have likely changed, but the population level of Steller sea lions in the Prince William Sound area have decreased, making interactions less likely. Further, Prince William Sound is on the eastern edge of the Steller sea lion western stock and some part of these 14.5 assigned mortalities are probably from the eastern Steller sea lion stock, which has increased in size. The simple truth is that NMFS' calculations of incidental mortalities and serious injuries is, once again, fundamentally flawed.

Conclusion

The Draft Assessment contains fundamental scientific, statistical, and analytical flaws that render its conclusions regarding population levels, recovery factors, and interaction levels unsupportable. Indeed, Exhibit 1 attached hereto calculates marine mammal bycatch using only observed lethal takes. Exhibit 1 also combines the populations of resident and transient killer whales and of humpback whales in order to address and correct the errors noted above. This Exhibit demonstrates the proper way to compute bycatch and shows that in every instance the total marine mammal bycatch in each fishery does not exceed 10% of the PBR for that stock of marine mammals.

MCA appreciates the opportunity to submit these comments and looks forward to working with NMFS to correct the noted errors in the SARs.

Sincerely,

David A. Benton
Executive Director

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EXHIBIT 1

Total catch in BS-GOA fisheries 1999-2003, percent of hauls monitored, observed bycatch, estimated bycatch, and total PBR of all sto
humpback whales and the western stock of Steller sea lions. In all cases, the total fisheries takes does not exceed 10% of the PBR.

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Species	Fishery	Total Catch	%monitored	Total bycatch in observed hauls	Estimated Total bycatch	PBR Total 5 years	10% PBR
Killer whales (combined transients and residents)							
	BSAI Pollock Trawl	6474805.2	78.79	1	1.27	98.00	
	BSAI Flatfish Trawl	940191.9	62.22	1	1.61	98.00	
	BSAI Greenland Turbot	31185.5	39.85	1	2.51	98.00	
	BSAI Pacific Cod LL	643451.3	31.07	1	3.22	98.00	
	BSAI Sable fish pot	1233.1	32.59	0	0.00	98.00	
	Total				8.60	98.00	
Humpback whales (all stocks)							
	BSAI Pollock Trawl	6474805.2	78.79	1	1.27	64.5	
	BSAI Flatfish Trawl	940191.9	62.22	0	0.00	64.5	
	BSAI Greenland Turbot	31185.5	39.85	0	0.00	64.5	
	BSAI Pacific Cod LL	643451.3	31.07	0	0.00	64.5	
	BSAI Sablefish pot	1233.1	32.59	0	0.00	64.5	
	Total				1.27	64.5	
Steller sea lions, western stock							
	BSAI Pollock Trawl	6474805.2	78.79	9	11.42	1155	
	BSAI Flatfish Trawl	940191.9	62.22	11	17.68	1155	
	BSAI Greenland Turbot	31185.5	39.85	0	0.00	1155	
	BSAI Pacific Cod LL	643451.3	31.07	1	3.22	1155	
	BSAI Sablefish pot	1233.1	32.59	0	0.00	1155	
	Other fisheries			11	20.78	1155	
	Total			32	53.10	1155	