

## 9.0 COMMENT ANALYSIS REPORT

In December 2008, the National Marine Fisheries Service (NMFS), in conjunction with the North Pacific Fishery Management Council (Council), issued the Bering Sea Chinook Salmon Bycatch Management Draft EIS/RIR/IRFA. In conformance with NEPA requirements, NMFS solicited public comment on the DEIS/RIR/IRFA. NMFS accepted public comments during an 80-day public comment period from December 5, 2008, to February 23, 2009. NMFS received 61 letters of comment.<sup>49</sup>

This Comment Analysis Report (CAR) provides summaries of the public comments received during the comment period and presents the agency's responses. Changes to the EIS and RIR from draft to final as a result of public comment are noted in this report.

A preliminary CAR was first prepared to provide information to the decision-makers and the public prior to the publication of the Final EIS and Final RIR.<sup>50</sup> The preliminary CAR served as an intermediate document that informed NMFS, the Council, and the public of the issues that need to be addressed in the Final EIS and Final RIR. The preliminary CAR contained summaries of the public comments and the agency's responses. The preliminary CAR also contained, as appendices, the EIS and RIR sections that authors substantively revised based on public comments. The preliminary CAR was a tool used by the EIS and RIR authors to revise the documents and respond to each statement of concern. The preliminary CAR was presented to the Council in April 2009 when it took final action to recommend Amendment 91.

### 9.1 The Role of Public Comment

NEPA is a procedural law intended to facilitate better government decisions concerning the management of our lands and oceans. The law has an environmental emphasis. Drafters of the law believed that by requiring a process designed to provide decision-makers with the best information available about a proposed action and its various alternatives, fewer adverse impacts would occur. NEPA does not dictate protection of the environment, but instead assumes that common sense and good judgment, based on a thorough analysis of impacts of various alternatives, will result in the development of the Nation's resources in a way that minimizes adverse impacts to our environment. This is achieved by requiring an open public process whereby the responsible government agency, combined with the stakeholders associated with a particular natural resource and development project, pull together and present relevant information for use in making decisions.

<sup>49</sup> NMFS posted the public comments received on the NMFS Alaska Region web page at: <http://www.fakr.noaa.gov/sustainablefisheries/bycatch/salmon/chinook/comments/default.htm>

<sup>50</sup> NMFS posted the preliminary CAR on the NMFS Alaska Region web page at: [http://www.fakr.noaa.gov/sustainablefisheries/bycatch/salmon/chinook/eis\\_car0309.pdf](http://www.fakr.noaa.gov/sustainablefisheries/bycatch/salmon/chinook/eis_car0309.pdf)

### **9.1.1 What is the Response to Public Comments?**

NEPA requires government agencies to include in a Final EIS all the comments received on the Draft. The Final EIS must include responses to the comments, and must describe any changes made to the EIS as a result of those comments.

According to the Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 CFR §1503.4), an agency preparing a FEIS shall assess and consider comments both individually and collectively and shall respond by one or more of the means listed below, stating its response in the final statement. Possible responses include the following:

1. Modify alternatives including the proposed action.
2. Develop and evaluate alternatives not previously given serious consideration by the agency.
3. Supplement, improve, or modify its analysis.
4. Make factual corrections.
5. Explain why the comments do not warrant further agency response, citing the sources, authorities, or reasons which support the agency's position and, if appropriate, indicate those circumstances which would trigger agency reappraisal or further response.

NMFS staff, Council staff, and ADF&G staff, as a cooperating agency, have undertaken a careful and deliberate approach to ensure that all substantive public comments were reviewed, considered, and responded to.

### **9.1.2 Analysis of Public Comments**

The analysis of public comment on the DEIS/RIR/IRFA was a multi-stage process that included reviewing and summarizing the comments within each submission, preparing responses, and reviewing the responses. The process is explained in detail below.

The NMFS Alaska Region staff copied and logged all incoming letters of comment, maintaining a comprehensive list of all public comments. Staff assigned each letter or email a unique submission ID number. NMFS posted the 61 letters of comment in the order in which they were received on the NMFS Alaska Region web page.<sup>51</sup>

Each letter of comment was reviewed by the preparers. The preparers divided each submission by its individual comments, each of which was assigned a Comment ID number. The goal was to capture each sentence and paragraph in a comment letter containing substantive content pertinent to the DEIS/RIR/IRFA. Substantive content included assertions, suggested alternatives or actions, data, background information or clarifications relating to the DEIS/RIR/IRFA document or its preparation. The substantive comments were summarized and organized by issue area. Within the 61 letters received by NMFS, the preparers identified 304 specific substantive comments. The preparers then wrote the response for each summarized comment.

The comment summaries and responses are presented by chapter and then by subject area. During the process of identifying statements of concern, all comments were treated equally. The emphasis is on the

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<sup>51</sup> URL: <http://www.fakr.noaa.gov/sustainablefisheries/bycatch/salmon/chinook/comments/default.htm>

content of the comments. They were not weighted by organizational affiliation or other status of commenters. No effort has been made to tabulate the number of people for or against a specific aspect of the DEIS/RIR/IRFA. In the interests of producing a Final EIS and Final RIR that both meets the mission of NMFS and best serves all stakeholders, all comments have been considered equally on their merits.

### **9.1.3 Quality Control and Review**

All comments and responses were reviewed by the preparers and NOAA General Counsel-Alaska Region. Additionally, various procedures were established in the analysis process to prevent a submission or comment from being inadvertently omitted. Communication and cross-checking between the submissions and the comments has ensured that all submissions received during the comment period are included in the report.

## **9.2 Chapter 1 Comments**

These comments are on Chapter 1; the purpose and need, Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act or MSA) national standards, NEPA issues, and general EIS issues. Changes were made to Chapter 1 to reflect these comments and to up-date the information on the Bering Sea pollock fishery, Chinook salmon bycatch in the pollock fishery, the consultations with Alaska Native tribes, and the Council's community outreach process.

NMFS acknowledges the following general comments:

- NMFS has portrayed a very jaded management perspective and it is clear that NMFS is mainly concerned with ensuring that pollock fishing continues even if salmon are not effectively conserved.
- Not enough is being done to reduce the bycatch high rate in the pollock trawl fishery.
- The proposed actions (including "no Action") have the potential to significantly affect the human environment of the Bering Sea.
- It takes too long to implement a management action when there are clear concerns regarding conservation and sustainability of the Chinook salmon stocks.
- Take final action in April 2009 to meet the goal as stated in the DEIS of controlling and reducing salmon bycatch regardless of annual abundance. Despite the deficiencies of the DEIS, any further delay would be detrimental to the salmon resource, meeting escapement objectives, and the communities and people who depend on the salmon resource, both in the US and Canada.
- Immediate action should be taken to reduce wasteful Chinook salmon bycatch in the groundfish fisheries despite the numerous problems with the DEIS. It is taking too long to implement this management action when there are clear concerns regarding conservation and sustainability of the Chinook salmon stocks. The state of Chinook salmon, and the communities who depend on them for subsistence and income, has deteriorated rapidly since the Council first began this action.
- Flexibility in the strategy to minimize salmon bycatch is important to minimize effects of the pollock fishery, but should not preclude decisive action to protect salmon stocks and the communities, commercial fisheries, and subsistence fisheries that depend on them.

### 9.2.1 Comments on legal issues

**Comment 1-1:** How are the alternatives consistent with the Magnuson-Stevens Act requirement to reduce salmon bycatch?

**Response:** The alternatives represent a range of bycatch management measures for analysis that assist the decision-makers and the public in determining the best alternative to meet the purpose and need for the action. The EIS explains the purpose and need in section 1.2. The alternatives meet the purpose and need by presenting different ways to minimize Chinook salmon bycatch in the Bering Sea pollock fishery to the extent practicable while achieving optimum yield. Based on the EIS analysis and the public comments received, the agency will be able to make an informed decision on which alternative best meets the purpose and need for the action. Amendment 91 must comply with the Magnuson-Stevens Act and all other applicable federal laws. With respect to the Magnuson-Stevens Act, Amendment 91 must be consistent with all ten national standards. The most relevant for this action are National Standard 9, which requires that conservation and management measures shall, to the extent practicable, minimize bycatch; and National Standard 1, which requires that conservation and management measures prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry. The Magnuson-Stevens Act defines optimum yield as the amount of harvest which will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems. The FEIS and the record of decision explain how the final preferred alternative best meets the purpose and need and complies with the Magnuson-Stevens Act.

**Comment 1-2:** The Chinook salmon bycatch plan was developed to meet the objectives of National Standard 9. However, what is required by National Standard 9 has been hotly debated before the courts with various parties offering different interpretations. According to the DEIS, the interpretation of National Standard 9 used to justify the proposed bycatch reduction proposal is that National Standard 9 "expressly requires that bycatch be avoided to the maximum extent practicable" and that "every" practicable effort be made to avoid bycatch, DEIS at 688-689. This interpretation of National Standard 9 has been expressly rejected by the courts as unnecessarily and unlawfully strict. Contrary to the DEIS, National Standard 9 does not "expressly" require that bycatch be avoided to the "maximum" extent practicable. Alternatives 2-4 were designed to meet a non-existent legal standard. National Standard 9 does not require that these bycatch reduction measures be adopted.

**Response:** This comment mischaracterizes the EIS. In no less than ten places, the EIS correctly notes that National Standard 9 requires that the adopted bycatch management measures, among other things, minimize bycatch to the extent practicable. Most prominently, the Purpose and Need section clearly states: "The purpose of Chinook salmon bycatch management in the Bering Sea pollock fishery is to minimize Chinook salmon bycatch to the extent practicable, while achieving optimum yield."

As the comment notes, on pages 688-89 of the draft RIR (Chapter 10 of the DEIS) is a quotation from the October 2008 minutes of the Scientific and Statistical Committee (SSC) that contains the SSC's discussion of the difference between an incidental catch allowance and a prohibited species catch limit, the latter of which "must be regarded as a 'prohibition' against harvest (to the maximum extent practicable), with an absolute cap." The RIR goes on to explain that "this is so critical a distinction that it has been enshrined as National Standard 9 of the Magnuson-Stevens Act, expressly require[ing] that bycatch be avoided to the maximum extent practicable." NMFS agrees that it would have been preferable to use the exact language of National Standard 9 here. Accordingly, NMFS has corrected the non-quoted portion of the text in RIR Section 6.1.10, Implications of Sector and Cooperative Level Quota Share Allocation of Bycatch Caps. However, in light of the EIS's correct statements in the other, more relevant

passages and the context of the SSC's discussion here, the EIS did not rely on the standard set forth on in the SSC minutes any material way, including with respect to the development, discussion, and analysis of Alternatives 2-5.

**Comment 1-3:** Alternatives 2-4 each violate National Standard 1 of the MSA by preventing the achievement of optimum yield in the pollock fishery. First, as the DEIS readily admits through its calculations of forgone catch and revenue, the bycatch reduction measures will prevent the harvest of the pollock TAC. Achieving the optimum yield for the BSAI groundfish fishery depends on fully harvesting the pollock TAC. Additionally, Alternatives 2-4 will prevent the achievement of the optimum yield the fishery is capable of producing on a continuing basis by forcing the harvest of less biologically acceptable age and size classes, all in violation of National Standard 1. Finally, preventing the full harvest of the pollock TAC because of bycatch-induced fishery closures will deprive the U.S. of substantial quantities of protein. Given that food production is a key element of achieving optimum yield, restrictions on food production caused by Alternatives 2-4 violate National Standard 1.

**Response:** NMFS disagrees. This comment conflates achieving optimum yield with harvesting the total allowable catch. The MSA defines optimum yield to mean “the amount of fish which . . . (A) will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems; [and] (B) is prescribed as such on the basis of the maximum sustainable yield from the fishery, as reduced by any relevant economic, social, or ecological factor . . . .” 16 U.S.C. § 1802(33). NMFS has established that the optimum yield for the Bering Sea Aleutian Island Management area is a range from 1.4 to 2.0 million metric tons (mt). 50 C.F.R. § 679.20(a)(1)(i).

By contrast, the total allowable catch “is the annual harvest limit for a stock or stock complex, derived from the [acceptable biological catch] ABC by considering social and economic factors” (Fishery Management Plan for Groundfish of the BSAI Management Area (“BSAI FMP”) (Jan. 2009) at 13). NMFS’s regulations provide that the “sum of the TACs so specified must be within the [optimum yield] range . . . .” 50 C.F.R. § 679.20(a)(2). The BSAI FMP provides further elaboration of the differences among optimum yield (OY), acceptable biological catch (ABC) and total allowable catch (TAC):

In addition to definitional differences, OY differs from ABC and TAC in two practical respects. First, ABC and TAC are specified for each stock or stock complex within the “target species” and “other species” categories, whereas OY is specified for the groundfish fishery (comprising target species and other species categories) as a whole. Second, ABCs and TACs are specified annually whereas the OY range is constant. The sum of the stock-specific ABCs may fall within or outside of the OY range. If the sum of annual TACs falls outside the OY range, TACs must be adjusted or the FMP amended (BSAI FMP at 13).

Thus, whether salmon bycatch management measures preclude the pollock fishery from harvesting its entire TAC for any given year is not determinative of whether the BSAI groundfish fishery achieves optimum yield. If the total catch for the BSAI groundfish fishery is within 1.4 and 2.0 million mt over the long-term, optimum yield will have been met. NMFS clarified the use of the term optimum yield in the FEIS to reflect this response and the statute, NMFS’s regulations, and the BSAI FMP, which are authoritative and explicit on this issue.

It is worth emphasizing that “optimum yield is a standard that should be achieved over the long-run, not necessarily a standard that must be achieved with precision each year.” Nat’l Coalition For Marine Conservation v. Evans, 231 F.Supp.2d 119, 135 (D. D.C. 2002). See also 50 C.F.R. § 600.310(f)(1)(ii) (“achieving, on a continuing basis, the OY from each fishery’ means producing, from each fishery, a longterm series of catches such that the average catch is equal to the average OY and such that status

determination criteria are met”). In this case, even if the Council and NMFS were to evaluate compliance with National Standard 1 only in terms of the amount of groundfish harvested in the BSAI Management Area, each alternative would achieve optimum yield (1.4 – 2.0 million mt), though to varying degrees. For example, if one considers the lowest hard cap option (29,300), the table below shows that, under the worst case scenarios, after subtracting the forgone pollock from the total catch within the BSAI groundfish fishery, optimum yield still would have been met for the 2003-2007 period.

Year	Alternative	Cap	Total forgone pollock (mt)	BSAI groundfish total catch	Difference
2003	2a (50/50)	29,300	392,440	1,973,541	1,581,101
2004	2a (50/50)	29,300	286,802	1,979,143	1,692,341
2005	2a (50/50)	29,300	401,470	1,981,374	1,579,904
2006	2d (50/50)	29,300	503,048	1,976,553	1,473,505
2007	2a (70/30)	29,300	653,339	1,856,717	1,203,378

See Table 4-4 through Table 4-8. Theoretically, while the total catch in 2007 would have been below 1.4 million mt, the results of that single year do not undermine the conclusion that OY would have been met even under the worst case scenario because, as noted above, OY is measured over the long-term.

With respect to the argument that the alternatives would force the harvest of less biologically acceptable age and size classes, the Section 4.3 notes this possibility if pollock fishermen go to extremes to avoid salmon bycatch. The EIS explains that this could result in lower TACs and ABCs. However, as explained above, a lower TAC for the pollock fishery does not necessarily correlate to a failure to achieve OY. Moreover, if the BSAI groundfish fishery fails in the future to achieve optimum yield on a continuing basis, the Council and NMFS will assess the reasons for that failure and either propose modifications to the FMP or reassess the determination that OY for the fishery is between 1.4 and 2.0 million mt (or both).

With respect to the argument that the alternatives violate National Standard 1 because they would deprive the United States citizens of substantial quantities of protein, the commenter misconstrues National Standard 1. Overall benefit to the Nation does not equate with protein supply. Rather, it requires consideration, in addition to food production, of recreational opportunities and protection of marine ecosystems. Further, commenter’s argument is speculative. It makes several assumptions not supported by the best scientific information available, such as that no protein substitution would occur and that all of the forgone pollock would have been delivered to U.S. markets (as opposed to exported). Nonetheless, NMFS will consider any credible information to the contrary that becomes available.

**Comment 1-4:** When considering the requirements of National Standard 1 and the practical meaning of the term "to the extent practicable" in National Standard 9, it is important to bear in mind the complete statutory context. The ultimate goal of the MSA is to conserve and manage fisheries to achieve their optimum yield. Reducing bycatch is not the MSA's top priority. To achieve optimum yield, the goals of the different National Standards may conflict, and the goals of one will take priority over the goals of another. In this case, to strike an overall balance, not all National Standards are created equally and National Standard 1 provides a mandate that optimum yield be achieved.

**Response:** To the extent this commenter argues Congress intended NMFS to give National Standard 1 priority over National Standard 9, or any other standard, NMFS disagrees. All regulations enacted under the MSA must be consistent with the ten national standards. 16 U.S.C. § 1851(a). Congress did not establish any priority among the specific standards. It did, however, establish that the “purpose of the Act

is clearly to give conservation of fisheries priority over short-term economic interests.” Natural Res. Def. Council v. NMFS, 421 F.3d 872, 879 (9th Cir. 2005); see also, Natural Res. Def. Council v. Daley, 209 F.3d 747, 753 (D.C. Cir. 2000). The Council and NMFS will therefore ensure that the final action is consistent with the national standards in light of the MSA’s over-arching purpose.

To the extent this commenter argues Congress intended NMFS to consider and balance all the national standards in the development of regulations, NMFS agrees. Congress was aware of the potential conflicts among the competing National Standards’ requirements and authorized the Secretary of Commerce to exercise discretion and judgment in balancing the standards. Alliance Against IFQs v. Brown, 84 F.3d 343, 350 (9th Cir. 1996).

**Comment 1-5:** The DEIS neglects to specifically address National Standard 8, which requires minimizing adverse economic impacts on communities. Although the DEIS discusses communities in several sections, the DEIS fails to explicitly address the requirement in relation to the other National Standards. The DEIS does not provide enough or detailed enough analysis as to how the proposed action and its various alternatives may affect coastal Alaska Native communities. Miscalculations, omissions, and inaccuracies abound in the analysis on subsistence users and their harvest. The DEIS in no way satisfies the intent of National Standard 8 regarding the impact to fishing communities. Thus, NMFS should consider National Standard 8, as balanced with the other National Standards, especially in the context of adverse impacts on the subsistence and commercial economics in Western Alaska salmon fisheries.

**Response:** NMFS agrees that the Council and NMFS must consider and weigh all National Standards, including National Standard 8, when they select and approve the final action. National Standard 8 provides:

Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities by utilizing economic and social data [based on the best scientific information available, ] in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.

16 U.S.C. § 1851(a)(8). NOAA guidance on National Standard 8 explains that this standard requires that a fishery management plan take into account the importance of fishery resources to fishing communities, and where the preferred alternative negatively affects the sustained participation of fishing communities, the FMP should discuss the rationale for selecting this over another alternative with a lesser impact on fishing communities. 50 C.F.R. § 600.345(b)(1).

The EIS itself does not attempt to balance the National Standards. The Council and NMFS will perform that analysis when they select and approve the final action. The EIS endeavors to analyze all impacts from the alternatives in order to disclose such information to the public and provide the decision-makers with the necessary information to balance the National Standards and render a final decision.

NMFS agreed that the EIS and RIR should provide a more complete description of subsistence users, their Chinook harvest, and the value of this fishery to western Alaska, even if the total value of the Chinook subsistence harvest cannot be evaluated in a way that is directly comparable to the monetary value of potential increases in commercial Chinook salmon catch or forgone gross revenues from the pollock fleet (a discussion of this issue is provided in RIR Section 5.1.1). NMFS reorganized, clarified and created a section in the RIR to better address these issues, and add a list and description of information on potentially affected communities. Final RIR Sections 3.2 and 3.3 describe subsistence

harvests of Chinook salmon and provide detailed descriptions of regional subsistence salmon fisheries throughout western Alaska.

With regard to the comment that the EIS does not provide enough analysis as to how the proposed action may affect coastal Alaska Native communities, NMFS lacks the necessary information to provide community-level impact analysis because there is no information available on which NMFS could rely to directly link Chinook salmon taken as bycatch in the pollock fishery with the in-river runs of Chinook salmon near any particular community. The EIS utilizes the best scientific information available, which is provided and presented by region (EIS Chapter 5 and RIR Chapter 3). This section provides extensive background information on the subsistence (and commercial and recreational) Chinook salmon fisheries in western Alaska river systems that are likely affected by Chinook salmon bycatch. The regions are based on the ADF&G management areas (Kotzebue, Norton Sound, Kuskokwim River/Bay, Yukon, and Bristol Bay).

In addition, RIR Chapter 5 states that it is not possible with presently available information to determine the proportions of river-specific Adult Equivalency (AEQ) estimates of returning adult Chinook salmon that would be caught in subsistence fisheries (or commercial or recreational fisheries) in the various river systems of western Alaska, and further, in any particular community. This Chapter notes that, while it is difficult to assess the specific impacts of additional AEQ Chinook salmon to a given river system, it is reasonable to assume that any additional fish would benefit escapement and harvest.

Finally, shoreside processing sector revenue impacts are estimated in the RIR, embedded within the overall shoreside sector impacts. This is because the price used to estimate impacts on the shoreside sector is inclusive of all value-added processing, at shoreside plants, to the first wholesale level. It is important to note that the analysis includes shoreside processing impacts, just not at the port or community level. Confidentiality requirements prevent refining shoreside impacts down to the port or community level.

**Comment 1-6:** The Problem Statement adopted by the Council states salmon bycatch "must be reduced" to address concerns about subsistence fishermen in rural areas who depend on local fisheries for their sustenance and livelihood (pg 1). Recognizing the very real and important role that subsistence has in the life of many Alaskans, the sad reality is that restricting the pollock fishery will not have the positive benefits for subsistence that the DEIS implies. In fact, the central problem with the DEIS is that it assumes these benefits will occur without doing an analysis of the impacts of the alternatives on the availability of Chinook salmon for subsistence. If the DEIS had done so, it would have found that even if 100% of the Chinook salmon bycatch was eliminated, the subsistence harvest would have increased by only one-tenth of one fish per household in the Norton Sound area, just over one fish per household in the Kuskokwim area, 1.7 fish per household in the Yukon, and less than three fish per permit holder in Bristol Bay.

**Response:** This comment misconstrues the role the Council's problem statement plays in the process, ignores other language in the problem statement that puts this excerpted language in its proper context, and makes an improper extrapolation from the analysis in the EIS and RIR.

The Council issues its problem statement as one of the first steps in the process for amending fishery management plans and/or promulgating regulations. It is a trigger for the NEPA process and, as a result, occurs before the EIS and RIR are drafted. The problem statement reflects the concerns of the Council, which is a body of 11 voting members who typically offer several viewpoints. It is important for NMFS, the public, and the regulated fishing community to understand the problems that form the incipient stage of the Council's action, and it guides in the development of an EIS's Statement of Purpose and Need.



Here, the Council properly expressed its concern due to the high Chinook salmon bycatch levels by the pollock fishery. The problem statement, on page 1, identifies several reasons for the Council's concern, including the high value of Chinook salmon to commercial, subsistence, and sport fisheries; the command in National Standard 9 to minimize bycatch to the extent practicable; and the low salmon runs in Western Alaskan rivers. The problem statement also states that the reasons for those low runs are uncertain, but the increases in bycatch by the pollock fishery "may be a contributing factor."

Following the Council's problem statement, NMFS and the Council developed the EIS and RIR to analyze alternative management measures, the purpose of which, as set forth in the EIS's Statement of Purpose and Need, is "minimize Chinook salmon bycatch to the extent practicable, while achieving optimum yield from the pollock fishery." NMFS agrees that subsistence plays a very important role in the culture and lives of many Alaskans, and subsistence users may benefit from the minimization of bycatch of the species on which they rely. NMFS disagrees, however, that the analysis overstates benefits from the minimization of Chinook salmon bycatch in the pollock fishery.

Rather, the EIS uses a three-step approach to explain what the potential benefits may be, which, in light of the problem statement and scoping comments, is an issue of great concern to the Council and public. The three-step approach is described in the executive summary and in Chapter 5. In the first step, the EIS analyzes reductions in bycatch numbers or salmon saved from bycatch by the pollock fishery, and the EIS is careful to point out that this number does not represent the actual numbers of salmon that will return to their rivers of origin. In the second step, the EIS employs an adult-equivalency model to estimate how the bycatch reductions from the various alternatives would translate into spawning salmon because not all salmon caught as bycatch in the pollock fishery would otherwise have survived to return to their spawning streams. Finally, based on the best scientific information available, the EIS incorporates into the adult-equivalency model genetic estimates of Chinook salmon taken as bycatch to determine where the adult-equivalent salmon would have returned.

Since there is no information available and it is impossible to predict, the EIS makes no assumptions as to the fate of those returning salmon. The EIS clearly states in a number of places that it is not possible, with presently available information, to determine the proportions of river specific AEQ estimates of returning adult Chinook salmon that would have been available for escapement or caught in commercial, subsistence, and sport fisheries in the various river systems.

Finally, it is important to recognize that the express language of National Standard 9 provides that "[c]onservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch." 16 U.S.C. § 301(a)(9). Minimize means "to reduce to the smallest possible number, degree, or extent." Webster's Third New International Dictionary of the English Language (Unabridged) (1963). NMFS has promulgated guidelines for implementing this standard, see 50 C.F.R. § 600.350. Of course, National Standard 9 does not exist in a vacuum. Rather, it is the Council and NMFS's role to ensure that the final action complies with all ten National Standards. Where there is tension among competing standards, the standards are balanced in light of the MSA's over-arching purposes.

**Comment 1-7:** NMFS's government-to-government consultations efforts have been less than impressive, and NMFS have been resistant to developing formal and accountable consultation processes and protocols. While the Council has made an admirable effort to reach out with tribes and communities, NMFS continues to conduct inadequate systematic consultation with the Alaska Native tribes as required by the Executive Order (EO) 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations and accompanying Presidential memorandum (1994), or EO 13175, Consultation and Coordination With Indian Tribal Governments (2000). NMFS should develop a Tribal Government-to-Government Consultation Plan to outline a framework for working effectively with

tribal governments in setting the management direction for Chinook salmon bycatch management. A Tribal Government-to-Government Consultation Plan would be useful in determining the best timing for conducting the consultation meetings which will not conflict with Alaska Native subsistence seasons. This plan should be developed in collaboration with interested tribal governments.

**Response:** NMFS has a consultation process that involves the tribes early in and throughout the decision-making process in accordance to Executive Order 13175. Section 1.5.7 details the consultation process for the Chinook salmon bycatch issue, which is being conducted in addition to the extensive Alaska community outreach efforts by the Council. Section 1.5.5 contains a description of the Council outreach program. The Final RIR in Chapter 8 provides an environmental justice analysis pursuant to EO 12898. We are currently discussing ways to make our consultation process more clear to tribal governments, Alaska Native Claims Settlement Act corporations, and interested organizations. We welcome any suggestions interested Alaska Native representatives may have.

**Comment 1-8:** The FEIS should disclose the tribal consultation and coordination process by providing a chronology with the dates and locations of meetings with tribal governments, results of the meetings, and a discussion of how the tribal government's input was used to develop the EIS and the action alternatives. The tribal consultation process is an opportunity to gather traditional ecological knowledge about local subsistence use and harvest of Chinook and chum salmon in Norton Sound, Kotzebue, Yukon and Kuskokwim Rivers, Bristol Bay, and Gulf of Alaska.

**Response:** NMFS agrees that the tribal consultation process is an opportunity to learn about local subsistence use and harvest of salmon as well as the cultural value and importance of subsistence. Section 1.5.7 contains the complete consultation history for this action.

**Comment 1-9:** The DEIS, on page 18, notes that Title VIII of the Alaska National Interest Lands Conservation Act ("ANILCA") creates a priority for subsistence uses of fish and wildlife over other purposes on public lands. The DEIS cites this priority as a legal rationale for restricting the offshore harvest of pollock. The DEIS contains numerous statements regarding the need to implement this subsistence priority. However, the legal argument advanced in the DEIS for doing so is without merit. The United States Supreme Court has ruled that ANILCA does not apply to the outer continental shelf ("OCS") of the United States. *Amoco Production Co. v. Village of Gambell*, 480 U.S. 531, 546-47 (1987). The action area for the proposed Chinook salmon bycatch management plan is the OCS region. ANILCA is not legally applicable, a fact the DEIS admits. Nevertheless, the DEIS asserts that NMFS intends to implement ANILCA by using NEPA and the MSA.

There are two legal defects with NMFS's approach. First, if ANILCA does not apply in the OCS region, it is not another applicable law under the MSA. Thus, the MSA does not provide a legal basis to implement ANILCA. Second, NEPA does not provide the authority to enforce the substantive provisions of any statute, including ANILCA. The Supreme Court has ruled on at least four occasions that NEPA is a procedural statute only that requires issues be examined. It does not provide the authority for a particular result to be reached or enforced. Contrary to the legal position set forth in the DEIS, neither the MSA nor NEPA can be used to enforce ANILCA.

**Response:** This comment mischaracterizes the EIS and the proposed action. Section 1.7.9 clearly states: "ANILCA does not apply to the outer continental shelf (OCS) region." It further explains that "NMFS and the Council remain committed to ensuring that federal fishery management actions consider the importance of subsistence uses of salmon and protecting such uses from any adverse consequences." *Id.* This hardly shows that "NMFS intends to implement ANILCA by using NEPA and the MSA." Rather, it reflects NMFS's and the Council's recognition of the importance of subsistence in Alaska and interest in avoiding actions that have adverse consequences on such uses.

The purpose the proposed action is to minimize Chinook salmon bycatch to the extent practicable, while achieving optimum yield. The EIS analyzes the impacts of alternatives to this proposed action, including potential benefits to subsistence users of salmon. That is part of the NEPA process and understanding the priority that federal and state law have afforded those uses is relevant to understanding the benefits, even if those laws do not dictate the outcome here.

**Comment 1-10:** According to the DEIS, the pollock bycatch reduction program was designed to meet the requirements of the Pacific Salmon Treaty. The DEIS states the proposed action is an element of the Council's efforts to "ensure" compliance with the Treaty, DEIS at 19. The Problem Statement adopted by the Council states that salmon bycatch "must" be reduced in order to meet the U.S. "obligation" under the Treaty and its associated Yukon River Annex, DEIS at 1. The supposition is incorrect that additional actions to address bycatch are required by the Treaty. The Treaty does not apply to the pollock fishery because it defines a "fishery" as "the activity of harvesting or seeking to harvest salmon." Even if the Treaty applied to the pollock fishery, it would be satisfied by the status quo because salmon bycatch reduction measures have been continued and additional bycatch reduction actions have been taken since 2002. Additionally, the Secretary of State has not made a determination that the US is in jeopardy of not fulfilling its international obligations under the Treaty.

**Response:** This comment offers interpretations of the Pacific Salmon Treaty with which NMFS disagrees. The purpose of the proposed action is to minimize bycatch to the extent practicable while maintaining optimum yield. The fact that such action also has the potential to contribute to satisfying U.S. treaty obligation is an additional compelling factor in decision-making. When the United States enters into a treaty with another country it does so in good faith to implement its provisions through relevant domestic law and regulatory action.

The Treaty's provision (Annex IV, Ch. 8, Cl. 12) that the parties must "maintain efforts to increase the in-river run of Yukon River origin salmon by reducing marine catches and by-catches of Yukon River salmon" is not limited to the salmon fishery. Similarly, there is no limitation on "maintain efforts" to only those that were in effect in 2002. Finally, while it is true that the Secretary of State, who is charged with ensuring and determining the United States' compliance with the Treaty, (e.g., 16 U.S.C. §§ 3632(h)(8)), has not issued a formal decision that United States is out of compliance with the treaty, the treaty remains in effect for the United States. This has bearing on the proposed action. In addition, the Council and Secretary of Commerce are not limited to taking action only upon a formal finding of noncompliance with the treaty since the MSA provides independent authority for this action.

**Comment 1-11:** The DEIS does not adequately analyze the United States' obligations under the Yukon River Salmon Agreement of the Pacific Salmon Treaty. While the treaty is mentioned and described in Section 1.7.13, nowhere does the DEIS discuss the specific obligations and the degree to which the proposed alternatives meet those obligations.

Under the terms of this Treaty the United States is bound to pass a set number of Chinook and fall chum salmon across the Canadian border to provide for Canadian harvests and escapement needs. NMFS must analyze the impacts each alternative will have on compliance with the United States' obligations under the Yukon River Salmon Agreement and identify other actions that may be necessary to ensure compliance with the agreement. Any cap numbers which exceed pre-2002 bycatch numbers may violate the United States' treaty obligations in the Yukon River Salmon Agreement. In-river commercial fisheries are eliminated and subsistence fisheries are regularly reduced to meet our treaty obligations; therefore, NMFS must restrict the take of these same salmon in the pollock fishery.

**Response:** The Council and NMFS are concerned about the low salmon runs returning to western Alaska which includes those returning to the Yukon River and believe that salmon bycatch should be minimized for several reasons, including, as the Council's problem statement indicates, to address concerns for those living in rural areas who depend on local fisheries for their sustenance and livelihood and to contribute towards efforts to reduce bycatch of Yukon River salmon. It is, however, beyond the scope of this EIS to analyze what level salmon bycatch by the pollock fishery is necessary, in conjunction with the varying efforts of the State of Alaska, Canada, and other federal agencies, to meet the United States' obligations under the Pacific Salmon Treaty. The specific purpose and need for this action are to minimize Chinook salmon bycatch to the extent practicable, while achieving optimum yield. Accordingly, the EIS examines alternatives that accomplish this goal. See *Vt. Yankee Nuclear Power Corp. v. Natural Res. Def. Council, Inc.*, 435 U.S. 519, 551 (1978) (the statement of purpose and need of the project determines the range of alternatives that an agency must consider).

**Comment 1-12:** The parties to the United States-Canada Yukon River Salmon Agreement of 2002 are required to increase the in-river run of Yukon River origin salmon by reducing marine catches and bycatches of Yukon River salmon. They shall further identify, quantify and undertake efforts to reduce these catches and bycatches. How do the alternatives impact the U.S.'s ability to reduce bycatch below pre-2002 levels?

**Response:** The purposes underlying the proposed action are multi-faceted: minimize Chinook salmon bycatch to the extent practicable, while achieving optimum yield. Minimizing Chinook salmon bycatch while achieving optimum yield is necessary to maintain a healthy marine ecosystem, ensure long-term conservation and abundance of Chinook salmon, provide maximum benefit to fishermen and communities that depend on Chinook salmon and pollock resources, and comply with the Magnuson-Stevens Act and other applicable federal law. Accordingly, using the best scientific information available, the EIS discusses, among other things, the substantive issues involving the portion of salmon taken as bycatch in the Bering Sea that originated from the Yukon River. See response to comment 3-9.

The Council and NMFS remain concerned about the low salmon runs returning to western Alaska which includes those returning to the Yukon River. The Council's problem statement expressly states that salmon "bycatch must be reduced to address the Council's concerns for those living in rural areas who depend on local fisheries for their sustenance and livelihood and to contribute towards efforts to reduce bycatch of Yukon River salmon . . . ."

### 9.2.2 Comments that the DEIS is inadequate

**Comment 1-13:** Extend the public comment period for 45 more days to provide more time for the pollock industry to prepare analysis, data, and information for comments on the costs, benefits, and environmental impacts of the proposed action and its alternatives analyzed in the DEIS.

**Response:** NMFS agreed that the public should be provided more time to read and make informed comments on the document and, on January 9, 2009, a notice was published in the Federal Register to extend the 60-day comment period an additional 20 days, from February 3, 2009, to February 23, 2009 (74 FR 898).

**Comment 1-14:** Inadequate time was allowed for the public to comment on the 762-page DEIS. An extension of the public comment period was requested to assist in developing the analyses required by NEPA. The twenty-day extension was inadequate to prepare a proper review of the document. The overall length of the comment period remains inadequate to prepare analyses on every issue that must be thoroughly examined before the DEIS can be considered compliant with NEPA.

**Response:** NMFS provided an 80-day public comment period, including the 20-day extension. This was the optimum length of time to allow both meaningful public comment as well as timely Council action on this important issue.

**Comment 1-15:** The presentation of the information in the DEIS makes it challenging for the public to understand all the associated impacts and how each alternative differs. The result of this may limit or bias those who can meaningfully participate in agency planning. The FEIS therefore should be organized and written in a clear manner that allows for meaningful public participation, especially for those whose first language is not English.

**Response:** Though the subjects are complex and the issues numerous, NMFS disagrees that the presentation of the information makes it challenging for the public to understand. The document's organization follows a logical and predictable pattern. Likewise, we have tried to communicate the complex issues as simply as possible to enable the general public to understand the analysis. While the document is unavoidably lengthy, we have tried to err on the side of inclusiveness, rather than run the risk of omitting any information or analysis that might aid decision-makers and the public in evaluating the relative merits of the alternatives. Yet, however lengthy, detailed, and technical the analyses, we have tried our best where possible to keep the information accessible to the reader. As with every large document analyzing extremely complex issues, improvements in clarity and organization can be made. NMFS has worked to make the Final EIS and Final RIR more accessible to all readers.

**Comment 1-16:** DEIS fails to meet the requirements of NEPA insofar as it fails to include an adequate range of alternatives for considered action. The range of alternatives presented fails to explore, in a serious manner, reasonable alternatives to address the obligation to reduce bycatch.

**Response:** NMFS disagrees. CEQ regulations at 40 CFR 1502.14(a) require that all reasonable alternatives be "rigorously explored and objectively evaluated." It is well settled that the benchmark for determining whether an alternative is reasonable depends on the nature and scope of the proposed action and that the range of alternatives considered in an EIS need not extend beyond those reasonably related to the purpose of the project. The purpose and need of the proposed action is to minimize bycatch to the extent practicable while achieving optimum yield. The range of alternatives in the EIS includes the status quo or no action alternative, measures to impose hard caps on the taking as bycatch of Chinook salmon, and triggered closure areas. In connection with each of these alternatives, the EIS also analyzes suites of options, including the distribution of the bycatch cap. This range of alternatives, including the suite of options within each alternative, is reasonable and adequate.

**Comment 1-17:** Reject this particular DEIS in favor of a more comprehensive and adequate analysis of bycatch. The DEIS does not adequately analyze the options, which impose unrealistic or impracticable restrictions on the Bering Sea pollock fishery. The DEIS is therefore inadequate to support informed decision-making to reduce Chinook salmon bycatch while allowing for reasonable prosecution of the pollock fishery.

For the Council and NMFS to make informed decisions about how to balance all of these important interests, they must have an environmental analysis that fully and accurately examines all of the issues. As the Supreme Court has said, the National Environmental Policy Act ("NEPA"), 42 U.S.C. § 4331, requires that there be a "hard look" at all of the issues (*Citizens to Preserve Overton Park, Inc. v. Volpe*, 401 U.S. 402 [1971]). This DEIS does not take a hard look at all the issues. It fails to mention basic and critical issues; it fails to include necessary facts and analyses; it analyzes only a small number of issues, and those issues are analyzed inaccurately or incompletely; and it uses old data that severely underestimates impacts.

On economic issues, the DEIS fails to rigorously evaluate the costs and benefits associated with the alternative measures under consideration; it relies on erroneous assumptions about ownership and investment patterns in the Bering Sea pollock fishery; it fails to consider the full range of impacts that some of the proposed measures would have on economically disadvantaged communities in Western Alaska; it fails to consider other critical factors affecting Chinook salmon runs in Western Alaska; and it fails to correctly depict the bycatch profile of the pollock fleet; and other reasons.

This DEIS does not provide adequate biological and economic information to make a reasonable assessment of management alternatives and therefore cannot be considered a legally sufficient document or adequate to inform decision makers of the consequences of a decision until it identifies and examines those consequences. This DEIS needs a great deal of additional work before being finalized.

**Response:** NMFS disagrees. The EIS and RIR take a hard look and provides the analysis necessary for informed decision-making. The EIS and RIR provide the decision-makers and the public with an evaluation of the potential impacts of the alternatives on the human environment based on the best available information. A number of public comments point out specific areas where changes should be made to the document with which NMFS agrees. As a result of this public comment process, NMFS has provided additional information to the Council and the public in the preliminary CAR provided to the Council and posted on the NMFS web page in March 2009. NMFS has incorporated this information and analysis in this FEIS. Based on the DEIS, the preliminary CAR, and the public comments, the Council had before it all of the information and analysis relevant and necessary to make an informed decision. All information and analysis in the public comment and in the preliminary CAR that was used by the Council as a basis for its final action was included in the FEIS prepared for the Secretary of Commerce to take action to approve the FMP amendment and the final rule implementing the Council's recommendation.

**Comment 1-18:** The deficiencies in the evaluation of the preferred alternative are highlighted by NMFS using this DEIS to provide suggestions for ways in which the Council might address them. DEIS at 63-71. The NEPA process is designed to ensure "that the agency, in reaching its decision, will have available, and will carefully consider, detailed information concerning significant environmental impacts [and ] that the relevant information will be made available to the larger audience that may also play a role in both the decision-making process and the implementation of that decision." Dep't of Transp. v. Public Citizen, 541 U.S. 752, 768 (2004) (citation omitted). Providing feedback to an advisory body is not one of these enumerated purposes. NEPA and CEQ require consideration of alternatives as "the heart of the environmental impact statement."

**Response:** NMFS disagrees that discussing open-questions and potential flaws in alternatives in the EIS is an inappropriate use of the NEPA process. Under the MSA, the fishery management councils serve a variety of functions, including preparing fishery management plans and amendments thereto. 16 U.S.C. § 1852(h)(1). Under consideration at this time is an amendment to the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area. At its June 2008 meeting, the Council developed Alternative 4 as its preliminary preferred alternative. In analyzing that alternative, NMFS staff identified three issues that needed to be resolved to avoid inherent ambiguities in implementing Alternative 4. By proposing and analyzing options to modify the Council's preliminary preferred alternative, NMFS provided the public, interested persons, and decision-makers with important information for considering and improving an alternative in the EIS. This DEIS discussion was then used by the Council as a basis for some of the features of Alternative 5, which the Council developed as its recommended alternative in April 2009. NMFS believes that openly discussing means to modify and/or improve alternatives within the EIS itself is an appropriate and important aspect of the NEPA process.

### 9.2.3 Comments that DEIS is adequate

**Comment 1-19:** The DEIS contains a considerable amount of information necessary for managers to make reasoned decisions and for the public to understand the issues and tradeoffs available. However, there are areas where the analysis could be improved to ensure that decision-makers have the most recent and relevant information available. None of these changes should be construed as reasons to delay action before the Council on the issue of salmon bycatch reduction.

**Response:** NMFS acknowledges the comment. A number of public comments point out specific areas where changes should be made to the document. For those changes that NMFS agrees with, we provided additional information to the Council and the public in the preliminary CAR and incorporated this information and analysis in the Final EIS and Final RIR. Public comment also suggested a number of changes that NMFS disagrees with and the reasons why these changes were not made to the Final EIS and Final RIR are provided in the response to those specific comments.

**Comment 1-20:** The DEIS adequately provides alternatives available to address Chinook salmon bycatch by the BSAI pollock fleet, recognizing constraints and limitations on developing a quantitative assessment of impacts. Analysis is limited by an incomplete understanding of the stock of origin and age distribution of the Chinook salmon taken as bycatch; interactions between pollock and Chinook salmon; relationship of Chinook salmon encounters in the pollock fishery with abundance; and expected changes and effect of changes in the behavior of the pollock fleet operating under bycatch management measures. The document effectively highlights these areas of incomplete understanding and relies on reasonable methods to inform decision makers and the public. We commend the authors for their comprehensive work and have offered suggestions for improving the document throughout its development. Public comments identify further needs for expansion and ADF&G will assist NMFS and the Council in responding to comments and in preparing the final draft. Working within constraints of unknowns and recognizing the NMFS Comment Analysis Report will bring additional information to the Council, the Council will have sufficient information in April to take action to reduce Chinook salmon bycatch in the BSAI pollock fishery.

**Response:** Comment acknowledged.

**Comment 1-21:** The DEIS is sufficient to take final action and does a good job of analyzing the effects of the caps and triggers closures given the best available science.

**Response:** Comment acknowledged.

## 9.3 Chapter 2 Comments

These comments are on Chapter 2, the alternatives and their monitoring and enforcement. Changes were made to Chapter 2 to add Alternative 5, the Council's recommended alternative from its April 2009 meeting. Additional editorial and organizational changes were made to Chapter 2. The DEIS Section 2.5, Managing and Monitoring the Alternatives, was separated and added to the section for each alternative in the Final EIS.

### 9.3.1 Comments on the alternatives in general

**Comment 2-1:** The DEIS does not describe options other than the alternatives analyzed that the Council may have discussed at its recent meetings or work-sessions.

**Response:** Section 2.6 identifies the alternatives considered but eliminated from detailed analysis and discusses the options recommended through the EIS scoping process and discussed by the Council. Many of the issues identified during the scoping process are presented in the current analysis; others were not carried forward for the reasons described in Section 2.6. This section also discusses the Council's process for developing alternatives, and those alternatives that were originally discussed at the Council level and through the Council's Salmon Bycatch Workgroup, but which, for the reasons noted in this section, were not analyzed in detail.

**Comment 2-2:** How do hundreds of options help inform the decision making process?

**Response:** The five alternatives analyzed in the EIS represent different policy choices for how to manage Chinook salmon bycatch. Chapter 2 describes the alternatives. The alternatives analyzed in the EIS generally involve limits or "caps" on the number of Chinook salmon that may be caught in the Bering Sea pollock fishery and closure of all or a part of the Bering Sea to pollock fishing once the cap is reached. Each alternative, except the status quo alternative, contains four components, and options for each component, to determine (1) the total cap amount and how to divide the total cap between the A and B season, and (2) whether and how to allocate the cap to sectors, (3) whether and how salmon can be transferred among sectors, and (4) whether and how the cap is allocated to and transferred among cooperatives. The EIS provides both an analysis and discussion of the impacts of the four alternatives as a whole and a more detailed analysis of the various options and suboptions to inform the Council and the public of the consequences on the human environment. These decision points are necessary to understand not only the impacts but how the hard cap will function and the distributional differences among the many options.

**Comment 2-3:** Limit Chinook salmon bycatch restrictions to practicable measures that are reasonably calculated to reduce bycatch without resulting in a premature closure of the Bering Sea pollock fishery.

**Response:** NMFS acknowledges the comment.

**Comment 2-4:** To protect cultures and livelihoods through out the North Pacific, NMFS should implement a precautionary approach to reducing Chinook salmon bycatch in the pollock fishery that considers the potential impacts on salmon of changes in climate and marine species composition, ocean acidification, and planned offshore oil and gas development in the Arctic and the Bering Sea.

**Response:** NMFS acknowledges the comment.

**Comment 2-5:** Ensure that the hard cap does not confer to the pollock fleet ownership of, nor the right to take, salmon.

**Response:** NMFS agrees that a transferable allocation of a Chinook salmon bycatch hard cap to the sector or cooperative level would not convey ownership of that amount of Chinook salmon or the right to take those Chinook salmon.

**Comment 2-6:** With any new management scenario it is possible that the pollock industry will have additional incentives to underreport bycatch. Therefore, NMFS must enact measures to ensure proper reporting of Chinook salmon bycatch. Under any of the alternatives, the Council should require 100% observer coverage to avoid attempts to under-report salmon bycatch. Enumeration of every salmon is imperative for a program that relies upon individual vessel accountability.



**Response:** NMFS agrees and identified in DEIS Section 2.5 the concern that the alternatives could create an increased incentive to misreport salmon bycatch because the cost to the industry of reaching the Chinook salmon bycatch cap could be so high. Therefore, NMFS recommended an increase in observer coverage requirements for catcher vessels delivering to inshore processors so that one observer is required on all of these vessels, regardless of vessel length. In addition, in the Final EIS, NMFS recommends that an actual count, or census, of all Chinook salmon bycatch be used as a basis for determining Chinook salmon bycatch by all vessels participating in the Bering Sea pollock fishery under any of the alternatives that involved a hard cap (all of the alternatives, except Alternative 1). This method currently is used for catcher vessel delivering to inshore processors and NMFS would expand this method to catcher/processors and motherships. In Section 2.2.5, NMFS describes the additional requirements that would need to be met by catcher vessels, inshore processors, catcher/processors, and motherships so that we may obtain accurate counts of salmon bycatch.

**Comment 2-7:** The Final EIS should include a monitoring and enforcement implementation framework for NMFS to be able to efficiently and effectively manage, monitor, and enforce the preferred action. In order to understand how monitoring and enforcement would be carried out, it would be helpful to have specific information in the framework, such as estimates for full-time equivalents (FTEs), labor hours, and costs associated with implementation of the program. In addition, the framework should identify the types of computer models and assumptions that would be necessary to ensure that the accounting system accurately considers salmon allocations for rollovers and transfers.

**Response:** NMFS believes that the EIS provides the necessary explanation about how NMFS will monitor and enforce the alternatives in Chapter 2, in Section 3.1, and in RIR Chapter 6.

### 9.3.2 Comments suggesting new alternatives

**Comment 2-8:** Ban trawling in Alaskan waters for the sake of all fish species and communities that depend upon them because bycatch wastes millions of dollars and sufficient evidence links trawling to ecosystem damage. Trawling is an indiscriminate way to fish and there must be a better way to fish. The pollock trawl fishery is having enormous implications on our entire ecosystem and economy and the only way to reduce bycatch is to ban trawling. Close the Bering Sea pollock fishery until it can be proven that trawling can be accomplished without destroying the Chinook salmon that Alaska communities depend on.

**Response:** An alternative to ban trawling or permanently close the Bering Sea pollock fishery is outside the scope of the action because it does not meet the action's purpose and need. The proposed action in the EIS is to minimize Chinook salmon bycatch in the Bering Sea pollock fishery to the extent practicable while achieving optimum yield. Closing the pollock fishery would not achieve optimum yield.

**Comment 2-9:** To meaningfully address National Standard 9, a range of alternatives should be analyzed that includes options that will reduce bycatch below the historical average of 32,500 Chinook salmon to a more biological and culturally sustainable level. The hard cap should be 30,000 Chinook salmon, based on the 2009 ADF&G Yukon River Chinook salmon forecast and the obligations under the Pacific Salmon Treaty. This hard cap should decline over time, as bycatch reduction methods result in declining bycatch rates in the pollock fishery. This hard cap, while low compared to with most alternatives, is still too high given the poor state of Chinook salmon stocks in Western Alaska.

**Response:** A hard cap that declines below 29,323 Chinook salmon is not in the range of alternatives considered and the EIS does not analyze the impacts cap levels below 29,323 Chinook salmon. Section 2.6 on alternatives considered and eliminated from further analysis, discusses that the Council chose to limit the low end of the range of caps under consideration to 29,323 Chinook salmon which is

representative of the 5 year average prior to 2001. Cap levels below 29,323 Chinook salmon were initially considered, but the Council felt that including this number was sufficiently conservative to meet the purpose of this action. The purpose of the action is to minimize bycatch to the extent practicable while, at the same time, achieving optimum yield. Based on the analysis in the EIS, a cap below 29,323 Chinook salmon would impose substantial costs on the pollock industry without providing additional substantial Chinook salmon savings. Therefore, the Council and NMFS concluded that hard caps below 29,323 do not meet the purpose of the action.

**Comment 2-10:** Establish a stair-stepped cap, which would further reduce the hard cap over time. This declining cap would reduce salmon bycatch initially, while allowing the pollock fishery time to adapt their operations to these expectations. Reducing bycatch over time would increase the return of Chinook salmon to the rivers and escapement while also allowing the pollock fleet time to adjust their catch methods.

**Response:** Comment acknowledged. Adding a stair-step provision for Alternative 2 that includes the hard cap suboptions analyzed under Alternative 2, component 1, was an available option for the Council to recommend.

**Comment 2-11:** The hard cap should be no higher than 32,500 Chinook salmon with the goal to further reduce salmon bycatch. An annual review should be conducted to determine a lower cap. This review should include information of escapement goals and success in meeting those goals, reports on the status of subsistence, commercial and personal use salmon harvests, updates on the stock-of-origin of the bycatch, and new insights in ocean research. The cap should decline on an annual basis to less than 10,000 Chinook salmon over a few years.

**Response:** A hard cap that declines from 32,500 to 10,000 Chinook salmon is not in the range of alternatives considered. As discussed in Section 2.6, the EIS does not analyze the impacts cap levels below 29,323 Chinook salmon or annual caps based on a consideration of a variety of factors. Section 2.6 contains the discussion regarding alternatives considered but eliminated from detailed analysis, and it notes that the Council considered an index cap based on consideration of run-size impacts and a number of uncertain components (e.g. river-of-origin, ocean survival, future expected run size). Due to a lack of information and uncertainty in estimating these components, the Council did not think that the index cap formation was sufficiently developed to include as an alternative. Additionally, the Council also considered establishing a new cap on an annual basis; however, this would be extremely difficult, if not impossible, to implement successfully.

This comment did not provide the specific method by which to determine a cap based on escapement goals and success in meeting those goals, reports on the status of subsistence, commercial and personal use salmon harvests, updates on the stock-of-origin of the bycatch, and new insights in ocean research.

**Comment 2-12:** The initial cap should be set at 45,000 Chinook salmon for 2010-2011. This hard cap should change based on ADF&G estimates of abundance. If and when the escapement of Chinook salmon all along the coast returns to the biologically acceptable level for a period, then the allowable bycatch levels could be raised in proportion. If there is a hard cap on each boat, based on its pollock quota, there should be no increased problem of a race for fish.

**Response:** A cap of 45,000 Chinook salmon is similar to the cap level suboptions under Alternative 2; however, the EIS does not analyze the impacts of caps set based on Chinook salmon abundance estimates. Section 2.6, Alternatives considered and eliminated from further analysis, discusses that the Council considered an index cap based on consideration of run-size impacts and a number of uncertain components (e.g. river-of-origin, ocean survival, future expected run size). Due to the uncertainty in

estimating these components, the Council did not think that the index cap formation was sufficiently developed to include as an alternative.

**Comment 2-13:** The range of alternatives is awkward and inadequate because the status quo alternative really represents a hybrid approach which, under different scenarios, imposes entirely different and distinct bycatch management rules and regulations. It is essential for the analysis and decision-making process to treat the cap and closure provisions of Amendment 58 and the VRHS ICA provisions of Amendment 84 as two separate and distinct "stand alone" alternatives. Each of those alternatives could then be evaluated on its own merits and compared and contrasted with Alternatives 2, 3 and 4.

The hybrid nature of the status quo alternative makes analysis difficult and confusing and complicates efforts to compare it with the other competing measures. Status quo involves (1) a pre-determined closure area that is triggered whenever total Chinook bycatch in the pollock fishery reaches 29,000 fish implemented under Amendment 58 and (2) a waiver, implemented under Amendment 84, of the cap and closure as long as the industry has agreed to and is operating under what is known as the VRHS. In order to qualify for such a waiver, the VRHS must have been implemented via an ICA that closes pre-determined "hot-spot" areas to those vessels failing to comply with bycatch limits and rules embodied in the VRHS ICA itself.

Amendment 58 was the extant Chinook bycatch management system at the time the US Canadian salmon treaty was signed in 2002 and clearly complies with both the letter and spirit of that treaty that require the US to "maintain" efforts to reduce bycatch of Yukon River salmon. Amendment 58 is a proven management measure that best balances the legal requirements of National Standard 1 and 9. Bycatch levels experienced in those years that Amendment 58 was in place were significantly lower than the bycatch levels experienced recently.

Amendment 84 involves an entirely different approach to Chinook bycatch management. Whether or not the increased bycatch levels experienced since Amendment 84 was implemented represent a failure of the VRHS or simply some other set of dynamics that have resulted in higher Chinook encounters remains to be seen. Nevertheless, some have argued that current bycatch levels have been too high and that the current system violates the spirit if not the letter of the US obligations under the US/Canadian Treaty.

**Response:** Alternative 1 represents the current regulations that manage Chinook salmon bycatch in the Bering Sea pollock fishery. Section 2.1 describes Alternative 1, the status quo alternative, as the current regulations implemented under three amendments to the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area, Amendment 21b, Amendment 58 (which modified the previous Amendment 21b closure areas), and more recently Amendment 84.

The Environmental Assessment/Regulatory Impact Review/Final Regulatory Flexibility Analysis for modifying existing Chinook and chum salmon savings areas analyzed, as Alternative 1, the trigger closure of 29,000 Chinook salmon implemented under Amendment 58 and also analyzed, as Alternative 3, the program implemented under Amendment 84. This document is available on the NMFS Alaska Region website at: [http://www.fakr.noaa.gov/analyses/amd84/Am84\\_EARIRFRFAfr.pdf](http://www.fakr.noaa.gov/analyses/amd84/Am84_EARIRFRFAfr.pdf). Therefore, the provisions of Amendment 58 and Amendment 84 were previously analyzed as stand alone alternatives in a NEPA document.

Based on that analysis, the Council did not find that the Amendment 58 measures best balanced the legal requirements of National Standard 1 and 9. Instead, the Council recommended, and NMFS implemented, Amendment 84 which was an exemption to the closure areas for pollock vessels participating in the VRHS ICA. As explained in that analysis, Amendment 84 was developed to address concerns that the closures were no longer effective at reducing bycatch as the fleet was experiencing increases in Chinook

salmon bycatch after the regulatory closure of the Chinook Salmon Savings Area (ChSSA) with Chinook salmon bycatch rates in some cases higher outside of the savings area than inside of the savings area.

In refining alternatives for the EIS, the Council considered a wide range of time/area closures similar to the previous ChSSA but based upon updated bycatch information. Analysis brought forward in the development of candidate closure area alternatives indicated that while some areas of the previous ChSSA currently contained average areas of high bycatch (per design of previous areas), not all of the areas with high seasonal levels of bycatch in recent years were contained within the ChSSA. Therefore rather than re-considering this as a separate closure alternative, the Council chose to evaluate new closure areas under Alternative 3 that were more responsive to current spatial and temporal patterns of bycatch. These areas are specifically designed to be triggered by a seasonal cap level (as with the ChSSA).

For a discussion of the Pacific Salmon Treaty, please see Section 1.7.14.

**Comment 2-14:** The DEIS should have considered an alternative in which fishing vessels would be required to pay a set amount for each salmon caught. Such as system would create an incentive to fish below the cap and could generate revenue for the necessary research. The economic penalties for the BSAI fishing industry must be implemented and strictly enforced to prevent high Chinook salmon bycatch. The penalties should apply to the individual trawl vessel and not across the fleet or industry.

**Response:** Section 2.6 explains that the EIS does not analyze an alternative containing provisions for fees or economic penalties for Chinook salmon bycatch by Bering Sea pollock fishing vessels because such provisions do not meet the purpose and need for this action because they do not comply with the Magnuson-Stevens Act.

**Comment 2-15:** The pollock industry should bear the cost of both improved sampling and analysis for genetic studies on the Chinook salmon stocks impacted by the fishery's bycatch. This should be tied to the economic incentives to improve the commercial fishery.

**Response:** An alternative that would have the pollock industry pay for improved sampling and genetic studies is outside the scope of this action because it does not directly meet the action's purpose and need. Economic incentives are addressed in the response to comment 2-14.

**Comment 2-16:** Develop and fund a comprehensive research program to adaptively manage Western Alaska salmon at all life-stages. This gravel-to-gravel research plan should emphasize hiring and development of local expertise and include community-based salmon research like habitat assessments, integration of traditional knowledge, in-river and ocean sampling for genetic stock identification, and the temporal and spatial use of ocean habitat. Research should also include identification of the stock-of-origin and age of all Chinook salmon caught as bycatch. This commitment should include funding the genetic stock identification of salmon caught as bycatch in the pollock fishery, marine research such as the BASIS program, and funding in-river enumeration and management.

**Response:** An alternative to develop and fund a comprehensive research program is outside the scope of this action because it does not directly meet the actions purpose and need to minimize Chinook salmon bycatch to the extent practicable while achieving optimum yield.

However, NMFS agrees that continued research on salmon at all life stages is desirable. In addition, the Council's 5-year research priorities, available on the Council web page at: [http://www.fakr.noaa.gov/npfmc/misc\\_pub/ResearchPlan1008.pdf](http://www.fakr.noaa.gov/npfmc/misc_pub/ResearchPlan1008.pdf), identifies "stock delineation for estimation of adult equivalence to appropriately account for the impact of incidental catches of salmon in

pollock fisheries on salmon populations" as a research priority.

#### *Stock identification studies*

Stock identification of salmon will require adequate funding and a scientifically defensible sampling plan for determining stock composition estimates that are representative of the entire bycatch. Funding for NMFS to genetically analyze any bycatch samples is currently lacking. Limited funding (\$60K for 1 year) has been obtained from the Alaska Sustainable Salmon Fund to analyze the 2008 tissue samples collected by the North Pacific Groundfish Observer Program (NPGOP) to support a feasibility study at Auke Bay Laboratories. Changes have been made to the NPGOP tissue sampling procedures for the 2009 season that will provide for increased numbers of tissue samples for analyses. However, further refinements to the sampling protocols may be required in the future before stock composition estimates representative of the entire bycatch can be completed. Given substantial financial resources and a sampling plan designed for the purpose, seasonal estimates of the stock composition of the samples would be possible.

#### *Bering Sea salmon survey research*

The following summarizes NMFS current and planned future salmon research. Standard research surveys by the Alaska Fisheries Science Center, the Bering-Aleutian Salmon International Survey (BASIS) research group in the Bering Sea have sampled the epi-pelagic fish communities within the northeastern Bering Sea (2002 to 2007) and Chukchi Sea (2007) from nearshore (> 20 m) to greater depths (100 m) offshore during late summer and early fall. These surveys provided much needed data for our understanding of how ocean conditions affect growth and marine survival of Pacific salmon, forage fish, and other commercially important fish species such as walleye pollock and Pacific cod after their first summer at sea.

For Yukon Chinook salmon populations, BASIS data provided:

- stock-specific catch data throughout the entire Bering Sea;
- relative abundance of juvenile Chinook salmon off the Yukon as well as relative abundance of co-occurring pelagic fish species;
- indicators of juvenile Chinook salmon health, including size, diet, and energy density; and
- biological (i.e., zooplankton samples) and physical (i.e., sea temperature and salinity) oceanographic parameters.

The BASIS data have been used to:

- build a new Yukon River Chinook salmon migration model;
- examine the relationship between juvenile Chinook salmon relative abundance and bycatch numbers as well as adult returns; and
- determine the consequences of climate variation and cycles on the health (survival), distribution, and migration pathways of juvenile Yukon River Chinook salmon.

The AFSC no longer funds BASIS research surveys off the Yukon River, so our 5 year data set limits our statistical power to address some of the issues related to determining the consequences of climate variation and cycles on the health (survival), distribution, and migration pathways of juvenile Yukon River Chinook salmon as well as Chinook salmon bycatch.

**Comment 2-17:** Secure adequate funds to ensure rebuilding and sustainable Chinook salmon escapement through comprehensive management and co-management of salmon by managing for all life-stages of salmon from in-river to estuary to ocean and return.

**Response:** Measures to manage Chinook salmon are outside of the scope of the action. The proposed action is to minimize Chinook salmon bycatch in the Bering Sea pollock fishery to the extent practicable while achieving optimum yield. ADF&G is responsible for Chinook salmon management and ensuring escapement. ADF&G is a cooperating agency in the analysis to provide the expertise necessary to understand the impacts of ocean bycatch on Chinook salmon escapement and abundance.

**Comment 2-18:** Expand the food bank program to distribute salmon bycatch to Western and Interior Alaska communities. This distribution would by no means be considered a substitution or replacement of the in-river subsistence fisheries.

**Response:** The Prohibited Species Donation (PSD) Program is a voluntary program needing participation from the fishing industry and the approved distributors, as described in RIR Section 2.1.5. There are no regulatory barriers to the PSD Program distributing salmon bycatch to Western and Interior Alaska communities. However, expansion of this program in this manner requires efforts from the industry, any approved distributors, and people and organizations in western Alaska. Any organization that can meet the requirements for a PSD program permit may apply to NMFS. To date, only one authorized distributor, SeaShare, is permitted to handle donated salmon. Because of the logistics of handling and shipping the fish, only Pacific Northwest residents have benefited from the donated salmon. Having an authorized distributor that could provide donated salmon to Western Alaska communities would be a good way to reduce salmon waste in the pollock fishery. More information about the PSD program is available at: <http://www.fakr.noaa.gov/ram/psd.htm>. NMFS agrees that a donation program for salmon cannot be considered a substitute to the nutritional and cultural importance of in-river subsistence fisheries. Fresh salmon harvested and processed in traditional ways from a river cannot be replaced by a frozen product with no traditional links.

At its February 2009 meeting, the Council expressed interest in modifying this program to mandate full participation. Any amendments to the PSD program would be analyzed in the future as a separate action.

**Comment 2-19:** Continue studies on bycatch reduction, such as salmon excluder devices and the effect of fishing tow speed and depth on salmon bycatch.

**Response:** NMFS acknowledges this comment and notes that while explicit continuation of studies is outside of the scope of this analysis, investigations such as the work on salmon excluder device and evaluations of temperature, tow speed and depth are on-going studies whose results are expected to inform management decisions in the future (section 5.4).

**Comment 2-20:** Close known salmon migrating areas to trawling.

**Response:** This alternative is not analyzed in the EIS. Based on a preliminary analysis using information in the EIS, a closure of the migration areas would not be effective at minimizing bycatch and therefore would not meet the purpose and need for this action. The known migration pathways for Chinook salmon are identified in Figure 5-3. Comparing the map of the migration pathways with the map of the location of pollock biomass in Figure 4-1, it appears that pollock does not occur in the migration pathways. Also, the migration pathway area is not included in the area closures in Alternative 3, which are based on where 90% of the Chinook salmon bycatch occurs in the pollock fishery.

### 9.3.3 Comments on status quo – Alternative 1

A description of Alternative 1 is provided in Chapter 2.

**Comment 2-21:** The VRHS system as currently implemented (including the A season fixed closure) provides adequate protection for Chinook salmon in low encounter years. The high encounter failings of the 2007 program were partially addressed in the 2008 revisions, and a hard cap to limit total take would complete the package.

**Response:** NMFS acknowledges the comment.

**Comment 2-22:** The status quo and Amendment 84 has not effectively reduced or minimized bycatch of Yukon Chinook salmon stocks. Salmon bycatch has increased despite Salmon Saving Area closure and VRHS ICA.

**Response:** NMFS acknowledges the comment.

### 9.3.4 Comments in support of a hard cap – Alternative 2

A description of Alternative 2 is provided in Chapter 2.

Public comments provided the following general comments on a hard cap:

- Immediately set a hard cap of the lowest number of salmon bycatch to protect western Alaska Chinook salmon.
- In light of the current state of the Yukon River Chinook salmon and the salmon-dependent people of western Alaska, it is essential to put a hard cap on Chinook salmon bycatch immediately. The weak Chinook run of 2008 has already created problems of crisis proportions along the Yukon River. While subsistence restrictions limited the amount of food available for the winter, the lack of a commercial Chinook fishery cut off one of the only sources of income for many Yukon River residents. These restrictions combined with high fuel costs result in a serious burden on subsistence fishermen. The promise of the same or worse Chinook salmon returns in 2009 is no comfort.
- Set the cap considering that other fisheries have Chinook salmon bycatch that won't accrue against this cap.

Public comments suggested that the following hard cap alternatives be chosen as the preferred alternative:

- **29,323 Chinook salmon:** Immediately implement a hard cap of 29,323 Chinook salmon (Alternative 2, Option 1, suboption viii, see Table 1). This is the only proposed bycatch cap that uses the average bycatch numbers for the 5 years prior to the United States-Canada Yukon River Salmon Agreement of the Pacific Salmon Treaty, 1997-2001, which requires the U.S. to increase in-river returns of Yukon River origin salmon by reducing marine catches and bycatches. This alternative would best ensure that Chinook salmon are returning to western and interior rivers to meet spawning escapement and subsistence needs.
- **30,000 Chinook salmon:** It is important for the conservation of Chinook salmon and the welfare of salmon-dependent villages that the cap is set no higher than 30,000 Chinook salmon, based on

the cap level in Amendment 58. A 30,000 Chinook salmon hard cap will help ensure the health of the Chinook fisheries that sustain and provide economic opportunities for Alaskan residents. Without such a cap there is not sufficient incentive for the pollock fleet to move forward with improved fishing practices that will minimize Chinook bycatch. The British Columbia example shows that hard caps are sufficient incentives to vessel owners to fish cleaner and to reduce bycatch.

- **30,000 Chinook salmon:** The simplest management scenario and the best course of action is hard cap with a seasonal distribution, no rollover, and no provisions for ICAs. To protect and conserve Chinook salmon, implement a hard cap of 30,000 Chinook salmon, with the Alternative 2, component 1, option 1-2 seasonal distribution of 58% to the A season and 42% to the B season, and the Alternative 2, component 2, option 1 sector allocation (10% to the CDQ sector, 45% to the inshore catcher vessel sector, 9% to the mothership sector, and 36% to the offshore sector, see Table 1).
- **29,000 to 38,000 Chinook salmon:** A hard cap of 29,000 to 38,000 Chinook salmon represents the historic range of Chinook bycatch. This substantial reduction in Chinook salmon bycatch would rebuild the Yukon River salmon stocks so that, first and foremost, biological escapement needs would be met, the subsistence needs of Alaska and Canada would be met, and the Yukon and Kuskokwim rivers' commercial fisheries would return.
- **32,500 Chinook salmon:** Hard cap should not exceed 32,500 Chinook salmon in the pollock fishery coupled with a comprehensive salmon research and management program. While we recognize that there are a variety of programs including incentive programs, gear modifications, and time and area closure that may have promise for managing bycatch, these programs do not provide a rationale for allowing an annual hard cap of more than 32,500 Chinook salmon.
- **32,500 Chinook salmon:** Adopt a hard cap of no more than 32,500 salmon (Alternative 2, Suboption vii) immediately with the following options and suboptions; a.) A/B Season split: 58/42 (Seasonal Distribution Option 1-2); b.) Allocation to the co-op level with allocation based pro rata on pollock allocation (Sector Apportionment Option 1, see Table 1). The recommended A/B season split provides essential protections to maturing salmon which are bound for their natal rivers in the coming summer.
- **32,500 Chinook salmon:** The best way to prevent future excessive bycatch of salmon stocks throughout the North Pacific is through the implementation of an adequate precautionary cap, such as hard cap of no more than 32,500 Chinook salmon bycatch (Alternative 2, Suboption vii, see Table 1). Implementing this as a hard cap and not a management goal or "soft cap" would provide a level of assurance to communities affected by low Chinook salmon returns in 2008 and may have to face equal or lower returns in 2009. This hard cap is the ten year average bycatch prior to the signing of the Yukon River Salmon Agreement of 2002. Additionally, Chinook salmon bycatch reached an all-time low in 2000 of 4,961 Chinook salmon but bycatch has steadily increased every year since.
- **37,000 Chinook salmon:** Implement, by emergency regulations, a hard cap of 37,000 Chinook salmon. When historic bycatch of Chinook salmon exceeds 37,000 Chinook salmon, escapements or harvests in the Yukon River have been less than expected, restricted, or reduced.
- **38,891 Chinook salmon:** Do not combined industry incentive programs with a cap level higher than 38,891 Chinook salmon. A cap above 38,000 would increase the likelihood of Chinook



salmon mortality, thereby decreasing the in-river returns and negatively impacting escapements and harvest opportunities.

- **40,000 Chinook salmon:** Based on experience with the Yukon River fishery, bycatch near 40,000 Chinook salmon appears to allow in-river escapement, subsistence harvest, and Canadian border passage goals to be achieved, while also providing for in-river commercial fishing opportunities. It appears when bycatch levels exceed 40,000 Chinook salmon, some segment of in river escapement or harvest is likely reduced. Therefore, based on review of the alternatives presented in the DEIS, a hard-cap of 38,891 Chinook salmon, beyond which the pollock fishery would close, would be most consistent with management responsibilities and the most likely to provide for the long-term conservation of Federal in-river Chinook salmon trust resources. This level would also be consistent with ANILCA.
- **40,000 to 50,000 Chinook salmon:** Implement Alternative 2 with a cap of 40,000 to 50,000 Chinook salmon. A low cap is necessary because a number of our river systems have escapement goals of less than 20,000 fish, such as the Naknek River, which has an escapement goal of 5,000 fish. With a high cap, the pollock fishery could inadvertently wipe out an entire season of Chinook fishing for all user groups in an area.
- **68,392 Chinook salmon:** A bycatch hard cap lower than 68,392 Chinook salmon would risk losing the pollock industry's ability to consistently fill contracts. Low caps would shut down the Bering Sea pollock fishery in unpredictable ways and times causing surimi buyers/users to seek alternative sources of supply that are more reliable.

### 9.3.5 Comments on time-area closures – Alternative 3

A description of Alternative 3, including maps of the proposed closed areas, is provided in Chapter 2.

**Comment 2-23:** Closing the savings area is no longer a functional mechanism to avoid Chinook salmon bycatch. Chinook salmon distribution has changed such that more and more salmon are encountered outside of the savings area. For this reason the proposed management measure to impose seasonal closures of areas where high salmon bycatch has traditionally occurred should not be considered as an adequate enforcement tool to prevent Chinook bycatch in the BSAI pollock fishery. Area closures have proven to be an ineffective tool in reduction of overall bycatch.

**Response:** NMFS agrees that the current regulatory approach is no longer adequate to minimize bycatch. The exemption for vessels that participate in the VRHS ICA was implemented in response to the shortcomings of the Chinook salmon savings areas and as a first step towards the more comprehensive measures analyzed in the EIS. The Alternative 3 trigger areas were specifically designed as large seasonal areas representing where 90% of the Chinook salmon bycatch occurs to meet the goal of reducing bycatch in response to SSC concerns that the Chinook Salmon Savings Area has been found to be insufficient to reduce bycatch. Section 5.3.6 provides a detailed discussion of the potential of Alternative 3, triggered area closures, to change Chinook salmon bycatch amounts. NMFS disagrees that area closures cannot be enforced. NMFS believes that the EIS provides the necessary explanation about how NMFS will monitor and enforce the alternatives, including the area closures, in Section 2.3, Section 3.1, and Section 9.6.4.

**Comment 2-24:** Time/area closures of areas identified as having high rates of Chinook salmon bycatch are a simple management measure that has proven effective in other Bering Sea fisheries. NMFS should

modify these time/area closures as necessary, based on new bycatch data as it becomes available. Vessels should not be exempt from these time/area closures for any reason.

**Response:** The Alternative 3 triggered area closures are based on areas of high Chinook salmon bycatch rates, as explained in Section 2.3. The Alternative 3 trigger areas were specifically designed as large area representing where 90% of the Chinook salmon bycatch occurred. Alternative 3 does not contain a provision to exempt vessels from the area closures or to adjust these areas based on new bycatch data. Adding a provision to adjust the closure areas based on new information would require additional analysis.

**Comment 2-25:** Close areas where high Chinook bycatch rates occur during time periods when bycatch rates are high and a hard cap is projected to be exceeded, for example when there is increased Chinook bycatch during the month of October. Some closed areas may change seasonally, whereas others may be closed indefinitely. Regulations and programs must address existing hot spots and new hot spots during the fishing season.

**Response:** Alternative 3 provides triggered seasonal closure areas which are explicitly designed in areas where 90% of the Chinook bycatch has occurred between 2000-2007. These areas would be triggered by a cap level as specified in component 1 of Alternative 3. As the analysis relates, some of the trigger cap levels would close these areas in the B season prior to the month of October. This alternative does not however allow for indefinite closures, each closure is designed seasonally and would reopen the following season and remain open until a trigger cap level is reached. Fixed closures were initially considered under the development of Alternative 3 candidate closures. The SSC recommended that they not be considered in this analysis as they have not proven effective previously (section 2.6). This was validated by analysis of candidate regions during the development of alternatives which showed temporally and spatially variable bycatch patterns by season.

**Comment 2-26:** Do not implement locked-in targeted area closures because there is too much noticeable movement of pollock stocks to make that feasible.

**Response:** NMFS acknowledges the comment.

### 9.3.6 Comments that support Alternative 4

A description of Alternative 4 is provided in Chapter 2.

The following public comments support Alternative 4:

- Implement the hard cap of 47,591 Chinook salmon in 2011, and do not delay action. In the analysis of how the different alternatives will affect minority or low income communities (DIES Table 9-8 through Table 9-13), this cap seems to be the most effective in reducing salmon bycatch for Chinook salmon users and other marine resource users in the six regions analyzed. It also states that adopting such a hard cap may reduce bycatch for seabirds and marine mammals. This may compound benefits of salmon bycatch reduction because the reduction in bycatch for other species may directly benefit Alaska Natives and other indigenous peoples of the North Pacific who subsist off of these species. Furthermore the analysis speculates that such Chinook management measures 'are likely to slightly reduce chum salmon bycatch' and that this cap may also reduce groundfish bycatch. This approach seems most consistent with National Standard 9, which states that "Conservation and management measures shall, to the extent practicable,

minimize bycatch and to the extent bycatch cannot be avoided, minimize the mortality of such bycatch," particularly in the context of achieving environmental justice. A cap of 47,591 would strike a balance between National Standard 1 and National Standard 9, both allowing the pollock fishery to continue and minimizing bycatch. A cap at this level would address the long term health of the Chinook salmon.

- The following measures show great promise in reducing Chinook salmon bycatch; reasonable limits on Chinook bycatch, the use of salmon excluder devices in pollock fishing nets, rolling hot spot closures, and intercooperative agreements that help reduce bycatch and penalizing fishermen who have high bycatch levels.

### 9.3.7 Comments opposing Alternative 4

The following public comments suggest that the hard cap of 68,392 Chinook salmon is too high:

- Salmon dependent communities and ecosystems in the Pacific Northwest, Alaska, and Canada are being harmed by the current management plan and will be harmed more with the 68,393 hard cap alternative that higher than average bycatch of 49,600 Chinook salmon. This estimate is reminiscent of the destruction foreign fleets caused.
- The high cap of 68,392 Chinook salmon is not justified and is too high for conservation reasons. The direct correlation between encounters and abundance is not borne out by the analysis, yet that underpins the argument for a higher cap in exchange for an incentive plan. It's fairly clear that the recent high encounter years are due to other factors, such as increased overlap in the ranges of Chinook and pollock, as the EIS notes. In years when high encounters don't correlate with high abundance, a higher cap simply translates to a higher rate of interception and larger impact to the other users of Chinook and to the resource. Low encounter years don't necessarily correspond to low abundance either, and there are other effective ways to limit bycatch at those times, such as the current VRHS system. Additionally, the industry has only hit that amount twice in 30 years so it would not stimulate avoidance of salmon bycatch in most years.
- Neither of the hard cap amounts in Alternative 4 (68,392 and 47,591) represents a reduction in Chinook salmon bycatch, but rather an allowance for higher bycatch. Therefore, Alternative 4 should not be adopted, as subsistence users would likely continue to experience difficulty meeting their Chinook salmon needs.
- As noted in Chapter 2, given that it is possible that the pollock industry may still exceed a hard cap of 68,000 Chinook salmon bycatch under the proposed alternative and that the incentives envisioned may prove elusive, Alternative 4 does not provide a reasonable alternative to reduce salmon bycatch within the National Standards.
- A cap somewhere between 47,591 and 68,392 Chinook salmon represent averages that, if continued, would only ensure that the status quo level of salmon bycatch would continue to occur and not be reduced as the MSA requires.
- In any alternative scenario, a cap of 68,392 has the effect of maximizing bycatch rather than minimizing bycatch. The pollock industry acknowledges that the hard cap of 68,392 Chinook salmon will likely still be hit. Even though a cap at this level would only have been exceeded 2 times in the last 20 years, a cap of 68,392 is not reasonable or prudent. Precautionary measures

are necessary to conserve the Yukon River Chinook salmon and are required under MSA National Standard 9 and the Yukon River Salmon Agreement.

- A 68,392 Chinook cap is excessive and the incentive program conceptually does not ensure that bycatch will be held at levels significantly below 68,392 Chinook salmon. Furthermore, after listening to the pollock industry's presentation on incentive programs, we are not at all confident that the plans will successfully drive down salmon bycatch to low levels. The incentive programs contemplated are interesting creative approaches but as long as the cap is high and the direction to industry is unspecified, what motivation does the industry have to challenge themselves? The alternative only says that bycatch reduction below the cap should be "as far as practicable." The industry will define what is practicable for them based on how much they are willing to sacrifice. What is practicable for villages and their success at harvesting enough salmon for their needs will be ignored.
- If the incentive program works well then a cap lower than 68k should suffice. There is no greater incentive to reduce bycatch than a cap that reduces bycatch to the historical average (1992 to 2001) prior to 2002. The ICA cannot be analyzed historically to determine its effectiveness, nor can an analysis be done to determine its effectiveness in the future.

Public comments provided the following viewpoints on the ICAs:

- Because the ICA are still under development and may continue to be so until fall of 2010, the ICA is difficult at best to evaluate. Because the proposals continue to change as much as they do provides no comfort to the public that the ICAs proposed today will have any resemblance to what we see when they are submitted to NMFS. Under these circumstances it is difficult to evaluate the efficacy of the current proposals let alone the proposals the Council will see at either final action or implementation. Both plans fail to meet the requirements and the intent of Alternative 4, nor is there any indication that they will meet those requirements by the time of final action or at implementation when an ICA would need to be submitted for approval. And once again, there is nothing to ensure that any ICA submitted to NMFS for approval would bear any resemblance to what the Council sees at final action in April. Therefore the 68,392 Chinook salmon hard cap should be rejected and 47,591 Chinook salmon hard cap should be adopted. Nothing precludes the industry from doing any of the elements of any of the Incentive Plans that have been proposed outside the Council process - in fact, it may be in their best interest to do so.
- AS1 also introduces additional conditions that create the incentive for secrecy and gaming at an unacceptably high hard cap. AS1 provides for pushing sector and cooperative allocations down to the vessel level. While this is a laudable goal, it may have the unintended consequence of creating a disincentive to share information with other vessels, as 'I do better if you do worse' is a real consequence. One of the strengths of the current VRHS system is the active, real-time information sharing. An argument can be made that more restrictive cap allocations at the cooperative level will do more to get the fleet to work together and address bycatch as a team effort than incentive plans, especially if some companies can figure out how to game the system despite the best efforts of the rest of the industry. We are very concerned about potential gaming, especially with the Financial Incentive Plan/Undercatch Incentive Program. Some industry players have repeatedly demonstrated that they will push the envelope and actively game whatever the Council passes. This plan in particular lets large companies buy their way out of bycatch problems as just another cost of doing business. As there is no carryover effect from year to year, the cost of being below average in performance just gets dialed in as a cost. A simple cost-benefit analysis may also encourage vessels to continue to fish in areas with high bycatch

rates at certain times because the penalty paid for salmon caught will still be less than the revenue generated targeting higher-value fish.

- We recommend that if AS1 moves forward, explicit criteria for the content and evaluation of any ICA and its Incentive Plans be outlined in regulation. The guidance provided in AS1 is so vague that it sets the bar very low. The AS1 guidance is inadequate and the bycatch price offered for the ICAs is way too high. The plans are quite complex, and frankly we're having a hard time trusting the industry due to some participants who appear to be operating in bad faith, despite the best efforts of the majority.
- If Alternative 4 is selected the performance of the incentive programs would not be subject to an objective evaluation. We are supportive of rewarding clean fishing and allowing industry room to apply innovative mechanisms to change behavior. However, leaving evaluation of the results up to vested parties does not serve the public interest. Furthermore the alternative does not require that the industry implement the same incentive program that has been presented. This irregular management approach presents serious problems from the standpoint of public policy and transparency.
- None of the incentive plans proposed to date provide enough additional disincentive in low encounter years to justify a higher cap and higher mortality in high encounter years. All incentive plans would also add significant and unnecessary complexity. Incentive plans alone also do not have the effect of flat out prohibiting a vessel from fishing in high bycatch areas. Trying to do this through financial disincentives is far less direct than simply closing those areas as under the hot spot system. That's why the incentive plans all include a substantial rolling hot spot system.
- Implicit in the selection of Alternative 4 is the proposition that it is within the means of the fishing industry to reduce bycatch if sufficiently motivated. Little evidence is presented to support this conclusion. Absent evidence that bycatch avoidance is at least partially determined by decision on where, when and how to fish, it is not clear that any incentive program could actually work.
- Alternative 4 and the ICA requires strong faith that the industry will do the right thing for the salmon interests even when it's not in the pollock industry's best financial interest.
- While the industry should be commended for offering to implement some of its own regulations and invest in methods to protect Chinook salmon, realistically, how would NMFS be able to execute a fishery if all participants are not on the same page? It would be dangerous and possibly unmanageable to have a portion of the fleet willing to cooperate under the ICA and fishing under one cap and the remaining portion fishing under a separate cap. It will cause dissension and unease among users. The alternative implemented should result in everyone playing from the same deck of cards.
- Alternative 4 includes measures developed, managed, and overseen by the pollock industry (the ICA) that cannot be enforced or evaluated. The uncertainty surrounding the effects of an ICA, the lack of analysis, and the fluidity of the ICA itself suggest strongly that these measures should be removed from Alternative 4.
- Reject the industry incentive program proposals. Neither proposal can guarantee that it will achieve bycatch reduction to a level sufficient to warrant a cap of 68,000, more than twice that recommended by many Western Alaska and tribal groups. It is clear that both systems depend on

boats to buy bycatch credits, or conversely a desire to keep bycatch levels down so as to avoid buying credits. Since a hard cap level of 68,000 has rarely been hit, 2006 & 2007 there is little incentive to buy credits or fear of losing them as the hard cap is unlikely to be hit.

- The current ICA proposals suffer from a failure of transparency, public participation, scientific rigor, and management oversight, and offer no assurance that salmon bycatch will be reduced. They should not be part of any alternative selected by the Council or agency at this time.
- Alternative 4 is not a viable option because of the reasons the Council's SSC spelled out at the February 2009 Council meeting.
- ICAs reviewed to date do not provide adequate incentives to change bycatch behavior. The proposed incentive programs that will be before the Council and NMFS when they take final action, will not necessarily be the incentive programs the industry submits prior to implementation of Amendment 91. Due to the changing nature of these proposals the Council cannot make an adequate review. It is unacceptable to adopt a management plan which includes industry incentive plans that can change at any time in the future. In effect, no one, including the public, NMFS, and the Council has the opportunity to assess the efficacy of the final incentive programs submitted NMFS. NEPA requires that ICAs be analyzed as alternatives within the DEIS. The preferred alternative in the Final EIS cannot rely upon a voluntary program that has received no substantive review of its environmental and human health impacts on the EIS.

Public comments provided the following viewpoints on the 47,591 Chinook salmon cap:

- The cap of 47,591 is too low and could cause major harm to the industry and fishery-dependent communities. A total closure of the Bering Sea pollock fishery would threaten the viability of the City of Unalaska and other communities in the region.
- If the 47,591 Chinook salmon cap is selected, bycatch will not be minimized but that number would basically sanction average years as acceptable. Also selecting this number rolls back the effect of the 1999 action which was expected to reduce bycatch from 48,000 to 29,000 Chinook salmon. Federal fishery managers should not start over but rather continue a rigorous program that improves fishery performance to minimize salmon bycatch.
- Even when coupled with triggered closures or incentive programs, a cap of 47,591 will jeopardize meeting the salmon escapement goals of the U.S. and Canada. This would continue to place the burden of conservation solely on in-river managers and fishermen while the marine fisheries continue unchecked.

**Comment 2-27:** The proposed incentive plans are not analyzed in the DEIS. The Alternative 4 analysis is inadequate because it does not evaluate the effectiveness of the ICA. The only major differences between annual scenarios 1 and 2 of Alternative 4 are the incentive plans. Thus, the entire premise of Alternative 4 is that bycatch will be reduced through the voluntary participation in the ICA. Reduction via the ICA is illusory and there is no analysis within the DEIS that supports its effectiveness. Therefore, analysis of the ICAs are a key factor to the decision making process. Analyze the ICAs before taking final action. Without analysis of incentive-based program proposals, it is difficult to assess the effectiveness of any proposed program to reduce salmon bycatch.

**Response:** It is not necessary for such an analysis to be included in the EIS for the Council to take final action or for the Secretary to approve the Council's recommendation because the Council did not

establish any benchmark for measuring "the effectiveness" of the incentive programs. Hard caps are proven bycatch controls that are enforceable and analyzed in the EIS. The EIS discloses the environmental impacts from instituting the alternative hard cap levels. Through the development of the incentive plans in Alternatives 4 and 5, these alternatives allow the pollock fleet the flexibility to stay within this cap. However, while additional reductions in Chinook salmon bycatch may occur as a result of the incentive programs, this outcome is uncertain and not required.

Alternative 4 does not provide any guarantee or contain any requirement that the actual level of bycatch be below 68,392 Chinook salmon. It is therefore permissible, and arguably foreseeable, that this level of bycatch would occur each year.

To address this issue, the Council included a performance standard in Alternative 5. Under Alternative 5, the 60,000 high cap is available to participants in an IPA, which is an incentive program similar to the ICA under Alternative 4. The IPA should provide incentives to minimize bycatch so that sectors, cooperatives, and CDQ groups harvest less than their allocation of the 60,000 Chinook salmon cap. However, if the IPA does not result in bycatch below the cap and if a sector fully harvests its allocation in three of seven consecutive years, then that sector has failed to meet its performance standard and would then be allocated a portion of the 47,591 Chinook salmon cap.

The EIS contains an explanation of the Council's general goals for incentive programs and the Council's intent to evaluate these programs once they are in effect and operational in the pollock fishery. This evaluation would be done through the annual report that would be required of the industry. The annual report would be required to include: (1) a comprehensive explanation of incentive measures in effect in the previous year, (2) how incentive measures affected individual vessels, and (3) evaluation of whether incentive measures were effective in achieving Chinook salmon savings beyond levels that otherwise would have been achieved in absence of the measures. Through these annual reports and its own assessment of future Chinook salmon bycatch levels, the Council would determine the effectiveness of the incentive programs. If analysis prepared after the incentive plans are in effect demonstrates that the Council's goals for salmon avoidance are not being met, the Council could reinstate analysis of alternative salmon bycatch management measures and implement revised or new management measures in the future.

Analysis of the efficacy and impacts of the incentive programs and its salmon bycatch avoidance incentive programs are not required under NEPA because the environmental impacts of Alternatives 4 and 5 are determined by the cap levels. The impacts on the human environment are based on the assumption that this level of bycatch could be reached in any year. Under Alternative 4, no regulations would prevent the pollock industry from reaching this cap. Alternative 5 includes a performance standard that would reduce the cap for sectors that did not maintain an average bycatch below that sector's performance standard. As long as the EIS analyzes and discloses the consequences of adopting the caps specified in the alternatives, and the Council considers the incentive programs as a feature of the alternative that may provide additional incentives to avoid Chinook salmon bycatch within these cap levels, the Council can take final action and the Secretary can approve the Council recommendation without an analysis in the EIS of the specific incentive program the pollock industry may submit.

The two principal goals of an EIS are to (1) ensure that the decision-makers carefully consider detailed information concerning significant environmental impacts and (2) make sure that the relevant information will be available to the public. The EIS discloses the environmental impacts from instituting the cap levels under each alternative. Additional reductions in Chinook salmon bycatch may occur as a result of the incentive programs, but this outcome is uncertain. Therefore, the EIS assumes that no additional environmental benefits or impacts are anticipated from the implementation of the incentive programs.

Consequently, the EIS provides the decision-makers and public with the relevant information with respect to the alternatives.

**Comment 2-28:** NMFS has failed to comply with MSA requirement by choosing to take no effective action to curb bycatch in the pollock fishery. Choosing to adopt a management structure dependent on an unproven, unenforceable, and unanalyzed industry agreement, as proposed in Alternative 4 would not address this failure. The MSA, 16 U.S.C. §1801 et seq, is a mandate for "conservation and management" of our marine resources. 16 U.S.C. §1801(b)(1). The first enumerated purpose of the MSA is "to take immediate action to conserve and manage the fishery resources found off the coasts of the United States." This conservation mandate applies broadly to all stocks of fish and all fisheries. Against this backdrop, the MSA requires NMFS to take practicable actions to minimize bycatch. See 16 U.S.C. §§ 1853(a)(11); 1851(a)(9).

**Response:** NMFS is in the process of taking action to minimize bycatch to the extent practicable in the pollock fishery in compliance with the MSA and other applicable law. To ensure that the most effective and practical methods for controlling bycatch are implemented, NMFS needs to take the time to work with the Council and consider the concerns of the fishing industry, affected communities, and interested members of the public. NMFS also must meet obligations to analyze the potential effects of the action under the NEPA, ESA, RFA, Executive Order 12866 on regulatory planning and review, Executive Order 13175 on consultation and coordination with tribal governments, and Executive Order 12898 on environmental justice. As a result, it is likely NMFS will not be able to implement additional salmon bycatch management measures before 2011. The EIS assumes that no additional environmental benefits or impacts are anticipated from the implementation of the incentive program, which are one part of Alternatives 4 and 5, the primary provision of which are dual hard caps and, for Alternative 5, a performance standard. See response to comment 2-27.

**Comment 2-29:** Alternative 4 allows for an unacceptable and unenforceable level of bycatch that will have significant adverse impacts on the western and interior Alaska way of life as well as the regional commercial salmon fishery.

**Response:** NMFS acknowledges the comment but disagrees that Alternative 4 would allow for an unenforceable level of Chinook salmon bycatch. Under Alternatives 2, 4, and 5, the level of bycatch would be controlled by the hard caps. The Final EIS and Final RIR provide the necessary explanation about how NMFS will monitor and enforce the alternatives in Chapter 2, Section 3.1, and RIR Section 6.1.4.

**Comment 2-30:** Alternative 4 is not adequately analyzed in the DEIS. The AS1 is described as a 68,392 Chinook salmon cap. As explained in the DEIS on page 65, however, the actual high cap on salmon bycatch under this alternative could exceed 100,000 Chinook salmon (68,392 salmon plus 32,482 under opt-out cap). The DEIS does not evaluate the effects of allowing bycatch to exceed 100,000 salmon and the impacts on subsistence and commercial fisheries.

**Response:** The DEIS, in Section 2.4.3.2, recognized that without a change to Alternative 4, bycatch could exceed 68,392 Chinook salmon if vessels, sectors, or cooperatives opted out of the ICA. However, as explained in the DEIS, even if vessels, sectors, or cooperatives opted out of the ICA, it is unlikely that 68,392 Chinook salmon would be exceeded. In recommending Alternative 5, the Council included a provision that ensures the 60,000 Chinook salmon cap is not exceeded by the bycatch of participants fishing under the opt-out cap. A description of how the opt-out cap would function under Alternative 5 is in Section 2.5.2.



### 9.3.8 Comments suggesting changes to Alternative 4

**Comment 2-31:** NMFS has expressed concern over how to handle a situation where more than one ICA was submitted. We believe that only one ICA should be approved, and that this will ensure that industry works together to find real solutions rather than just easy solutions that fit any one user group. Should more than one ICA be submitted for a calendar year, NMFS should reject all ICAs and give the industry 30 days to work together to submit one comprehensive ICA that represents at some minimum percentage (90%?) of the pollock harvest. If the industry cannot reach a resolution, then the ICA will be rejected for the year and the lower cap will be allocated as outlined at final action.

**Response:** Comment acknowledged.

**Comment 2-32:** The DEIS identifies potential problems with Alternative 4 in the event that some entities opt out of the ICA and fish under the lower hard cap. Without additional clarification at final action, the 68,392 hard cap could be exceeded. Option B identified in the DEIS is the best resolution to this potential problem and we believe it to meet the intent of the Council motion. Option B would subtract from the 68,392 cap the portion of the 68,392 cap represented by vessels opting out and fishing under the backstop cap using the proportion of 32,482 represented by the vessels fishing under the backstop.

**Response:** NMFS acknowledges this comment. In recommending Alternative 5, the Council included a provision that ensures the 60,000 Chinook salmon cap is not exceeded by the bycatch of participants fishing under the opt-out cap, as described in Section 2.5.2.

**Comment 2-33:** Consider an adaptive management approach to determine which components and options of Alternative 4 would best support the purpose and need for this action. The selection of the preferred alternative should be based on sound scientific research, field data, and modeling information. A phased approach over a specified timeframe/schedule may be an effective way to implement the preferred alternative based on an adaptive management framework.

**Response:** All fishery management actions are intrinsically adaptive in the sense that the FMP is an ongoing process of adaptive management. Monitoring is ongoing to collect Chinook salmon bycatch data, including river-of-origin and stock identification information. As scientific data indicates a need for a change in management course, NMFS and the Council respond by initiating an FMP amendment analyses to evaluate different management strategies. The selection of the preferred alternative is based upon the best scientific data and analysis available to support decision-making at the time of final action. This does not preclude further changes to management actions at a later time should new information become available. A phased-in approach for implementing a hard cap was discussed at the Council but was not included in the alternatives, as discussed in Section 2.6.

**Comment 2-34:** There is no discussion in either of the industry-initiated incentive plans for monitoring and enforcing their program. We find this to be a serious flaw in both plans. The plans put forward are complicated, outside the public process, and ripe for gaming by the industry - it's a case of the fox watching the chicken coop. Should Alternative 4 be recommended to the Secretary, strong provisions for monitoring and enforcement of the rules imposed by the ICA should be required.

**Response:** Under Alternatives 4 and 5, the incentive plans are industry agreements and its provisions would be monitored and enforced through the incentive plans and civil contract. NMFS would not have a role in monitoring or enforcing the express provisions of the incentive plans. NMFS, however, will monitor the bycatch from each vessel and will, in the event the NMFS closes a fishery because the cap is exceeded, enforce compliance with such closure(s) and assess penalties if an allocation is exceeded. The

Final EIS and Final RIR provide the necessary explanation about how NMFS will monitor and enforce the alternatives in Chapter 2, Section 3.1, and RIR Section 6.1.4.

**Comment 2-35:** Adopt a hard cap of no more than 32,500 Chinook salmon. This cap is equal to the ten year average of salmon bycatch in the BSAI pollock fisheries prior to signing the 2002 Yukon River Salmon Agreement. Thus, a hard cap of 32,500 is necessary and achievable. Given the forecasts for salmon returns in western Alaska in 2009 that project equal or lower salmon returns than the low returns of 2008, a hard cap of 32,500 salmon represents necessary insurance to the communities of the North Pacific who depend on salmon as a subsistence resource.

**Response:** NMFS acknowledges this comment. A hard cap of 32,500 is within the range of cap levels analyzed in the EIS.

**Comment 2-36:** Adopt Alternative 4 AS2, with one change and two additions. (1) With respect to the sector allocations under a hard cap, allocating Chinook salmon based on 75% salmon bycatch history and 25% AFA pollock amounts Alternative 4 allows sectors with the highest salmon bycatch a higher portion of the proposed allocation. The Alternative 4 weighted sector allocation formula should be reversed to 25% history bycatch and 75% AFA pollock. Alternative 4's use of a blend of history and pollock allocation to addresses the issue that basing sector allocations on straight history rewards a bigger share of the bycatch cap to sectors with members that fish in October or otherwise have Chinook bycatch significantly higher than that of their peers. However, the history component needs to be reduced to 25% to wring out the differences in behavior. All other aspects of the sector cap calculations, specifically including the adjustment of CDQ and CDQ harvesting sector history as described in the Council's June 2008 motion, would remain unchanged.

(2) Add to Alternative 4 the Alternative 3 B season triggered closure, applied at the cooperative or entity level such that if October 7 or any date thereafter, an entity has met or exceeded its bycatch allocation, it is subject to the closure. The cap allocation would be calculated using the methodology of Alternative 4 modified by the change above, but for a cap level of 29,300.

(3) Add to Alternative 4 the status quo VRHS and exemption from the savings area closures such that the hard cap and triggered closure are in addition to status quo.

These changes will provide adequate protection for Chinook salmon stocks in low encounter years and will be much simpler to implement than the incentive plans currently being proposed. Overlaying a hard cap on the status quo shouldn't require significant analysis. The effects of the hard cap are already fully analyzed. The effects of the rolling hot spot system are fully analyzed. Putting the two together should provide effective low encounter avoidance under Status Quo and effective high encounter avoidance under the hard cap. It should be possible for the analysts to flesh out how the agency would implement that between final action and the FEIS without delaying implementation.

**Response:** Comment acknowledged. The suggested modifications to the seasonal sector-specific allocations differ from those explicitly considered in the alternatives, but are nonetheless within the range of sector allocations considered in this analysis. However some provisions of the area closure suggestions have not been considered in this analysis. While layering the area closure in conjunction with a hard cap is possible under the existing suite of alternatives, there are management complexities to be considered in doing so that have been raised in previous Council discussions and were contained in the preliminary review draft (June 2008 Initial review version of the analysis).

Furthermore the commenter suggested that the B season area closure should be applied at the cooperative level. Application of area closures below the sector level (managed by NMFS) is not included in the

existing suite of options due to the management difficulties raised in tracking cooperative-level caps and the challenges in enforcing cooperative level area closures for the Agency. Note that Alternative 3 component 2, option 1 provides for ICA management of a triggered area closure which could be applied under the ICA provisions at the cooperative level.

The combination of a B season area closure triggered by a lower cap in conjunction with the status quo system of VRHS program (with the exemption to status quo closures) and a hard cap divided by sector and season is possible under the existing suite of alternatives, but a more specific analytical discussion of the impacts of this alternative combination in conjunction with the existing analysis would be necessary following final action.

**Comment 2-37:** Any ICA that moves forward should be required to have a third-party conduct an annual analysis of the effectiveness of the ICA as it relates to the current problem statement and ICA criteria identified at final action. That analysis should be presented to the Council in an annual report for public review. The Council should also require scheduled review by NMFS of the proposed action after one, three and five years of the program to consider whether the program continues to meet Council intent and to consider new developments in the understanding of salmon biology and pollock fishing patterns. Should the program fail to prove more effective than a hard cap alone, the program would sunset.

To evaluate the efficacy of an ICA the following criteria should be required:

- Test fishing (up to 5% of the TAC) inside closed areas for the purpose of evaluating performance of the ICA against any Incentive Plan.
- Thorough explanation of the mechanisms for monitoring and enforcement of the ICA including any fee structure and the ultimate outcome for where those fees would be spent.

**Response:** Comment acknowledged. Alternatives 4 and 5 do contain general goals for the incentive plans and provisions for the Council to evaluate these programs once they are in effect and operational in the pollock fishery. This evaluation will be done through the annual report that will be required of the industry. Under Alternatives 4 and 5, the annual report would be required to include: (1) a comprehensive explanation of incentive measures in effect in the previous year, (2) how incentive measures affected individual vessels, and (3) evaluation of whether incentive measures were effective in achieving Chinook salmon savings beyond levels that otherwise would have been achieved in absence of the measures. Through these annual reports and its own assessment of future Chinook salmon bycatch levels, the Council would determine the effectiveness of the incentive programs. If analysis prepared after the incentive plans are in effect demonstrates that the Council's goals for salmon avoidance are not being met, the Council could reinitiate analysis of alternative salmon bycatch management measures and implement revised or new management measures in the future.

**Comment 2-38:** The industry incentive program should begin working immediately and include funding, at a meaningful level, to support research relevant to salmon bycatch reduction.

**Response:** Section 2.6 explains that the Council considered a fee per salmon caught to provide an incentive to reduce bycatch and to support research assessing impacts and methods to further reduce salmon bycatch. However, the Magnuson-Stevens Act provides NMFS limited authority to impose fees. Section 304(d)(1) specifically limits the amount of fees to "the administrative costs incurred in issuing the permits." Similarly, in the context of limited access privilege programs, NMFS and the Council must impose fees "that will cover the costs of management, data collection and analysis, and enforcement activities." Thus, the Magnuson-Stevens Act does not authorize NMFS or the Council to impose a fee on a per-salmon basis or collect fees to support research for reducing salmon bycatch. In addition, NOAA General Counsel also advises that NMFS cannot require that an ICA contain management measures that NMFS does not have the authority to require directly. Therefore, NMFS cannot implement regulations

that would expressly require a salmon bycatch ICA to include fees on salmon bycatch, even if such fees were not directly assessed by NMFS.

**Comment 2-39:** The Council should evaluate each proposed incentive program with regard to the following: a) monitoring and enforceability; b) meaningful penalties for non-compliance, not simply a "trading" of credits or reducing or phasing out of participation in the fishery; and c) the inclusions of funding from industry for research that will help reduce salmon bycatch in the pollock fishery and meet escapement goals established by the Yukon River Salmon Agreement.

**Response:** NMFS acknowledges this comment. See also the response to Comments 2-34 regarding monitoring and enforcement and Comment 2-38 that explains that the Magnuson-Stevens Act does not authorize NMFS or the Council to impose a fee on industry to support research.

**Comment 2-40:** Oppose transferability of Chinook salmon bycatch allocations between sectors or individuals. If the higher cap amounts are adopted, selling or trading the caps should not be allowed. Such activity would result in reaching the cap instead of providing incentive for the fishing industry to reduce bycatch below the cap. It is unconscionable to allow the pollock industry to buy and sell Chinook salmon allocations when it is illegal for subsistence salmon fishermen to do the same. Transferability would result in greater use of salmon bycatch allocations and will result in less salmon returning to the region's rivers and streams. Transferability would allow a vessel with low bycatch rates to transfer their unused bycatch allocation to a vessel with high bycatch rates, and the result is that both vessels' bycatch allocations of salmon may be taken. There would be no long term commitment or incentive to reduce bycatch.

**Response:** Comment acknowledged.

**Comment 2-41:** Regulatory and non-regulatory measures are necessary to reduce salmon bycatch. Support industry incentive programs that work with meaningful performance measures. Reward pollock boats reducing bycatch. Industry could fund such a program with dockside fees similar to the vessel buy-back program.

**Response:** Alternatives 4 and 5 do contain regulatory and non-regulatory measures to reduce salmon bycatch. The regulatory measures are the hard caps. The incentive plan component would be largely a non-regulatory measure. As explained in section 2.4.7.1 and 2.5.8, the implementing regulations for the incentive plans would include requirements for the information that must be included in the agreement and a deadline for submission of the agreement. In addition, the regulations would describe the process NMFS would use to review and approve or disapprove the incentive plans. However, the regulations would not specify any specific requirements for the type of incentives that must be included in the plans. As non-regulatory measures, the plans could include rewards for boats to reduce bycatch or a system of fees. Note that, as discussed in the response to comment 2-38, NMFS does not have the authority to impose fees on the amount of bycatch. Fees collected on bycatch are different than cost recovery fees necessary to pay back a loan, as under a vessel buyback program.

**Comment 2-42:** Do not allow the rollover of bycatch from A season to B season if the cap is 47,591 or higher, because these caps do not effectively minimize bycatch. A rollover could result in higher bycatch in the following B season. However, if the hard cap is 37,000 or lower, then a rollover provision would be more acceptable, because a lower cap will result in minimizing the overall bycatch.

**Response:** Comment acknowledged.

**Comment 2-43:** The Council should allocate more pollock quota to the CDQ groups because they have harvested pollock with lower Chinook salmon bycatch rates than the other sectors. Allocating relatively more pollock to the CDQ groups would promote clean fishing and penalize dirty fishing.

**Response:** The AFA establishes the allocation of ten percent of the BSAI pollock total allowable catch to the CDQ Program. Because this allocation was established by Congress in a federal statute, the Council does not have the authority to increase the allocation of pollock to the CDQ Program. In addition, it would be difficult to confirm the statement that the CDQ entities have harvested pollock with lower salmon bycatch rates than the other sectors because operators of vessels harvesting both CDQ and non-CDQ pollock on the same fishing trip have the option of assigning a haul of pollock to either the CDQ entity's quota or to the vessels quota after the crew assesses the bycatch in that haul. NMFS regulations allow up to 2 hours after the fishing gear is retrieved to record the assignment of the haul in the vessel's logbook. Historically, because the CDQ entities were constrained by multiple hard caps for other groundfish species and prohibited species and the non-CDQ pollock fisheries were not, some CDQ entities would request that the vessel operators assign the lower bycatch hauls to the CDQ entity and the higher bycatch hauls to the non-CDQ pollock fisheries. This would result in it appearing that the CDQ entities were fishing with lower bycatch rates than the non-CDQ pollock fisheries.

## 9.4 Chapter 3 Comments

These comments are on Chapter 3, Methodology for Impact Analysis. In response to public comments, substantive changes were made to sections 3.1 Estimating Chinook salmon bycatch in the pollock fishery, 3.3 Estimating Chinook salmon adult equivalent bycatch, and 3.4 Consideration of Future Actions. The revised Sections 3.3 and 3.4 were provided to the Council and public as appendices to the preliminary CAR. The specific changes are detailed in the following comments and responses.

### 9.4.1 Comments on the AEQ methodology and genetics

**Comment 3-1:** The 68,000 cap is too high regardless of an incentive program's effectiveness and is unacceptable because it represents the average of the three highest bycatch years on record. If the all-time high year of 2007 is included as the basis for analysis, the low year of 2000 should also be included.

**Response:** The years used to calculate the caps which are based upon average bycatch over different time periods are different than the years chosen for the impact analysis. Section 2.2.1.1 describes all of the iterative ranges of years employed in establishing a range of cap level alternatives. None of the cap options include the highest year of 2007 in calculation of historical averages. The option chosen in the Alternative 4 represents a three-year average 2004-2006. Other options under Alternative 2 have different year-sets included (3, 5, and 10 year averages before and after 2002). Option iv is specifically the 10 year average 1997-2006 with the lowest year (2000) dropped from consideration, while option vi is the same 10 year average but with 2006 dropped.

The years selected for the impact analysis are based upon consideration of current conditions and consistent data. As explained in section 3.2, the years 2003-2007 were chosen for the impact analysis because that is the most recent 5 year time period and most reflective of recent fishing patterns. Chinook salmon bycatch increased dramatically after 2002 and NMFS catch accounting changed after 2002 and thus starting in 2003, the most consistence and uniform data set was available from NMFS on a sector-specific basis for analysis. Note that the Chinook salmon bycatch information from 2000 is included in the EIS. Section 5.3.1, in Tables 5-20 and 5-21, provides Chinook salmon bycatch data from 1991 to 2008 to show how bycatch has changed over time and the variability in bycatch between years.

**Comment 3-2:** This method used to assess impacts on Chinook salmon and forgone pollock is unreliable because it assumes impacts from the highest bycatch years for the historical behavior (2003-2007) and it assumes no behavioral changes by the pollock fleet in response to hard cap. The methodology assumes that the retrospective behavior of the pollock fleet will be repeated under the various hard cap alternatives. The analysis is based on past performance of the fishery, but you should not assume that past amounts of bycatch would have the same impacts in future years. This assumption is inconsistent with the primary justification for the preliminary preferred alternative, which presumes adoption of incentives to change fleet behavior. The DEIS analysis of impacts on Chinook bycatch and forgone pollock catch is very likely incorrect because the pollock industry will make considerable efforts to avoid Chinook when faced with a hard cap, and that using historic bycatch with no savings due to avoidance measures greatly overstates the impact of a hard cap. This analysis could be improved by assuming a set percentage reduction in historical bycatch levels to account for the behavioral change a hard cap will produce.

**Response:** Using the time series 2003-2007 was selected since this reflects the most consistent and uniform dataset available from NMFS on a sector-season specific basis for analysis. NMFS acknowledges that the analysis does not account for any changes in fleet behavior that may result in bycatch levels below historical amounts. The analysis of impacts is structured based upon the 'worst case scenario' of sections of the fleet reaching their cap retrospectively over the year analyzed in order to estimate salmon saved and forgone pollock and does not make any allowances for the fleet modifying their behavior to stay below the cap.

NMFS agrees there are issues with adequately predicting changes in fleet behavior, but disagrees that this represents a flaw in the analysis. Alternative predictive approaches (and data to support these approaches) are lacking and as such, the analysis notes that fleet behavior is likely to change, and the likely impact of changing fleet behavior is dealt with qualitatively. One approach would be to model potential changes in fleet behavior. However, such a model requires more information than is currently available. The SSC, in June 2008, noted in its review of the model methodology that "...while the calculated impacts in 2003-2007 are in one sense the worst case because they make no allowance for changes in fleet behavior, it is quite possible that in some future year the impacts on the pollock fishery could be even larger, even with changes in fleet behavior. This may occur simply because of a greater spatial overlap of Chinook salmon and pollock than seen in any of the years 2003-2007." Any set percent reduction employed to estimate behavior changes in response to a hard cap would be arbitrary and thus potentially uninformative in estimating true fleet operational behavior under a hard cap.

**Comment 3-3:** The Chinook salmon bycatch caps should be based on the strength of the projected Chinook salmon returns. There is no scientific data to support the use of bycatch data when compared to the use of projected returns. This method is similar to way the groundfish quota is set, based on percent of biomass. Successful fisheries have shown that the use of a projected run is more sound and then setting an allowable intercept for catch.

**Response:** NMFS agrees and setting the cap based on Chinook salmon abundance was considered extensively during the development of alternative management approaches. In discussions with the SSC over the years, options such as using BASIS surveys or other indices were considered. However, the data on future-year oceanic salmon abundances (preferably to river system) that would be required to manage salmon bycatch levels in this manner is lacking. Retrospectively, there is some evidence that salmon bycatch rates are positively correlated with subsequent salmon run-strengths but this relationship is variable and therefore cannot at this time be used as a basis for determining bycatch limits (e.g., 2007 Chinook salmon bycatch encounter-rates were extremely high while run-strengths for a significant group of these fish was relatively low).

**Comment 3-4:** Two significant deviations in the DEIS from methods employed in all previous bycatch AEQ estimates were 1) the use of ADF&G's genetic (SNP) analysis (Page 111, last paragraph), instead of the traditional scale pattern analysis for determination of stock of origin; and 2) seemingly biased bycatch sample collections for the genetics studies (page 118 2nd paragraph). The SNP methodology underestimates the stock composition of Yukon River Chinook salmon and overestimates others such as the Alaska Peninsula stock over the years presented in the DEIS. The SNP analyses of bycatch used in the DEIS are unable to allocate fish stocks to the major drainages (Yukon, Kuskokwim, Columbia, etc) even though this is the primary metric for managing Chinook. Scale pattern analysis provides this information. Biased genetic tissue sampling in the 2005 B and 2007 A seasons is apparent and acknowledged in the DEIS, 'most genetic tissue sampling was completed prior to when most the bycatch occurred' and 'all of the 2007 samples came from a single vessel fishing in a closed area using experimental salmon excluder trawl gear'.

**Response:** NMFS disagrees. Section 3.3 is revised in the Final EIS to clarify the methodology employed in this analysis. For further information on the use of the SNP analysis as the primary determinant of stock of origin please see response to comment 3-5 where an explanation of the rationale for the most recent data is provided as well as further details on the use of Myers et al. (2003) in this analysis. With respect to the apparent bias in sample collections, this is fully acknowledged and accounted for in this analysis (as opposed to a possible similar bias in Myers et al. study). Furthermore the 2007 A season data was downweighted considerably in its relative use compared to the other seasonal data due to these issues with sampling intensity. Additional information has been added to section 3.3 regarding the weighting of each season as this was inadvertently omitted in the DEIS.

**Comment 3-5:** The DEIS repeatedly relies on preliminary or cursory studies to develop arguments that are of central importance to any proper evaluation of environmental impacts, without a clear presentation of how the limitations of those studies translate into uncertainties. The genetic data used to derive the estimates of Chinook salmon adult equivalent bycatch for the AEQ model relies heavily upon two poster presentations (Seeb et al. 2008; Templin et al. 2008) that have not been made publicly available or peer reviewed. The preliminary nature of these studies and the lack of an opportunity to fully review their methodology and sampling techniques makes their inclusion in the DEIS questionable. NMFS must make clear the extent to which the DEIS relies on information that is not peer reviewed. We recommend that the published Myers (2003) methodology be the sole methodology utilized by the DEIS.

**Response:** NMFS disagrees. The data and the methodology by which the data have been employed in this analysis are all fully explained in the text. Section 3.3 is revised in the FEIS to clarify any additional details to the methodology that was not adequately explained in the DEIS. The only aspect to the studies that were not included in the DEIS are the methodologies by which the genetic data (single nucleotide polymorphisms SNPs) are analyzed and the specifics by which classification groupings are made as this is both outside of the scope of this analysis as well as proprietary pending publication by the geneticists involved in that study. However all details including the classification thresholds, river systems included in each group, as well as aspects of the data necessary for understanding their use in this analysis were included in the DEIS, with additional details for clarification purposes included in the FEIS.

Furthermore, the cited Myers et al. (2003) study, which was employed in this analysis for purposes of estimating impacts to the Yukon, Kuskokwim and Bristol Bay (as described in revised section 3.3) received a similar level of review and has not been published. The Myers et al. (2003) study result is presented in a final report of a multi-year project funded by the Yukon River Drainage Fisheries Association (YRDFA). This study had relatively high levels of sampling but simply assumed that sampling was proportional to bycatch in space and time. For the genetic study results used in the EIS, this was not assumed and sampling was adjusted to account for differences in proportionality.

The need to use a more recent time frame is important. Hence, the EIS focused on samples and results collected during 2005-2007 (see Section 3.3 for additional details on the time period for sampling over those years). Genetic results in aggregate for western Alaskan stock composition compared favorably with Myers et al. (2003) earlier work from 1997-1999.

**Comment 3-6:** The model used in the DEIS drastically underestimates the impacts to western Alaska Chinook salmon stocks and to Chinook salmon users.

**Response:** NMFS disagrees. For total salmon taken incidentally as bycatch, the sampling effort is very high by scientifically trained and certified who observe a majority of the catch in the pollock fishery. This indicates that the uncertainty in total removals of salmon is well known.

Relative to specific impacts to western Alaska Chinook stocks, NMFS acknowledges the uncertainty in estimating the stock composition of the bycatch. However, this study uses results from both genetics and scale pattern analysis (which gave similar results relative to WAK stocks) to arrive at estimates. These approaches, combined with appropriate weighting schemes to account for sampling disparities, should provide unbiased estimates of the loss of salmon returning to western Alaska rivers due to pollock fishery bycatch.

**Comment 3-7:** The 2007 A season tissue collections have an unusually high proportion (55%) of age-4 Chinook salmon bycatch compared to the historic average of 30% (table 3-5). Younger fish tend not to be AYK stocks contrary to older fish. Historically, the A season bycatch has been dominated by older fish, AYK stocks, contrary to 2007 bycatch estimates. This results in misallocation and biased estimates of regional impacts in the DEIS (Table 3-8, Myers et. al. 2003). All prior AEQ impact analysis suggested the bulk of the AYK stock bycatch occurred in the A season, contrary to the DEIS (Table 3-11). This issue is compounded by the small genetic tissue sample size (N=360). Using an estimate of 1% of the 2007 A season bycatch tissue samples being AYK stock, so only 3 or 4 fish taken as A season samples (table 3.9) were of Yukon origin, suggesting a high potential for error due just to insufficient sample size. Earlier studies by Myers and others commonly had sample sizes greater than 1,000.

**Response:** NMFS disagrees and notes that the 2007 A seasons genetics collection were downweighted appropriately. The 2006 A-season samples genetics received 4 times the weight of the 2007 samples and the proportion of age 4 in 2006 was 30% (close to the average). The bycatch in the A-season is dominated by age 5 fish (51%) with ages 6 and 7 Chinook representing 15% on average while ages 3 and 4 are 35%. The age compositions are based on extensive length frequency sampling. While Myers sample sizes were relatively large, no attempt to correct for area and season specific sampling was done (they assumed that sampling was proportional to the actual bycatch by region and seasons). Further clarifications of methodology are included in the revised section 3.3 in the Final EIS.

**Comment 3-8:** In Section 3.3.2, the salmon genetics for non-western Alaska stocks are not in close agreement with the scale analysis, and there are questions concerning North Alaska Peninsula and upper Yukon contributions to bycatch. Please refer to Table 3-12. The data for western Alaska stocks (Bristol Bay and north) from the three studies cited in the DEIS are reasonably consistent in the aggregate and are good enough to use as basis to protect those stocks. The extensive work done by the analysts to deal with the less than ideal sampling for the Seeb et al. study is to be commended.

Summing figures from western AK and Yukon segments (Seeb et al.) yields 54%, which is in reasonable agreement with the scale analysis done by Myers et al. at 56% and 60% for the core bycatch stocks. That said, there are some limitations to sampling methodology for the Seeb et al. study in particular, and the need for additional work characterizing the stock composition of the Chinook bycatch is obvious.



The North Alaska Peninsula contribution to the pollock bycatch, indicated by Seeb et al., seems highly unlikely, though if true could explain their very weak status. These stocks are quite small, and if the stock composition is true, they contributed 10,810 fish to the bycatch in 2006. This probably exceeds total run size for those rivers. The composition of the rest of the bycatch, totaling 40-46%, is quite variable. Do Cook Inlet stocks contribute 4%, 17% or 31% of the bycatch? Are Russian stocks 2%, 5% or 14%? Are Pacific Northwest stocks 0% or 23%?

Given this variability, it's also possible that the Upper Yukon stock components' migration patterns and degree of interception by the pollock fishery are not well understood. While it was 3% in the 2006 samples analyzed by Seeb et al., given these stocks' magnitude and importance, it may be prudent to assume that these stocks may not have shown up proportionally in the less than optimally collected, spatially and temporally limited samples analyzed. The Upper Yukon stocks might show up at higher levels at other times and their interception rate may vary more than the core stocks. The last caveat may also apply to the North Alaska Peninsula, Pacific Northwest, Cook Inlet and Russian stocks.

**Response:** NMFS agrees that while there is consistency in relative stock composition estimates for aggregate WAK river systems between scale pattern and genetic studies, we note that there is considerable variability among the other stock composition estimates between studies. Table 3-12 highlights these issues. Additional text has been added to the revised Section 3.3 in the Final EIS to clarify the intent of the comparative table. Given these similarities and differences we note the following: the consistency in aggregate WAK core groupings between all studies supports the impact estimates for the aggregate groupings. Differences in stock composition estimates between studies for other regions were noted but given less emphasis in impact analysis for these regions (e.g., Cook Inlet, North Alaska Peninsula, Russia, Pacific Northwest) due to the variability between studies. This also led to our conclusion that further study is required to better estimate stock composition for those regions.

**Comment 3-9:** The genetics and AEQ model provide reliable aggregate stock trend information, but do not accurately assess stock-specific impacts. Due to the inconsistencies associated with insufficient sample size, the genetic analysis should be used only to indicate trends across broad stock groups, such as WAK and should not be used for smaller stock groupings. Myers et al. (2003) should be used to break out the Coastal Western Alaska aggregate grouping. Given the importance of these stocks for treaty obligations, we cannot assume that the stock composition from the spatially and temporally limited samples analyzed by Seeb et al. are indicative of the overall presence of these stocks in the bycatch.

Tables 5-47, 5-48, 5-49, 5-50 and 5-51 should be amended to present information on an aggregate level.

**Response:** The revised Section 3.3 includes further clarifications on the methodology employed and these are also reflected in the response to comment 5-6. Given the aggregate grouping of Coastal WAK from genetics, the results from Myers et al. (2003) was in fact used to break out this grouping (plus the added portions from the middle and upper Yukon) and provide gross river-specific impacts for the Yukon, Kuskokwim and Bristol Bay. No attempt is made in this analysis to discuss the middle and upper Yukon based on genetics alone for impact analysis, instead they are reaggregated as noted and only the Yukon as a whole system is estimated. Tables 5-47 through 5-51 present the 9 genetic groupings while the specific river systems are shown in Tables 5-52 through 5-56.

**Comment 3-10:** The DEIS lacks sound data on the abundance and origin of Chinook salmon in the Bering Sea. This combined with uncertainty about how salmon ecology is linked to ocean conditions will force the Council to take action without the best science and research available to them and in doing so invite unintended negative economic consequences to the Bering Sea pollock industry and associated dependent communities. On-going research of such concerns is underway but has not yielded results.

**Response:** NMFS agrees that uncertainty exists in understanding the factors affecting Chinook salmon abundance and the relationship between bycatch mortality and in-river abundance. Identifying these uncertainties was a major scientific undertaking presented in the EIS. This EIS identifies the potential impacts of the alternatives on Chinook salmon and points to areas of uncertainty about those impacts. NMFS is actively taking steps to reduce uncertainty and better understand the river-of-origin of Chinook salmon caught as bycatch and ADF&G has ongoing research to estimate and understand the factors impacting in-river abundance. See response to comment 2-16.

**Comment 3-11:** In section 3.3.2, page 119, the DEIS states that ongoing work to identify the stock of origin of salmon bycatch is occurring. However, the description of sampling and study design is not included.

**Response:** NMFS appreciates the comment. Presently the AFSC has developed a sampling strategy to improve genetic sampling done by observers. Additionally, ADF&G has contracted a review of sampling approaches for this problem. These efforts are underway and will improve future analysis of the type presented in the EIS.

**Comment 3-12:** NMFS must include all relevant 2009 catch data, including Chinook salmon bycatch, in the FEIS to comply with NEPA. Bycatch rates of Chinook salmon in the early stages of the 2009 pollock fishery are comparable to the 2007 when more than 120,000 Chinook were killed. By many indications, 2009 is shaping up to be another disaster for Chinook salmon bycatch.

**Response:** The Final EIS provides the most recent Chinook salmon bycatch data up to the finalizing of the document, as the DEIS provided the bycatch estimates for 2008 prior to printing at the end of November. Additionally, NMFS posts the weekly catch reports of Chinook salmon bycatch in the Bering Sea pollock fishery on the NMFS Alaska Region website at: <http://www.fakr.noaa.gov/2009/2009.htm>.

Note that the 2009 estimates of Chinook salmon bycatch have been adjusted from the reports for the first weeks of the 2009 pollock fishery which used very preliminary data. A large amount of observer data were missing for this time period. Once the observer data were incorporated into the catch accounting system the salmon rates decreased and the bycatch numbers decreased. The 2009 rates are lower than the 2007 rates. For the same time period in 2007, the bycatch was 59,451 Chinook salmon in the Bering Sea pollock fishery.

#### 9.4.2 Comments on the cumulative effects analysis

**Comment 3-13:** The analysis neglects to adequately acknowledge the cumulative impacts associated with climate change. Climate change represents one of the most ominous threats to Alaska's fisheries resources and cannot be ignored as it relates to changes in abundance, distribution, and the general ecological relationship of fish populations in the Bering Sea. Climate change could completely alter the ecology of the Bering Sea, resulting in significant acute and chronic effects on individual species and considerable population level effects among various species. Moreover, climate change could have substantial impacts on subsistence, beyond the population level effect it could have on various species. Increasing arctic temperatures and associated physical effects could compound and amplify the impacts large-scale commercial fishing in the Bering Sea. Section 3.4.1 (Ecosystem-sensitive management) addresses climate change only by noting that current research in the Bering Sea might inform the process in the future, but fails to acknowledge existing research that would inform decision-makers and the public.

In light of the potential threats posed by climate change and its potential negative impacts on in-river salmon harvests, salmon bycatch, and the pollock fishery, it is important that the EIS address the issue in

a systematic and transparent way in the context of cumulative impacts. Thus, the DEIS should take a hard look at the issue of climate change and how it may affect both the pollock fishery and its prosecution as well as how it may affect salmon populations. The potential negative effects on both the pollock and the salmon fisheries resulting from climate change would argue for additional precaution in setting a cap for salmon bycatch. The public comment provide references the EIS also should consider in assessing the potential effects of climate change.

**Response:** NEPA requires a cumulative impact assessment on past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions (40 CFR 1508.7). Global climate change can is a natural occurrence and, under NEPA, is not characterized as an “action”; therefore it is not a reasonably foreseeable future action. However, the EIS does provide information on ocean climate change and regime shift issues in Section 8.4. This discussion relies on the Ecosystem Chapter of the annual SAFE report. The SAFE report is available to decision-makers and the public. NMFS agrees that the EIS should include additional discussion on the available information regarding the potential impacts of climate change on salmon and pollock. The Final EIS was revised to included this information in Sections 3.4, Section 4.4, Section 5.4, and Section 6.6.

**Comment 3-14:** Section 3.4 fails to consider several reasonably foreseeable future actions that will have impacts on Chinook salmon in the affected region. The "Other Federal, State, and international agencies" category should include future exploration and development of onshore mineral and oil and gas resources and development of hydrokinetic power resources in river. Water quality, pollution, habitat damage caused by mining, dredging and cumulative effects of same on Chinook salmon stocks are not discussed in the DEIS. Nor are management practices that may be harmful to selected stocks (e.g. those that increase bycatch of Chinook salmon in in-river fisheries). These factors need to be identified as additional sources of potential harm to Chinook salmon runs and need to be addressed in the EIS.

Section 3.4.4.3 states that Chinook salmon consumption can be an important part of regional diets. Chinook salmon are in fact the staple of many regional diets, and the most important subsistence food in many of the regions discussed. This statement should be modified to more accurately characterize the importance of Chinook salmon as a subsistence resource. Section 3.4.4.5 mentions increasing mining activities in Alaska in coming years. Donlin Creek mine, a proposed open-pit gold mine located between the Kuskokwim and Yukon River watersheds should be specifically mentioned in this section as is the proposed Pebble mine.

**Response:** NMFS agrees and included additional reasonably foreseeable future actions and their impacts of Chinook salmon should in the Final EIS. These additional reasonably foreseeable future actions have been added to Section 3.4 and the analysis of impacts of these on Chinook salmon have been added to Section 5.4.

**Comment 3-15:** The DEIS does not discuss the cumulative impacts of the proposed action. Instead of providing a review of the associated cumulative impacts, the DEIS lists a variety of impacts with no analysis of what the actual cumulative impact is. So, while the DEIS acknowledges potential impacts in Section 3.4, there is no way to gauge the impact, taking all these different actions into account, on salmon runs. Section 3.4 does not a contain conclusion that assesses the cumulative impact of all the past, present, and reasonably foreseeable actions.

**Response:** Section 3.4 was not designed to assess the cumulative impacts of all the past, present, and reasonably foreseeable future actions. As explained in section 3.4, this section provides a summary description of the reasonably foreseeable future actions that may affect resource components and that also may be affected by the alternatives in this analysis. The reasonably foreseeable future actions identified in Section 3.4 are likely to have an impact on a resource component within the action area and timeframe.

These include future actions that may affect the Bering Sea pollock fishery, the salmon caught as bycatch in that fishery, and the impacts of salmon bycatch on the resources components analyzed in the EIS. Identification of actions likely to impact a resource component, or change the impacts of any of the alternatives, within this action's area and time frame will allow decision makers and the public to make a reasoned choice among alternatives.

In the EIS, relevant past and present actions are identified and integrated into the impacts analysis for each resource component in Chapters 4 through 8. Each chapter also includes a section on consideration of future actions to provide the reader with an understanding of the changes in the impacts of the alternatives on each resource component when we take into account the reasonable foreseeable future actions. The discussions relevant to each resource component have been included in each chapter (1) to help each chapter stand alone as a self-contained analysis, for the convenience of the reader, and (2) as a methodological tool to ensure that the threads of each discussion for each resource component remain distinct, and do not become confused.

Public comment identified a number of reasonably foreseeable future actions that NMFS added to Section 3.4 for the Final EIS. See response to comments 3-13, 3-14, 5-06, 5-12, 5-13, 5-14, and 5-15. NMFS has also added to the analysis of the impacts of reasonably foreseeable future actions on pollock (Section 4.4), Chinook salmon (Section 5.4), and chum salmon (Section 6.6), as requested by public comments.

#### **9.4.3 Comments on the observer issues and the catch accounting system**

**Comment 3-16:** It is our understanding that NMFS observers may be underreporting bycatch and that NMFS is aware of the underreporting bias but has not adequately accounted for it in the EIS.

**Response:** NMFS disagrees and is unaware of a deliberate underreporting bias by observers. Observers are trained by NMFS, monitored during the fishery, and debriefed extensively by NMFS staff after each deployment. The AFSC North Pacific Observer Program (NPGOP) has long standing and sophisticated quality control practices in place and regularly evaluates the quality of observer information and sampling methodology. Data which NMFS identifies as being collected incorrectly are routinely corrected, when possible, or removed from the system, and the estimation processes are re-run to account for any corrections. NMFS final catch statistics for any given year include all of the corrections made to that year's observer information.

**Comment 3-17:** The NMFS Alaska Region relies on unverified assumptions that may lead to overly optimistic estimates of precision and systematic underestimation of bycatch. These assumptions include: 1) unobserved vessels behave the same as vessels with observers onboard; 2) observed vessels behave the same while observers are off shift; 3) salmon outside of an observer's sample on catcher processors are not included in bycatch estimates but are claimed to be delivered to observer for examination; 4) observers attempt to remove all salmon from the catch as it is offloaded at shoreside plants, but inevitably miss some (called 'after-scale' salmon in DEIS); 5) observers record 'after-scale' salmon as if the observers themselves had collected them; 6) it is not clear if 'after-scale' salmon are physically sampled by observers for coded wiretags; 7) the proportion of salmon physically examined by observers for coded-wire tags is not reported; and 8) the proportion of salmon discarded at sea is not reported.

**Response:** NMFS agrees that there are potential issues associated with estimation of bycatch. Response to each of the comments follows:

1 and 2) NMFS agrees that catch estimates rely on the assumption that unobserved fishing operations have similar bycatch characteristics as observed fishing operations. NMFS has not evaluated this assumption; however, NMFS is not aware of evidence of biases favoring overly optimistic estimates of

precision and systematic underestimation of bycatch. This assumption associated with NMFS catch estimation is acknowledged in Chapter 3. Efforts to improve overall quality of observer data are ongoing within NMFS and through the Council to restructure the mode in which observers are contracted and deployed.

3) NMFS disagrees that salmon outside of an observer's sample on a catcher processor may cause biased estimates. Regulations require vessel personnel to retain salmon from all catches until they are counted by an observer, but NMFS does not use these unverified, industry sorted, numbers in management. Instead, NMFS estimates salmon bycatch by expanding the independent observer sampled salmon to unsampled portions of the catch using accepted statistical estimation techniques.

4 and 5) The commenter refers to "after-scale" salmon and this means salmon which were detected by plant personnel after the fish were weighed in a fish processing plant. NMFS agrees that some salmon may initially make it past the observer into the shoreside processing plant and improvements needed to reduce the occurrence of "after scale" salmon are addressed in Section 3.1.3. Currently these after scale salmon are returned to the plant observer by plant personnel and they are counted in NMFS estimates of Chinook salmon bycatch.

6 and 7) The "after-scale" salmon are brought to the observer by plant personnel and these fish are included in the observer's counts. NMFS observers are trained to collect snouts from Chinook salmon which are missing an adipose fin. Observers currently collect snouts from salmon they encounter within their samples. The coded wire tag is not visible and is extracted later by NMFS staff noting that not all fish with clipped adipose fins have tags in them. In some circumstances when there are large numbers of salmon, the observer can only look at a subset of them, and this subset can be identified using the protocols NMFS had had in place since 2008. Observers also collect snouts opportunistically from adipose clipped salmon from outside of their samples. Information is collected to identify which fish were collected outside of the samples so analysts can use the information appropriately in their work.

8) NMFS disagrees that the number of at-sea discards is unknown. Vessel operators are prohibited from discarding salmon at-sea until salmon are sampled by an observer. The final estimates produced by NMFS include at-sea discards.

**Comment 3-18:** The DEIS notes that Chinook salmon "that are retained by catcher/processor and mothership crew outside of the observer's sample are not included in the observer's samples and are not used to estimate the total number of salmon caught." Capturing such information could provide a useful check on the accuracy of the observer estimates for the observed vessel hauls. *Id.* at 104. Also, in light of Miller (2005), it would seem that this information is ultimately used by the Alaska Region via transmission from the fishing industry to estimate bycatch, so it is not clear why the information is not recorded by observers to serve as a check on the accuracy of the industry data.

**Response:** NMFS agrees that this information could be useful, however NMFS prefers to rely on scientifically trained observers as opposed to crew-member census as recorded on WPR. NMFS disagrees with the premise that this information is then used by the NMFS Alaska Region to estimate bycatch.

**Comment 3-19:** Explain the technique used to estimate Chinook salmon bycatch in the pollock fishery.

**Response:** Chapter 2 and Section 3.1.4 provides a detailed explanation of the estimation procedure for Chinook salmon.

**Comment 3-20:** If current bycatch monitoring is effective, why does NMFS advocate increasing observer coverage for catcher vessels with transferable bycatch allocations and for shoreside processors?

**Response:** NMFS explains in Section 2.2.5 that increased observer coverage on catcher vessels from status quo is required for alternatives that allocate Chinook salmon bycatch to entities. Entities that receive an allocation are prohibited from exceeding the allocation. If an entity exceeds an allocation, NOAA may initiate an enforcement action against the entity. Enforcement of a quota allocation requires entity-specific catch information. Currently, some catcher vessels under 125 feet in length are required to carry an observer on 30 percent of their fishing trips. To enforce transferable allocations, NMFS would only increase catcher vessel coverage so that all trips were observed so the bycatch estimate is entity-specific. The EIS does not recommend increased observer coverage on catcher vessels for alternatives that do not have entity-specific allocations.

**Comment 3-21:** The DEIS states that the "the levels of salmon bycatch are precisely estimated. . ." pg. 103 (citing Miller (2005)). The DEIS, however, fails to explain or consider several important factors in this regard. It does not appear that the bycatch numbers reported in the DEIS were estimated by the same methods presented in Miller (2005). A comparison of Chinook salmon bycatch estimates presented in Miller (2005) and in the DEIS suggests the biases introduced by the NMFS Alaska Region. Given the precision claimed by Miller (2005) for his estimates and the fact that he relies solely on sampling results, it is unlikely that such large differences could be dismissed as mere modeling differences. The DEIS must explain this discrepancy between the bycatch numbers on which it relies and those in Miller (2005).

**Response:** NMFS believes the estimates for bycatch used in the EIS are based on the best available science. NMFS disagrees that the agency is using an ad hoc method for estimating bycatch. The NMFS estimates of Chinook salmon are based on well-established sampling methodology implemented by the observer program and ratio estimators based on post stratification of catch. The sampling intensity for bycatch in the pollock fishery is very high in order to reduce the severity of potential sampling issues and to satisfy the demands of inseason management. Because sampling fractions are high for the pollock fishery, uncertainty associated with the magnitude of salmon bycatch is relatively low. Fishing activities during the time period considered in the EIS were managed under NMFS-generated catch estimates, not the estimates used by Miller (2005) in his PhD dissertation. The NMFS estimate is the official record of catch of Chinook salmon.

NMFS recognizes the differences between their estimates and those presented in Miller 2005 as part of a dissertation. To address this comment, several potential sources of error and the assumptions used by Miller in querying the database were examined. The results indicate one fundamental flaw is the way that Miller understood and used the observer data. Additionally, an assumption about the observer coverage level was made, but is no longer necessary. Neither of these issues discredit Miller's dissertation work, which represents a very comprehensive and thorough presentation of a statistically sound method. However, an unfortunate detail about how observer data records were coded for salmon specifically was overlooked. While the methodology presented in Miller is sound, the details required for proper implementation of the method include extensive sets of cross-checking about assumptions on how data are being used and how they are being interpreted. NMFS is continuing to develop a system that provides reliable scientifically defensible estimates while at the same time meeting the needs of inseason management and transparency in how estimates are computed.

The main reason that Miller's estimates are considerably higher than NMFS is due to the fact that partial and whole-haul samples with no Chinook salmon were inadvertently excluded in his estimation. Prior to 2008, the observer program had a data convention that if a sample was taken and no salmon were found, then a default species code (220) was used and a zero for the number of salmon in the sample was recorded. These specimen records were inadvertently overlooked. If salmon species other than Chinook salmon were found in the bycatch, then those species codes were recorded and the partial or whole-haul record created for that species. Those records (positive records of non-Chinook salmon) were also omitted

from the algorithm. Since in both of these cases the samples represent effort that should be included as part of the Chinook sampling, the unintentional omission of those samples is clearly incorrect and results in significant overestimates. Observer data collection system revisions implemented in 2008 eliminated this potential for confusion by eliminating different sample sizes for different species within a haul.

A second, relatively minor issue is that Miller's design and model-based estimators assume that the observer coverage for 60-125' vessels was exactly 30% for all trips within each quarter of the calendar year. In reality, these vessels often have a much higher levels of coverage based on trips (sometimes in excess of 50%) and therefore this assumption may lead to estimates that are biased (depending on the real level of observer coverage). One simple solution is to use the true ratio of observed and unobserved trips or fishing days for each year and quarter and this was noted in his study but at the time, the information was unavailable.

In summary, the discrepancy in point estimates between Miller and NMFS estimates are due to some incorrect data interpretations from Miller and is not due to differences in estimation methods. Edits to clarify the differences between these methods are included in the Section 3.1 in the Final EIS.

**Comment 3-22:** Observers should be collecting fin clips from Chinook bycatch as part of a long term scientific genetic sampling program designed to represent, annually, the genetic contributions of the salmon bycatch. In-season stock identification techniques are available and should be used. This is especially important as listed ESA stocks are taken as bycatch (DEIS p, 244). In addition, coded-wire-tag data should be evaluated against genetic estimated to access concordance.

**Response:** The majority of salmon bycatch in the Bering Sea groundfish fisheries is in the pollock fishery for which a large fraction of the fishing operations (~70%) are sampled by observers. In fact, since 2003 the average sample fraction of the total pollock catch from observed vessels exceeds 50% (although this does vary by sector). This level of sampling effort is unprecedented. The current level of observer coverage provides sufficient data and confidence in the catch data to allow for sustainable management of the fishery and to give some understanding of the bycatch in the fishery.

The NPGOP has collected salmon tissue for genetic analysis at the request of AFSC Auke Bay Lab staff in support of a developing genetics program. The salmon tissues were initially collected in an ad hoc manner to support a pilot project. In 2009, AFSC staff collaborated to make changes in the tissue collections by moving from ad hoc collections to selecting the tissues from salmon encountered in the existing sample frame used by observers for catch composition sampling. The changes made in 2009 provide more tissue samples for analysis, but further refinements to the sampling protocols may be required in the future before stock composition estimates representative of the entire bycatch can be completed. NMFS may make further modifications to observer tissue sampling as we evaluate these samples and further refine our work. NMFS is committed to continuing to obtain tissues to enable a better genetic understanding of the origin of salmon taken as bycatch. Given substantial additional financial resources and a sampling plan designed for the purpose, seasonal estimates of the stock composition of the samples would be possible.

In-season (near real time) analyses are not presently feasible due to the large numbers of observers collecting samples and the non-uniform times at which they return to port to ship the samples. The analysis of samples taken may occur months to years after the samples were collected, dependent on available funding for the laboratory analysis for either CWTs or genetics. It is important to determine the origin of salmon in the pollock fishery bycatch to understand the potential effects of bycatch on ESA-listed salmon stocks. The incidental take statement of ESA-listed salmon is based on annual determinations of salmon bycatch and CWT recoveries and is not based on an inseason determination. CWT recoveries and genetic analysis of salmon bycatch are both described in the annual report on salmon

bycatch to the NW Region, as required by the terms and conditions in the 2007 supplement to the 2000 biological opinion on the effects of the Alaska groundfish fisheries on ESA-listed salmon. At this time, only the CWT recoveries provide direct evidence of bycatch of ESA-listed stocks while genetic analysis provides origin of the salmon on only a regional level.

Scientific challenges surround the ability to genetically detect ESA-listed salmon stocks in the bycatch. Detection or identification of ESA-listed stocks depends in large part on sufficient numbers of samples from the bycatch and the power of the genetic markers to separate stocks. Individuals from ESA-listed stocks are expected to be rare in the bycatch of federal fisheries in the Bering Sea, based on CWT recoveries from salmon sampled by the observer program and from research cruises. If the number of individuals from the ESA-listed salmon stocks is small relative to all stocks contributing to the bycatch mixture, the probability of detecting the presence of the ESA-listed stock may be quite small, even with a relatively large sample from the salmon bycatch.

**Comment 3-23:** How effective is the quality control on observer data? Explain the nature and amount of corrections and the nature of any data entry problems.

**Response:** NMFS believes that this comment is outside the scope of the EIS since the alternatives considered in the analysis do not require changes to quality control and data entry procedures for observer data. For reference, the observer protocols for data collection are documented in observer sampling manual ([http://www.afsc.noaa.gov/FMA/Manual\\_pages/MANUAL\\_pdfs/manual2009.pdf](http://www.afsc.noaa.gov/FMA/Manual_pages/MANUAL_pdfs/manual2009.pdf)) and a description of data quality is documented in the North Pacific Groundfish Overview ([http://www.afsc.noaa.gov/FMA/PDF\\_DOCS/NPGOP%20REPORT%20-%20Overview%202001%20-%20web.pdf](http://www.afsc.noaa.gov/FMA/PDF_DOCS/NPGOP%20REPORT%20-%20Overview%202001%20-%20web.pdf)).

**Comment 3-24:** The average bycatch (pg. 244) of 49,600 Chinook salmon does not include unreported bycatch by vessels without observers or chum salmon.

**Response:** NMFS provides estimates of all bycatch including chum and for vessels without observers. Section 3.1 explains how NMFS estimates Chinook salmon bycatch by expanding observer data to unobserved fishing operations.

## 9.5 Chapter 4 comments

These comments are on Chapter 4, Walleye Pollock. Chapter 4 was revised for the Final EIS to include an analysis of Alternative 5 and a more detailed section on the consideration of future actions as requested by public comment.

**Comment 4-1:** The lowering of the pollock TAC to 815,000 tons will help to alleviate bycatch but it is not enough. Scientific evidence presented at the December 2009 Council meeting that indicated that the pollock TAC should be 400,000 tons, was ignored.

**Response:** NMFS disagrees with this comment. While a lower pollock TAC might result in lower bycatch amounts of salmon (assuming similar salmon bycatch rates per metric ton of pollock), there was no scientific information presented in December 2009 to indicate the pollock TAC should be set to 400,000 metric tons. Scientific information presented at the December 2009 Council meeting, using the latest stock assessment information from the Alaska Fisheries Science Center, reviewed by scientists from the Groundfish Plan Teams and the Council's Scientific and Statistical Committee, indicated a conservative acceptable biological catch limit of 815,000 metric tons.



**Comment 4-2:** As the pollock abundance continues to decline, fishing effort will increase resulting in additional salmon bycatch. Review the pollock quota and consider season reductions to protect the pollock stocks. As the desired commercial fish stock becomes less abundant, more fishing effort follows, which results in additional salmon bycatch.

**Response:** NMFS disagrees. In the event abundance did continue to decline, fishing effort is likely to decrease correspondingly. While it is possible that catch per unit effort would decrease (thereby resulting in increased effort relative to a given stock abundance), it is not accurate to assume that overall effort would increase. If seasons were shortened, effort to catch the TAC (at whatever level) would simply be compressed into a shorter time frame. It is possible that season restrictions could be effective at reducing salmon bycatch, if seasons were closed during certain periods of higher bycatch rates, but overall effort would not necessarily be decreased. Shortening the pollock season, or closing it during certain periods of higher salmon bycatch rates, is discussed in Section 2.6, Alternatives considered and eliminated from further analysis. The Council and NMFS could consider such season adjustments through a separate plan amendment analysis, but not as part of the action covered under this EIS.

**Comment 4-3:** The FEIS should include a discussion of how climate change may have a direct, indirect, and/or cumulative impact on the Bering Sea pollock fishery and the management decisions for the Chinook salmon bycatch management. The Final EIS should discuss adaptive management measures that would be taken to address climate change conditions. Additional information exists regarding how pollock abundance and distribution may change as a result of climate change. These changes could have a profound effect on salmon bycatch in the pollock fishery. For instance, if pollock abundance continues to decrease or stocks become more erratically distributed it could increase tows which would correlate with higher overall salmon bycatch. A number of peer-reviewed scholarly articles investigating climate change effects on pollock and other gadids with similar life histories may be found in the Proceedings of the Symposium Resiliency of Gadid Stocks to Fishing and Climate Change, 2007. G.H. Kruse, K. Drinkwater, eds. Alaska Sea Grant, Anchorage, Alaska.

**Response:** Additional information on climate change and impacts to salmon and pollock productivity is included in Section 4.4. Note that while a general discussion of climate change impacts can be included in the document, it is not possible to definitively estimate impacts on pollock or Chinook salmon stocks.

**Comment 4-4:** The DEIS overlooks the potential cumulative impacts of foreign fisheries on transboundary stocks of pollock. Russian fishery managers project increased effort and catch in all pollock fisheries from the Sea of Okhotsk to the Western Bering Sea. Two separate investigations of the Eastern Bering Sea pollock stock estimated that 10-30% of the U.S. stock spills over into Russian waters.

**Response:** NMFS acknowledges this comment. However, the focus of this EIS, and potential action being considered, is Chinook salmon bycatch caps on the U.S. pollock fisheries. The cumulative effects of foreign fisheries on transboundary pollock stocks is of interest in the determination of annual catch limits on U.S. pollock fisheries, and these effects are taken into consideration in the determination of those catch limits on an annual basis.

## 9.6 Chapter 5 Comments

These comments are on Chapter 5, Chinook salmon. Chapter 5 was revised for the Final EIS to include an analysis of Alternative 5 in Section 5.3, updated Chinook salmon status information in Section 5.2, and a more detailed section on the consideration of future actions as requested by public comment in Section 5.4. Substantive changes were made to Section 5.3.1.1 Pollock fishery bycatch of Chinook salmon in response to public comments. The revised Sections 5.3.1.1 and 5.4 were provided to the Council and

public as appendices to the preliminary CAR for Council final action in April 2009. Specific changes are detailed in the following comments and responses.

### 9.6.1 Comments containing run information

**Comment 5-1:** Management and conservation of Yukon River salmon are challenging during these times of reduced salmon production when restrictions to subsistence fisheries may be necessary. 2008 was a very poor Chinook salmon fishing season on the Yukon River. The Canadian Chinook salmon escapement objective was not met for the second year in a row. Fisheries managers closed commercial fishing in the US and Canada. They reduced fishing time in the U.S. subsistence fisheries and allowed only smaller mesh gillnets in the lower Yukon River districts. Managers reduced sport fishing bag limits in the U.S. and closed sport fishing in Canada. Canadian First Nations voluntarily reduced aboriginal fishing harvests by more than 50 percent. Even with these severe reductions, spawning escapement of Canadian-origin Chinook was 27 percent below the minimum interim management escapement goal of 45,000 Chinook salmon. A poor run of Yukon River Chinook salmon is anticipated in 2009. Returns in Bristol Bay are also down.

**Response:** NMFS acknowledges this comment. Updated run and harvest information, to the extent the information is available, is included in this Final EIS.

**Comment 5-2:** In 2008, 150,000 Chinook salmon were counted entering the Yukon River while 122,000 Chinook salmon were caught as bycatch in the BSAI pollock fishery. These bycatch estimates only include the December fishing season and no bycatch was recorded for this fishery during the earlier fishing season. All of the bycatch Chinook salmon were bound for Western Alaskan Rivers but only a small portion reached the Canadian border. Escapement was also low on the Tanana River, Ankreafsky River, and other tributaries to the Yukon River due to bycatch in the BSAI pollock fishery.

**Response:** NMFS acknowledges this comment. Updated run information as well as estimated stock composition proportions of the pollock bycatch of Chinook salmon are included in the Final EIS. The degree to which bycatch relates to declining Yukon River salmon stocks is unknown.

### 9.6.2 Comments on ichthyophonous

**Comment 5-3:** The DEIS fails to consider the effect of ichthyophonous, an infection that can render fish unusable, on the availability of fish for subsistence harvest. Of the 762 pages in the DEIS, exactly 21 lines are devoted to ichthyophonous infection and none of this rather abbreviated text discusses the impact of the disease on subsistence. DEIS at 228. The DEIS does cite ADF&G statistics that the ichthyophonous infection rate on the Yukon River averaged 20%, 2004-2007. DEIS at 228. However, the DEIS also cites a study by Dr. Richard Kocan as providing the "baseline" analysis of the extent to which the disease is present in Yukon River Chinook salmon. Id. After admitting the Kocan study establishes the baseline, the DEIS neglects to mention that the "baseline" showed the infection rate had already reached "about 45%" in the Yukon River by 2003. Kocan, R., P. Hershberger, J. Winton; Ichthyophoniasis: An Emerging Disease of Chinook Salmon in the Yukon River; Journal of Aquatic Animal Health, 2004 ("Kocan 2004") at 58. The DEIS also cites Hayes, et al. 2006 as documenting the ichthyophonous infection rate on the Chena River, but fails to mention that this study showed a 37% infection rate. DEIS at 228. The DEIS also neglects to mention that the Kocan study reports ichthyophonous is "firmly established" in the Yukon River, "increasing to levels that impact subsistence and commercial fishing, as well as the resource itself." Kocan 2004 at 68. In that regard, the DEIS fails to mention that middle Yukon River fish processors are discarding up to 20% of purchased fish because of tissue damage caused by ichthyophonous. Id. at 58.

**Response:** Ichthyophonous is described in section 5.2.4.3. While additional details could be included in this section as well as noted in the subsistence section to more comprehensively describe the disease, an estimate of the impact on harvests due to ichthyophonous is beyond the scope of this analysis.

**Comment 5-4:** The DEIS does not discuss whether or not such fish lost to ichthyophonous are adequately accounted for in the annual salmon catch accounting system, but the disease is clearly a problem for subsistence fishermen.

**Response:** The EIS provides some information on ichthyophonous in section 5.2.4.3. No information on presence of the disease is recorded by NMFS observers and no additional information on the disease presence or absence in bycaught Chinook salmon in the federal fisheries is available from NMFS.

**Comment 5-5:** Ichthyophonous has several potential implications for the issues discussed in DEIS. First, there are reproductive issues associated with disease-related mortality and/or failure of infected fish to reach the spawning grounds in a sufficiently good enough condition to successfully spawn, in other words, what the infestation does to the salmon runs themselves. Second, there is the effect that the disease has on subsistence fishermen who are compelled to inspect their catch and then throwaway infected fish. For every such fish they discard, they must return to the stream to catch another.

The ichthyophonous effect is not even mentioned in the DEIS as a factor for consideration in connection with the subsistence fishery. Instead, the DEIS focuses entirely on Chinook bycatch in the pollock fishery as the sole explanation for the extra time and expense that, according to the DEIS, Yukon fishermen have been reporting in connection with their efforts to meet subsistence needs.

The DEIS'S failure to disclose, much less discuss, the complications that the Ichthyophonous infestation is having on in-river Chinook stocks and on the fishermen who depend on those stocks for subsistence purposes is a major flaw in the analysis. The disease is clearly a complication insofar the development and maintenance of a commercial fishery for Chinook well. Again, the DEIS is silent on the issue. The Council and the public deserve to be fully informed about all such other causal factors when making their decisions about whether or not and to what extent bycatch in the pollock fishery may be contributing to the problems being faced by up-river fishermen and what to do about it. The DEIS fails to meet that test insofar as its cursory discussion of Ichthyophonous is concerned.

**Response:** Additional information on ichthyophonous is not necessary in order to understand the impacts of the Council's forthcoming management decision. A discussion of ichthyophonous is included in Section 5.2.4.3. The relationship of ichthyophonous to in-river returns is certainly a consideration for ADF&G managers, however treatment of and analysis of the impacts of the disease is outside the scope of this analysis.

### 9.6.3 Comments on impacts to Chinook salmon

**Comment 5-6:** The DEIS fails to provide decision makers with the necessary refinement showing, for example, the relative impact of a bycatch salmon cap of 68,000 versus 47,000. This difference of 21,000 fish would result in an AEQ of returning fish of only 17,640. However, since only 54% of the Chinook salmon taken in the pollock fishery originates in western Alaska, the total difference to all of western Alaska would be 9,526 fish. An addition of only 9,526 fish throughout western Alaska is a minuscule number when one considers the actual percentages that would be available for escapement by the river system, let alone for subsistence and other uses. The DEIS does none of this analysis.

**Response:** NMFS disagrees. The values cited are drawn directly from the analysis and these are valuable for decision considerations. Carrying the results further and making an assertion about relative impacts would require a number of inappropriate assumptions about in-river management and stock productivity.

### *Background*

Impact rates had been presented in the preliminary draft for public review as part of the evaluation of using indexed (annually varying) caps as an alternative. Information was presented as an example of the process by which a threshold impact rate policy, indexed to a specific stock (or stock grouping), could be used to establish a cap level (e.g., of not more than X% impact rate on Y river system). A specific example in the preliminary draft involved comparing Coastal W AK estimates of run sizes with AEQ levels. This information was not included as a representation of the relative impact of bycatch rates or thresholds on the river systems themselves due to incomplete understanding of the impact of bycatch on stock productivity. Rather it was included as a means to provide a policy-basis for the cap in terms of freezing or decreasing relative impact rates. Because estimates were unavailable for some river systems, and because it would be difficult to select the stock from which to index the cap, the Council decided to drop consideration of a cap indexed to a specific impact rate threshold by river system, as discussed in the in Section 2.6. As the information was only presented in the context of formulating a policy-based cap, impact rate information was not included in the EIS to reduce the possibility of mis-characterizing impacts.

### *Use of fine-scale AEQ and run-size results*

At finer scales (i.e., specific river systems), the data become increasingly uncertain for both AEQ estimation and for run sizes. For AEQ estimation, some critical assumptions include

1. that the genetics results within season and areas are constant;
2. that the sample period (2005-2007) is suitable for earlier periods;
3. that a weighted average age-specific maturation by brood year is adequate; and
4. that oceanic survival rates are reasonable and similar for different river systems.

For these reasons, a full assessment of this level of uncertainty is incomplete. The EIS carries forth AEQ estimation uncertainty to the extent possible, but given some of the critical assumptions as noted above, these uncertainty estimates are too low and consequently may be misleading. Hence, NMFS believes it is inappropriate to present fine-scale point estimates.

Use of total run-size estimates for impact analyses by river system or in aggregate are also problematic. As described in the EIS, assessment of total run size and escapement by river system is variable between systems. Some river systems in the WAK region lack total run or escapement estimates. As such, combining available estimates to determine an "aggregate total" for WAK is inappropriate due to magnification of errors. Also, combining harvest and escapement data independently to reconstruct runs (as with the NRC report "Effects of Chinook salmon bycatch in the Bering Sea pollock on salmon harvest, escapement, and abundance in Western Alaska (Ruggerone 2009), attached to the comment letter number c39 from Nossaman LLP) tends to mask the uncertainties and data limitations. Use of individual run estimates to compare with bycatch AEQ is also complicated by the caveats associated with the stock composition estimates. AEQ estimation to river of origin was used in the EIS to estimate the relative changes under various cap scenarios. These estimates are also uncertain and that uncertainty increases with further extrapolations historically and to finer resolutions. Therefore, judgments with respect to detailed impacts were avoided, especially in cases where it would require interpretations beyond the extent of the data. Finally, impact rates by river system (i.e., explicit comparison of AEQ with run size for runs) would presume analyses on productivity thresholds about river systems that are beyond the

scope of this analysis.

Even if it were appropriate to include data for specific river systems, this information is insufficient for determining whether there is a conservation concern. NMFS considers the EIS adequate for making reasoned decisions and has presented data in a fair manner while attempting to minimize judgments on Chinook salmon management and productivity levels.

#### *Summary*

Estimates of impact rates as a metric for evaluating conservation issues of concern were discussed. Given the paucity of information to evaluate the relative impact of bycatch on specific river systems for explicit decision-making, and due to uncertainties related to the river-specific AEQ analysis, a comparison of AEQ values relative to run sizes was omitted.

**Comment 5-7:** The analysis of impacts on Chinook salmon is limited to the gross estimated number of bycatch salmon that are reported by the fishery. Other factors that must be evaluated include:

- 1) impacts on salmon that are contacted, but not retained, by the net or associated gear;
- 2) data collection issues explained above which may bias estimates of the total number of salmon downward and which may bias estimates of the number of ESA-listed salmon downward;
- 3) impacts to Chinook salmon stocks in other regions besides Western Alaska;
- 4) impacts on salmon schools or schooling behavior;
- 5) cumulative effects of persistent trawl mortality on salmon populations;
- 6) effects of non-selective mortality on Chinook salmon populations as the Chinook salmon taken by trawls may not be the same ones that would succumb to disease, predation, or other causes of natural mortality;
- 7) interactions and cumulative effects from other fisheries, especially the Russian pollock fishery, which almost certainly intercepts significant numbers of Chinook salmon; and
- 8) attractive nuisance impacts associated with the effects of offal discharge from the mothership and catcher/processor vessels that lure Chinook salmon to the vicinity of these vessels during wintertime operations when the availability of alternative food sources is low, thereby increasing the likelihood attracted Chinook will be caught by subsequent trawling.

**Response:** The analysis of impacts on Chinook salmon is based on the best available scientific information regarding the action and Chinook salmon. Responses are specific to the numbered comments above.

- 1) Without specific studies to determine the effects of contacting the salmon by trawl gear, it is not possible to determine the impacts on salmon and address this in the EIS. It is likely the contact with the salmon by fishing gear may result in injury, but the impact on the mortality of the salmon is not known and cannot be analyzed without more information.
- 2) The pollock fishery is well sampled for bycatch resulting in highly confident estimation of salmon bycatch. Because of extrapolation of subsamples to the whole haul at times of high catch, the likelihood of over and under estimating the bycatch is about the same. The number of ESA-listed salmon taken is based on the coded-wire tag (CWT) recoveries and the estimated contribution of the tagged population. Recoveries of the tags are based not only on the normal observer samples but also on the occasional salmon that may not have been part of the observer's sample but noticed to have a clipped fin by crew and delivered to the observer by the crew. Therefore, the ESA-listed salmon numbers are based not only on the observer sampling but also on the opportunistic collection of additional CWTs, outside the normal observer sampling process.

- 3) The EIS discusses not only the effects on salmon bycatch on western Alaska stocks but also on ESA-listed stocks, Pacific Northwest, Cook Inlet, and Russian stocks. This information is included in Chapter 5, Tables 5-47 through 5-51.
- 4) Without specific studies to determine the effects of trawling on salmon schools and schooling behavior, it is not possible to determine these kinds of impacts on salmon and address this in the EIS.
- 5) The effects of continued trawling on salmon is inherent in the analysis provided in the EIS. The action is expected to continue into the future and the effects on salmon are described expecting the fishery to be implemented for the long term.
- 6) It is not possible to tease out the salmon that may have been taken by different causes of natural mortality versus salmon affected by trawling. No information is available to determine the selectivity of the condition of salmon taken in trawling vs the condition of salmon that would die of natural mortality (e.g. are healthy salmon more likely to be taken in a trawl)
- 7) The EIS contains a discussion of other fisheries that may be most likely to have an impact on salmon resources in Sections 3.4.3 and 3.4.4. The Russian pollock fishery is not discussed because no information on salmon bycatch in this fishery is available to allow for an analysis of potential effect.
- 8) Recent information from the BASIS survey indicates that Chinook salmon may be eating offal in the winter possibly due to starvation (45 % of stomachs from winter sampling were empty), available at: [http://www.npafc.org/new/events/symposium/BASIS%202008/Abstracts/Poster-19\(Davis\)](http://www.npafc.org/new/events/symposium/BASIS%202008/Abstracts/Poster-19(Davis)). It is not known whether Chinook salmon feeding on offal are also more likely to be taken in trawls compared to Chinook salmon that eat primarily squid, the usual winter prey. It is possible that the Chinook salmon are provided an easy source of food from the offal discharge which may be a beneficial effect, but it may also be a detrimental effect if the salmon are more likely to be taken in a trawl when feeding on offal. Without more information, it is not possible to determine the potential effect of offal discharge on Chinook salmon and if there is a nuisance effect.

**Comment 5-8:** Due to the presence of ESA-listed Chinook salmon stocks taken in the BSAI pollock bycatch, a comprehensive research and monitoring program, including both Alaskan and lower-48 streams, is necessary. This research and monitoring program must be based on sound science and full public participation and disclosure. To complete such an evaluation, the DEIS and NMFS should have more complete biological information about age and stock of origin. If it is technically impossible to separate ESA and transboundary stocks with genetics or other means, the Final EIS must describe the reasons.

**Response:** The EIS uses the best available information on the origin of salmon based on genetic research and provides the most complete description of the stocks possible based on this information. NMFS agrees that additional analysis is needed to better understand the potential effects on salmon bycatch on salmon stocks. That is why we are working with other organizations and universities to conduct genetic research on salmon bycatch from the Bering Sea pollock fishery, and we continue to be a participant in the Pacific coast wide coded wire tag (CWT) program which provides public access to all coded wire tag activities throughout the Pacific region at: <http://www.rmhc.org/>. The CWT recoveries provide direct evidence of the take of ESA-listed salmon. Genetic research on salmon bycatch from the pollock fishery is ongoing and is expected to provide more information on the origin of salmon taken in the pollock fishery, including information on ESA-listed salmon stocks. The CWT recoveries from salmon taken in the pollock fishery give stream origin specific information. The CWT program includes transboundary and ESA-listed salmon stocks from streams and hatcheries coastwide along the US and Canada Pacific. Based on the review of all ESA-listed salmon stocks in the 2007 supplement to the 2000 biological

opinion on the effects of the Alaska Groundfish fisheries on ESA-listed salmon and on recent CWT recoveries, only the Lower Columbia River and Upper Willamette River Evolutionary Significant Units (ESUs) ESA-listed Chinook salmon stocks are caught in the BSAI pollock fishery.

NMFS agrees that ESA Section 7 consultation will be required before implementation of the Bering Sea pollock fishery salmon bycatch reduction program. The best available scientific and commercial information will be used at the time of the consultation to understand the potential impacts of the action on ESA-listed salmon. The consultation will likely result in a new biological opinion including an incidental take statement that applies to the Bering Sea pollock fishery and to the other BSAI groundfish fisheries. Under the monitoring provisions of Amendment 91, all Chinook salmon will be sampled, ensuring all fish with CWTs are sampled and all Chinook salmon are counted rather than the current practice of estimating the number of salmon incidentally caught. The biological opinion will likely contain reasonable and prudent measures for monitoring and reporting of Chinook salmon incidental catch and to continue genetic studies and participation in the CWT program. We continue to monitor the amount of Chinook salmon incidental catch in the Alaska fisheries and provide annual reports to the NMFS Northwest Region, as required by the 2007 supplement to the 2000 biological opinion.

**Comment 5-9:** The current Chinook salmon genetic analysis and the adult savings calculations were based on an insufficient number of opportunistically collected samples which inadequately represent stock contributions being harvested by the BSAI pollock fishery. The bias in these data could confound the AEQ and not accurately represent the stock composition of Chinook salmon bycatch harvested by the pollock fishery. The likely inadequacy of the existing samples to represent the entire bycatch seriously undermines the apparent conclusion that few Yukon River Chinook salmon occur in the bycatch.

This appears to be substantiated by Tables 5-47 to 5-51 on pages 297-301. These tables purport to show the adult reductions in equivalent numbers under various scenarios. Using the last row of Table 5-51, as an example, the bycatch for Chinook salmon bound for western coastal Alaska (column 3) would be reduced by 37,492. However, the bycatch reduction to the middle and upper Yukon (columns 5 and 9) would only be reduced by 449 and 389, respectively. This appears to be at odds with our general understanding of run magnitudes in Western Alaska, considering that the Yukon run tends to be the largest in western Alaska and that the middle and upper Yukon stocks typically comprise greater than 75% of the Yukon run in most years. For example, if the Yukon run was of average magnitude of 250,000 and 75% were middle or upper Yukon origin, this would mean that the western coastal abundance of Chinook salmon would be nearly 8.4 million, which seems exceptionally high. While we realize the stock composition estimates being used are the only ones available, that does not mean they are representative of the entire bycatch. Certainly, the samples were not collected for the purpose of supporting an analysis of such broad scope.

Samples were taken on an EFP only and likely do not represent fleetwide bycatch patterns.

**Response:** NMFS disagrees. This Final EIS includes a revised section 3.3 to further clarify the methodology employed in this analysis. For further information on the use of the SNP analysis as the primary determinant of stock of origin please see the response to Comment 3-5 where an explanation of the rationale for the most recent data is provided as well as further details on the use of Myers et al. (2003) in this analysis. With respect to the apparent bias in sample collections, this is fully acknowledged and accounted for in this analysis (as opposed to a possible similar bias in Myers et al. study). Furthermore the 2007 A season data was downweighted considerably in its relative use compared to the other seasonal data due to these issues with sampling intensity. Further information has been added to section 3.3 regarding the weighting of each season as this was inadvertently omitted in the DEIS.

With respect to the proportion of middle and upper Yukon stocks, these are resolved genetically (as opposed to scale pattern analyses which fail to break out estimated proportions of the Yukon River). As noted in the EIS, bycatch is accounted for by season and location which exerts an impact on the relative contribution of bycatch from different salmon regions, e.g., upper Yukon as presented in Figure 3-7. Nonetheless, we chose to aggregate results for upper and middle Yukon with the Coastal WAK grouping (see Section 3.3) and characterize our results for the Yukon River as a whole system. Neither scale pattern analyses Myers et al. (2003) nor Myers and Rogers (1988) provided estimates on the relative percent contribution of the upper and middle Yukon stocks in the bycatch. Thus information on the effect of sampling variability versus actual stock composition variability in the bycatch is lacking. Stock composition estimates as presented do provide some indication of relative impacts by area and river systems using available data.

Regarding the comment about how (for example) Table 5-51 appears to be at odds a general understanding of run magnitudes in Western Alaska, it is important to understand that the bycatch composition may be out of proportion to relative run strengths, particularly by season and area strata. The AEQ estimates, based on hypothetical past scenarios, result in re-allocating bycatch among these strata so that relative stock composition of the bycatch can change by scenario.

**Comment 5-10:** The DEIS should provide more salmon species composition information and obtain stock of origin information to better understand how Norton Sound's salmon stocks interplay in the Chinook salmon bycatch. The DEIS does not characterize any Norton Sound salmon savings component.

**Response:** All salmon caught in groundfish fisheries are identified by observers to species level.

The ability to indicate impacts of bycatch to region of origin is dependant upon the genetic ability to resolve individual stocks. Stock of origin information for Norton Sound is currently limited by the genetic resolution for those stocks. This is described in Section 3.3.2. The genetic stock identification (GSI) study employed a classification criteria whereby the accuracy of resolution to region-of-origin must be greater than or equal to 90%. Under this criteria, the Norton Sound stocks are reported in the aggregate Coastal west Alaska stock unit. As the resolution gets finer with each reporting of the expanding data set, further resolving of the individual components of Coastal Western Alaska group is planned. However, at this time it is not known whether or not the accuracy of resolution for those Norton Sound stocks will allow for them to be resolved separately.

Impacts to Norton Sound are thus characterized in terms of trends consistent with the aggregate Coastal western Alaska stock grouping. For further information on the limitations of our ability to estimate impacts of bycatch as it relates to the overall sustainability of individual or aggregate salmon runs please see comment 5-6.

**Comment 5-11:** The EIS does not contain adequate information about Norton Sound Chinook salmon and this lack of information must be provided for NMFS and the Council to make an informed decision about the appropriate way to manage Chinook salmon bycatch in the BS pollock fishery.

- NMFS and the Council must make decisions that reflect the broad range of knowledge we now have concerning salmon in Norton Sound and Nome. The EIS says (on page 205) that there is only one escapement project operating specifically for Chinook enumeration in Norton Sound. There are four fish counting projects in the Nome area that count Chinook salmon. These projects count all salmon species, so they are counting Chinook.
- The EIS must include a broader range of scientific knowledge (information) about Norton Sound Chinook.



- The EIS has a limited number of references about Norton Sound Chinook salmon and must make meaningful efforts to portray a broader array of information about Norton Sound Chinook salmon so that the Council will make an appropriate action.

**Response:** Where sufficient information exists, we have attempted to provide overviews of the primary data which is employed in each region in assessing stock status. The other projects listed do enumerate all salmon species but are not used for primary assessment information for Norton Sound Chinook. Information provided in the EIS attempts to summarize stock assessment and stock status by region. This provides the Council with information on run status as background information to consider in assessing the vulnerability of salmon stocks. Some of the summary information for Norton Sound stocks (as reflected in the DEIS Table ES-9 and Table 5-3) incorrectly listed information about the 2008 preliminary run forecast as NA when this should have been characterized as "below". Likewise the Norton Sound escapement goals summary in those tables should be changed from "infrequent" to "No". This Final EIS includes a revised version of this table. The ability to indicate impacts of bycatch to region of origin is dependant upon the genetic ability to resolve individual stocks (see comment response for 5-14 regarding genetic limitations for Norton Sound). Impacts to Norton Sound are thus characterized in terms of trends consistent with the aggregate Coastal western Alaska stock grouping.

**Comment 5-12:** The DEIS fails to clearly identify the wide array of factors likely impacting Western Alaska Chinook runs and the ranking of bycatch in the pollock fishery among those factors and impacts. Such analysis is necessary to avoid unfounded assumptions about the need for drastic measures aimed at bycatch reduction (that could have enormous negative impacts on the pollock fishery) and unrealistic expectations about potential benefits to Chinook stocks. The Chinook salmon returns to western Alaska are highly variable and unpredictable. Bycatch of Chinook and other salmon in the pollock fishery is also highly variable and unpredictable. While much is not known, Council actions, particularly those that may bring enormous negative economic impacts, must be based on the best available information of all factors that may be at play and a realistic analysis of likely costs and benefits.

Section 5.4 contains no detailed information or conclusions about what the cumulative impact is for Chinook salmon. The DEIS must analyze what those impacts, in total, mean to the salmon runs and how those action further exacerbate or contribute to the bycatch problem.

**Response:** The EIS does include a discussion of other factors that may impact western Alaska Chinook runs. Sections 3.4 and 5.4 of the Final EIS augment the discussion in these sections, in response to comments from the public. At the same time, it is not possible to conduct a cost and benefit analysis of the various factors impacting Chinook salmon at this time, because insufficient information is available to determine the proportionate impact each factor may have on Chinook salmon runs. Consequently, the revised sections include a broader cumulative discussion of the various factors impacts Chinook, but they do not attempt to rank these factors against Chinook bycatch in the pollock fishery.

**Comment 5-13:** The DEIS overlooks the potential cumulative impacts of foreign fisheries on transboundary stocks of salmon. We currently do not know the level at which salmon bycatch occurs in the Russian pollock fishery and Russian authorities are unwilling or unable to share information on salmon bycatch at this time. Despite Russian official's claims that no salmon bycatch exists in their fishery, it can reasonably be inferred from existing bycatch rates in the U.S. fishery and the absence of any kind of bycatch mitigation scheme in Russian waters that substantial bycatch in the Russian fishery goes unobserved and/or unreported. Additionally, recent news regarding Russian and Japanese driftnet fisheries in the Western North Pacific indicates that some salmon bound for U.S. waters are intercepted in those fisheries. Recently, Russian authorities began to take action to exclude Japanese fishermen from participation in the driftnet fishery that occurs in the Russian EEZ. The Japanese fishermen involved in this fishery have indicated intentions of potentially withdrawing from the North Pacific Anadromous Fish

Commission process and re-engaging in the high seas driftnet fishery. The lack of information in these two important fisheries and the high degree of potential impact argues for additional precaution in addressing salmon bycatch in U.S. waters. Therefore the DEIS should estimate potential catch and bycatch in foreign fisheries in an effort to inform our own managers and the public of the level of precaution that may be necessary in our own fisheries to ensure that U.S. salmon runs are maintained.

**Response:** NMFS acknowledges that bycatch in foreign fisheries can affect salmon stocks that originate in western Alaska. At the same time, it is not possible to estimate the degree to which bycatch in foreign fisheries affects western Alaska stocks. This analysis addresses management measures within the BSAI FMP region and the EBS pollock fishery only, and an evaluation of foreign catch is outside of the scope of this analysis.

**Comment 5-14:** To better inform managers and the public about the issues associated with climate change impacts, the Draft EIS should include the best available scientific information regarding climate change effects on salmon. A growing volume of recent research specifically addresses the issue of climate change impacts on salmonids.

**Response:** NMFS agrees and included additional information on climate change and the potential impacts on salmon should in the Final EIS. Specific information has been added to Section 3.4, and to the analysis of the impacts of reasonably foreseeable future actions on Chinook salmon (Section 5.4), and chum salmon (Section 6.6), as requested by public comments. However, the impacts of climate change on salmon stocks are unpredictable, and the analysis does not attempt to draw definitive conclusions about the impacts of future climate change on salmon stocks.

**Comment 5-15:** Additional sources of potential harm to Chinook salmon runs need to be addressed in the DEIS. Water quality, pollution, habitat damage caused by mining, dredging, and cumulative effects of same on Chinook stocks are not discussed in the DEIS. Nor are management practices that may be harmful to selected stocks (e.g. those that increase bycatch of Chinook in in-river fisheries).

**Response:** Additional information on mining and dredging activities and in-river and ocean hydrokinetic power generation has been included in the revised Section 3.4. A discussion of these impacts relative to Chinook stocks is included in the revised Section 5.4. An acknowledgement of the impact of in-river management practices on Chinook salmon stocks is included in the revised Section 5.4.

#### 9.6.4 General comments

**Comment 5-16:** The DEIS states, "Relative impacts to individual river systems are highly dependent upon where the fleet fished in a given year, as a river system's proportional contribution to bycatch varies spatially." (pg 155). This statement calls into question the premise of the retrospective analysis used to predict impacts. Since fishing locations may change in future years, the impact results from past history may not be indicative of future impacts.

**Response:** NMFS agrees but notes that the retrospective component takes into account the location and season that historical bycatch occurred. Stock composition of future Chinook salmon bycatch is also acknowledged to be impacted by when and where bycatch occurs from year to year.

**Comment 5-17:** More research regarding the origin of Chinook salmon taken as bycatch, in the Bering Sea pollock fishery as well rivers of origin, should be addressed, and the overall abundance figures of the salmon resource in the Bering Sea need to be better understood before restrictive hard caps or other measures are put in place.

**Response:** NMFS disagrees. While research is continuing to better understand the stock of origin and abundance of salmon species in the Bering Sea, management actions can be taken now which work toward minimizing salmon bycatch. As new information unfolds, the Council may choose to revise its management actions for Chinook bycatch. The Council has historically taken many measures to manage salmon bycatch and will continue to proactively work to improve upon management measures as new information becomes available.

**Comment 5-18:** The DEIS lacks a credible analysis of the relationship between encounter rates of salmon in the pollock fishery, behavior of the pollock fishery itself, and salmon abundance. Though several of the alternatives focus on managing encounter rates of salmon, no credible analysis has been conducted to evaluate whether these measures reduce overall Chinook salmon bycatch. Nor is there an analysis of the effects these measures may have on salmon populations.

**Response:** NMFS agrees that encounter rates relative to salmon abundance are poorly understood. However, abundance of oceanic salmon is largely unavailable. Extensive GIS methods have been applied to bycatch patterns leading up to the EIS and many of the results from these studies remain in the document (e.g., Fig. ES-2, Fig. ES-3, Fig. 4-1 Fig. 5-27 through Fig. 5-31).

Regarding effectiveness of measures, NMFS disagrees. Bycatch of salmon is estimated through extensive observer sampling and this includes extensive sampling for length and age compositions. The approach to apply these data properly accounts for factors affecting actual returns of salmon. This is done by using information on the amount, timing, length, and age structure of the salmon bycatch.

**Comment 5-19:** There is no such thing as "surplus" fish that can be sacrificed for bycatch because every fish that returns to our rivers is important for meeting our subsistence needs, for supporting our small commercial salmon harvest, and for contributing to continued migrations of salmon and future generations of Alaska Native people.

**Response:** NMFS acknowledges this comment.

**Comment 5-20:** The DEIS admits that the cause of any weaker Chinook runs in western Alaska is not bycatch in the pollock fishery but food limitations for salmon in the ocean. DEIS at 196, 199. The food Chinook salmon rely on, nekton, is very sensitive to rising ocean temperatures. The DEIS contains no analysis of this issue and its effect on the availability of Chinook salmon.

**Response:** NMFS disagrees with this comment. The EIS acknowledges that a definitive cause for declines in Western Alaska salmon runs is lacking. The degree to which food limitation is a primary factor in comparison to bycatch in the pollock fishery is also unknown. The statements on the referenced pages are misconstrued. In the first instance, Section 5.1 states "Weak runs during this time period (referring to the previous sentence of 1998-2002) have been attributed to reduced productivity in the marine environment rather than an indication of low levels of parent year escapements (Bue and Lingnau, 2005)." No comparisons to other causes (i.e., bycatch in the pollock fishery) are mentioned. This section provides a descriptive overview of the food habits and ecology of Chinook salmon.

The second reference is presumably related to the sentence in Section 5.1.3 (second paragraph) "It is speculated that spring sea surface temperatures on the eastern Bering Sea shelf likely impact growth rate of juvenile western Alaska salmon through bottom-up control in the ecosystem. Cold spring SSTs lead to lower growth and marine survival rates for juvenile western Alaska salmon, while warm SSTs have the opposite effect (NPAFC, 2001)". This simply references published literature on Chinook salmon growth patterns and acknowledges the complexity of ecosystem linkages. Extension and further speculation on

ecosystem mechanisms is beyond the scope of this EIS. However, additional information on climate change and its relation to salmon productivity is included in a revised Section 5.4 in this Final EIS.

**Comment 5-21:** The dramatic rise in salmon bycatch in the pollock fishery threatens the sustainability of the Yukon River salmon stocks and the continuation of a subsistence way of life in interior Alaska.

**Response:** NMFS acknowledges this comment. The degree to which bycatch relates to declining Yukon River salmon stocks is unknown.

**Comment 5-22:** The Yukon River Chinook salmon run is clearly under stress biologically within the river system. This run does not need indiscriminate harvest by the Bering Sea pollock fishery prior to entering the river system. Huge bycatch in the pollock fishery must be curtailed at once.

**Response:** NMFS acknowledges this comment.

**Comment 5-23:** The pollock harvesters in the Bering Sea are contributing to the decline of the Chinook and chum salmon in Western Alaska. Although the pollock fishery is justified in providing food for the nation, Chinook salmon feed on the pollock and the bycatch cannot be avoided and will continue despite efforts to lower the bycatch.

**Response:** NMFS acknowledges this comment. The degree to which levels of bycatch are related to declining returns to salmon streams in western Alaska and elsewhere is unknown.

**Comment 5-24:** The continuing decline in the returning salmon stocks has to stop, and a key component with reversing this decline is the immediate reduction on the BSAI Chinook salmon bycatch.

**Response:** The purpose of this action (and analysis) is to make an informed decision on measures to minimize bycatch of Chinook salmon in the Bering Sea pollock fishery. The degree to which levels of bycatch are related to declining returns to salmon streams in western Alaska and elsewhere is not well known.

**Comment 5-25:** It is a long held belief that commercial mid-water and bottom trawling are the primary human influences affecting salmon returns to western Alaska streams. Other influences such as severely cold winters, poor ocean conditions, predation, and migration also affect the number of returning salmon. It is apparent that chronic commercial bycatch is one of the major human influences in the recovery of salmon.

We appreciate that BSAI pollock fishery bycatch is not the only impact to Western Alaska Chinook salmon stock returns, but it has been shown to contribute significantly to mortality. (Meyers et al. 2004).

**Response:** NMFS agrees that the EIS and studies such as Myers et al. (2003), Myers and Rogers (1988) and Witherell et al. (2002) have estimated the impacts of adult equivalent salmon returning to western Alaskan river systems as a result of bycatch in the pollock and other groundfish fisheries. However, the degree to which pollock fishery bycatch is impacting the runs on these rivers is not well known when compared with other factors as noted. This Final EIS includes a revised Section 5.4 with additional discussion of other impacts on salmon.

**Comment 5-26:** None of the proposed bycatch reduction plans proposes eliminating the entire bycatch, as doing so would mean the complete closure of the pollock fishery. Thus, in every instance where these comments provide a number of fish that would be added to escapement or to subsistence, commercial, or

sport harvests, that number overstates the benefits of the proposed action because that number is based on what would happen if zero Chinook salmon were taken as bycatch.

**Response:** NMFS disagrees. Such comments are based on a misinterpretation of the results. The alternatives as presented are designed for cross-comparisons and no alternative includes zero pollock fishing (which is the only means of assuming zero Chinook catch). For comparative purposes, all alternatives are also contrasted against actual historical bycatch levels and their resulting estimated AEQs. This is to provide context for how various management alternatives under consideration in this action would save more or less salmon than the status quo (no cap) scenario.

Furthermore, the analysis specifically avoids adding AEQ values to returning salmon, escapement, or commercial, subsistence, or sport harvest. Qualitative estimates are provided in consultation with area management biologists from ADF&G to the extent that management might have differed if additional salmon returned to specific river systems. Table ES-14, and RIR Table 7-4, and the text were revised in the Final EIS to help avoid such misinterpretation of results.

**Comment 5-27:** There is no conservation rationale based on escapement goals for a bycatch reduction program with respect to 46% of the Chinook salmon that originate outside of western Alaska that are incidentally caught in the pollock fishery.

**Response:** NMFS and the Council are mandated to minimize bycatch to the extent practicable under National Standard 9 of the MSA. While the primary impact analysis focuses upon impacts to western Alaska, the goal of minimizing salmon bycatch is not limited to only those salmon originating in western Alaskan streams, and proposed measures to reduce bycatch in the pollock fishery will minimize bycatch for salmon originating in all areas. Information on the impacts to Chinook salmon outside of western Alaska is also reported in the EIS and RIR. To the extent that information is available on stock status and management for other aggregate regions (Cook Inlet, Southeast Alaska, Pacific Northwest) this information is also included in the EIS and RIR.

**Comment 5-28:** A careful analysis of the facts reveals no support for the argument that there is a biological need to severely curtail Chinook salmon bycatch in the pollock fishery. Proponents of imposing additional restrictions on the pollock fishery to reduce Chinook salmon bycatch can find no biological basis for such restrictions based on escapement rates. The vast majority of the Chinook salmon stocks interacting with the pollock fishery is meeting or exceeding escapement goals. Even where runs are weaker, the number of Chinook incidentally taken in the pollock fishery is so small that it cannot be responsible for changes in salmon abundance. In other words, there is no biological issue in terms of meeting escapement but there is an issue of providing more fish for harvest. The fact that the DEIS glosses over and fails to examine these issues makes the DEIS legally inadequate.

**Response:** NMFS disagrees with this comment, in part. NMFS and the Council are mandated to minimize bycatch to the extent practicable under National Standard 9 of the MSA, regardless of whether there is a conservation concern with respect to salmon populations. The Council's approved problem statement and a description of the purpose and need for this analysis are provided in Chapter 1. See response to comment 10-38. The analysis provides a comparison of the relative impacts of AEQ bycatch by river system (or aggregate grouping) but does not assert that bycatch is the limiting factor in salmon productivity. Further information on the data limitations in evaluating this are provided in response to comment 5-6 and in the revised section 3.3. The EIS and RIR also explicitly includes qualitative information in the revised Table ES-14, and RIR Table 7-4, regarding the possible management-related changes that would have occurred as a result of additional fish by river system over the time period (2003-2007) of the analysis. These changes include both accruing additional fish towards escapement by river system as well as increases in harvest levels by commercial, sport and subsistence users.

### 9.6.5 Comments with specific suggested changes

**Comment 5-29:** Page 241, first paragraph, it is not accurate to state that the Northern District stocks "continue to trend sharply upward and most escapement goals are being met or exceeded." Perhaps based on older information (as the Clark, 2006 reference eludes). Some Northern District stocks have declined notably in the Dëshka River in 2008 and Alexander Creek. This section should perhaps be updated with more current information from ADF&G.

**Response:** NMFS agrees and updated this section with current information from ADF&G in the FEIS.

**Comment 5-30:** Figures 5-27 through 5-30 appear to be paired (27&28 and 29&30), where the second in the pair is a continuation to the right of the first. Why is the information presented in 5-31 (which portrays the B season) so different in format than the previous 4 figures, that showed the A season? Consistency across these figures would be helpful.

**Response:** NMFS appreciates the comment. The reason they are different is because they show different things. Full sets for both seasons had been presented in earlier drafts of the EIS but were dropped to shorten the document. NMFS feels that this is acceptable and the level of information is provided in sufficient detail.

The A-season figures are arranged to easily show the spatial variability over 5-day intervals over different years. This is suited to the A-season since it is more concentrated in time and space. Including the same figures for the B-season would have required a larger scale map, and more weeks of data (many of which were blank).

**Comment 5-31:** Page 319, Table 5-75: Note a comment on this specific table referring to the mothership sector, but why are there not similar tables for the shoreside and catcher/processor sectors within this cluster of tables?

**Response:** NMFS appreciates the comment and corrected this typographical error. This table (and the corresponding ones for other sectors) is found in Chapter 4 (specifically Table 4-13).

**Comment 5-32:** The past and present configuration of pollock trawl gear and its operation in the Bering Sea pollock fishery must be described. The DEIS states that, based on anecdotal information, the configuration of trawl gear has changed over time. See DEIS at 259. It then states that no information is available to analyze these changes. The DEIS must explain why this information is not available and whether efforts were made to obtain it. The configuration of trawl gear including mesh sizes, trawl sweeps or aggregating devices, net dimensions vertically and horizontally, speed and depth of towing and towing on or near the seafloor would all influence the rate and retention of salmon bycatch.

**Response:** NMFS agrees that this is an important issue. Unfortunately, the configuration and net mensuration data have not been collected and any anecdotal or voluntarily supplied information was unavailable for the analysis. This is a research priority that has been identified.

**Comment 5-33:** Page 259, first paragraph: the three tables referenced in the paragraph (5-9 through 5-11) are incorrect. Perhaps the text should have referred to tables 5-33 through 5-35?

**Response:** NMFS notes that the figures (not tables) referenced in this comment on pages 259-260 in the DEIS should have been numbered 5-33 through 5-35 in accordance with the figures included in this section. These figure reference corrections will be included in the Final EIS.

**Comment 5-34:** Section 5.3.1.1 is a short, but important section of the DEIS. It presents historical Chinook bycatch information for each of the three sectors involved in the Bering Sea pollock fishery. Unfortunately, the information as presented is confusing and potentially prejudicial. The text of the entire section should be re-written. For example:

1). Seasonal Bycatch levels by sector. Remove Figures 5-36 and 5-37 from the analysis. Figures 5-36 and 5-37 show total A season and B season Chinook bycatch by sector for each of the years 1990-2007. The resulting graphs show widely diverging salmon "catch" patterns overtime between the three sectors. The text suggests that some conclusion can be drawn from those patterns. But no where is there any explanation that the differences in "catch levels" between sectors in any given year and/or over time are, to a certain extent, simply due to the amount of pollock each sector caught during the year(s) in question. This is complicated further by the time period spanned by the charts: 1990-2008. That period covers times of the open access "race for fish" when each of the pollock sectors competed with each other for a share of the common pollock quota pool (1990 ~ 1992); the period of inshore/offshore allocation measures that created and then changed sectoral shares of the annual pollock quota periodically (1993-1999); and the years in which the fishery has operated under the allocation provisions of the AFA--2000-present. Thus, to a great extent, the changes in salmon bycatch shown in Figures 5-36 and 5-37 simply reflect different allocations of the pollock quota that were imposed in the sectors' respective shares of pollock over time. Simply put, any depiction of salmon bycatch levels without some adjustment for the amount of pollock caught by each of the sectors during the period in question paints an extremely erroneous picture-a picture that is irrelevant to any determination about how to address salmon bycatch and potentially prejudicial to the sector(s) that happened to catch the most pollock in any given year. For this reason, the charts and graphs shown should be limited to comparative rates of salmon bycatch (by sector) over time.

2) Figures 5-38 and 5-39 should indicate if CDQ catch and bycatch is included in the bycatch rate calculations. These figures show relative rates of salmon bycatch (Chinook/1000 tons of pollock). For that reason, these figures are more informative than Figures 5-36 and 5-37. The text that accompanies Figures 5-38 and 5-39, however, does not indicate whether or not CDQ catch is included in the comparative rate lines shown for the catcher/processor and mothership sectors. In our view, the preferred approach should be to include CDQ pollock catch and related salmon bycatch along with the non - CDQ catch and bycatch in the same rate calculations for those sectors and vessels engaged in the harvest of both CDQ and non-CDQ pollock. In practice, a vessel with CDQ pollock normally harvests both CDQ and its non-CDQ pollock as part of a normal fishing trip. It is the same boat, the same skipper and the same crew, fishing in the same places that harvests both COQ and non-CDQ pollock---on the same trip. Any attempt to distinguish CDQ from non CDQ tows (and the salmon bycatch attributed to such tows) made by the same boat would be arbitrary at best. At worst, it could be unfair and prejudicial.

3) Tables 5-22 and 5-23 need clarification as well. a) First, the symbols used in these tables (and elsewhere in the document) to depict the three pollock sectors are somewhat confusing. There should either be a legend indicating what "M", "P" and "S" mean; or symbols that are more familiar to the public should be used: "CP" for catcher processors; "MS" for vessels delivering to motherships; and "SS" for vessels delivering to shoreside processors. b) Second, the rate of bycatch should be shown in the metric most commonly used to depict bycatch--a "rate per ton", instead of the "rate per 1,000 mt" as used in the tables; c) Third, the "mean" and "deviation from the mean" values used in the tables is not a familiar way of showing/comparing bycatch. Simple "rates per ton" with an average over time at the end would convey the message in a more meaningful way to the reader. d) Fourth, the text that accompanies the tables should indicate if CDQ catch and bycatch is included in the data series. As noted above, we think it should be.

**Response:** NMFS disagrees that the figures are confusing. They are clearly labeled and show the actual pattern of actual estimates. The allocation is irrelevant for this presentation. NMFS however recognizes the sensitivity and hence revised section 5.3.1.1 by showing a longer time series of the rates by the Final EIS.

Regarding tables 5-22 and 5-23, a legend was provided elsewhere for these abbreviations. However, to help minimize confusion, the more standard abbreviations of CP, MS, and SS have been added.

Regarding the request to express the rate per ton instead of the rate per 1,000 t, NMFS feels that this is clearly labeled and presenting integer numbers adds clarity in this case. Further explanation regarding the utility of comparing bycatch rates by sector in reference to mean values has also been included in this section for increased clarity. The text has been modified to denote that CDQ has been included in the revised section 5.3.1.1.

## 9.7 Chapter 6 comments

These comments are on Chapter 6, chum salmon abundance, stock of origin, impacts to chum stocks. Chapter 6 was revised for the Final EIS to include an analysis of Alternative 5 in Section 6.5 and a more detailed section on the consideration of future actions as requested by public comment in Section 6.6.

**Comment 6-1:** Put measures in place to eliminate or at least minimize the non-Chinook bycatch in the Bering Sea. Support closure of the pollock fishery after a cap has been reached. Limit the total poundage of fish caught, including by-catch. Fishermen would then have to quit fishing when they reach that total amount, whether they caught the kind of fish they were targeting or bycatch fish. Fishermen would have to bring whatever they caught to shore and sell it and whatever escapes will return to their spawning grounds, regardless of species. This is a much better option than having fishermen throw the chum salmon back into the sea, dead. The Nenana area of the Tanana River have had a steep decline in salmon returns. The people in the Nenana area are very dependent on chum salmon as a food source for themselves and our dog teams. So, in many ways their lifestyle is dependent upon the return of the salmon.

**Response:** NMFS acknowledges this comment and notes that changes to bycatch management measures for non-Chinook salmon are being considered separately and are outside of the scope of this analysis. For accounting purposes all non-Chinook salmon are reported as one aggregate group, however non-Chinook salmon are comprised of greater than 99% chum salmon as described in section 6.4.2. The Council is considering separate management measures for non-Chinook salmon. Measures under consideration for non-Chinook salmon species include hard caps on the pollock fishery as well as area closures. These measures are being considered separately from this EIS which specifically addresses Chinook bycatch management. People's dependence upon chum salmon will be considered in conjunction with the forthcoming analysis on separate management measures for non-Chinook salmon species.

**Comment 6-2:** The Tanana-Rampart-Manley areas are also concerned about the severe detrimental effect that the pollock fishery's salmon bycatch is having on salmon runs in the Yukon and Tanana rivers. The bycatch of other species, such as chum salmon, needs to be addressed immediately. The pollock fishery is a 'dirty' or wasteful fishery that is putting one of the world's last wild salmon runs in jeopardy.

**Response:** NMFS acknowledges this comment. The Council is scheduled to discuss proposed alternatives to address non-Chinook (chum) salmon bycatch in the Bering Sea pollock fisheries at its June 2009 meeting.



**Comment 6-3:** DEIS does not mention that chum salmon in Nome (subdistrict 1) were managed under a Tier II subsistence strategy, the first and only time for a fish stock. The Tier II scoring and permit system limited effort and harvest because chum salmon numbers did not meet subsistence needs.

**Response:** NMFS agrees and notes that updated information on stock status and management information is included in the Final EIS in Chapter 6. We also note that separate management measures are under consideration by the Council for non-Chinook salmon bycatch management. This forthcoming analysis will include comprehensive information on chum salmon stock status and management.

**Comment 6-4:** NMFS must include an analysis of the environmental and economic effects that low abundance Chinook management by ADF&G has on the optimum yield of the Yukon River summer chum fishery. This information is necessary to provide to the Council and other decision makers like the public. The Council's preferred alternative must comply with MSA National Standard 1. Low Chinook runs have affected the management of the summer chum runs on the lower Yukon the Council's preferred alternative must take into account that management measures currently being considered may preclude the optimum yield of the Yukon River summer chum commercial fishery.

**Response:** NMFS disagrees. An overview of stock status and management of Yukon River chum salmon are provided in sections 6.2.4 and RIR Chapter 3. A discussion of the impacts of low abundance Chinook management on the management of Yukon chum is provided in these sections as well as the related sections on Yukon Chinook management (5.2.4 and RIR Chapter 3). This information is provided for context on the broader impacts that decreased Chinook returns have on other fisheries such as chum salmon management on the same river system and was updated in the Final EIS to reflect additional management restrictions through 2008. This information is sufficient in the context of the decision point for the Council with respect to Chinook salmon bycatch management measures. The Council's preferred alternative must comply with all of the National Standards.

**Comment 6-5:** It is important to note that in years of low Chinook salmon returns chum salmon are a vital subsistence resource, and the primary marketable fish on the Yukon River. In such times management measures limit and delay the summer chum fisheries to allow Chinook salmon to pass up river. In 2008 failed Chinook salmon runs on the Yukon River prevented the harvest of a significant number of harvestable summer chum resulting in forgone revenue of millions of dollars to the WAK region. The Yukon River commercial chum harvest was economically impacted by in-river Chinook salmon management actions limiting fishing effort. The forgone commercial harvest was close to 1 million fish. This caused a large adverse economic impact on the residents and businesses of the lower Yukon and will have potential negative environmental effects due to the over-escapement of chum. Forgone chum salmon harvest due to Chinook salmon management measures averages \$18,500,000 annually or 50% of the pre capita income for the region.

**Response:** NMFS acknowledges this comment. An overview of stock status and management of Yukon River chum salmon are provided in Section 6.2.4. A discussion of the impacts of low abundance Chinook management on the management of Yukon chum is provided in these sections as well as the related sections in RIR Chapter 3 on Yukon Chinook management. This information is provided for context on the broader impacts that decreased Chinook returns have on other fisheries such as chum salmon management on the same river system. Updated information through 2008 on restrictions in the chum fisheries in response to management of Chinook will be included in the Final EIS.

## 9.8 Chapter 7 comments

These comments are on Chapter 7; other groundfish, other prohibited species, and forage fish. Chapter 7 was revised for the FEIS to include an analysis of Alternative 5 in Sections 7.2, 7.3.3, 7.3.5, 7.3.7, and 7.5.

**Comment 7-1:** Bycatch in the trawl fleet negatively affects other fisheries, such as halibut, and causes billions of dollars of economic waste. Halibut brings in millions of dollars to many communities and to the State of Alaska. Trawl bycatch of halibut is affecting commercial quotas as shown by the IPHC cuts across the board for 2009.

**Response:** NMFS believes the comment is not necessary to understand potential impacts from the alternatives considered in the EIS. The alternatives considered in the EIS do not change halibut PSC catch limits for the Bering Sea trawl fisheries, nor do they change allocation of halibut. Section 7.3.2.2 discusses management of the halibut PSC, including a detailed discussion on the overall trawl limit for PSC halibut and Section 7.3.3 discusses the potential impacts of the alternatives on halibut.

**Comment 7-2:** The DEIS assumes pollock fishermen will move to new pollock fishing grounds if Alternative 2, 3, or 4 is adopted. DEIS at 165. The DEIS does not consider the potential problem of increased interactions with other species, such as non-pollock groundfish, squid, sharks, seabirds, etc., that may be encountered on these more distant fishing grounds.

**Response:** NMFS disagrees. The EIS considered the potential impacts on non-pollock groundfish, squid, sharks, and seabirds. The EIS discusses potential interactions of the alternatives on non-pollock fish species in Chapters 7 and seabirds in Chapter 8.

## 9.9 Chapter 8 comments

These comments are on Chapter 8; marine mammals, seabirds, EFH, and the ecosystem. Chapter 8 was revised for the FEIS to include an analysis of Alternative 5 in Sections 8.1.4.4, 8.1.5.4, 8.1.6.4, 8.2.6.4, 8.3.2, 8.4.6, and 8.4.7. Section 8.1 Marine Mammals was updated to reflect changes in the status of marine mammals.

**Comment 8-1:** The FEIS would be enhanced if the findings in Section 8.2.4.1 could be incorporated into the final analyses and appropriately cited. "The USFWS has been working with Dr. Paul Sievert and Dr. Javier Arata of the U. S. Geological Survey to develop a status assessment of Laysan and Black-footed Albatrosses . . ."

**Response:** NMFS agrees and has added the following reference for Section 8.2; Arata, J.A., Sievert, P.R., and Naughton, M.B., 2009, Status assessment of Laysan and black-footed albatrosses, North Pacific Ocean, 1923–2005: U.S. Geological Survey Scientific Investigations Report 2009-5131, 80 p.

**Comment 8-2:** Harvesting pollock is the main reason the Steller sea lion numbers are diminishing.

**Response:** Steller sea lions have experienced a population decline, and pollock is an important prey species for Steller sea lions. Steller sea lion diet is dependent on the type of fish that occurs in the area where Steller sea lions forage. Stomach analysis of Steller sea lions taken in the Eastern Bering Sea in the 1980s showed pollock is an important prey species. NMFS is preparing a biological opinion which will take a hard look at the effects of the groundfish fisheries on Steller sea lions and their critical habitat. This document will contain the latest scientific information on Steller sea lions and the potential effects of the groundfish fisheries, including the effects of the pollock fishery on Steller sea lions, on their designated

critical habitat, and on their recovery. A draft of the biological opinion is scheduled for release in August 2009. We may know more at that time whether harvesting pollock could be a main reason for the Steller sea lion population decline.

**Comment 8-3:** High Chinook salmon bycatch affects the very ecosystem on which all species depend upon, marine birds, mammals, crab, squid and all fish. Even your agency reports continuing declines of Northern Fur Seal and Steller Sea Lions in the Bering Sea. Removal of salmon from streams will also have a hugely negative effect on those ecosystems as many mammals such as bear, wolves and bald eagles depend upon returning salmon for survival.

**Response:** NMFS agrees that Chinook salmon are an important part of the marine ecosystems of the Bering Sea. The effects of salmon bycatch on Northern fur seals and Steller sea lions depend on the amount of salmon eaten by these species. Northern fur seals eat mostly pollock, and Steller sea lions usually eat salmon at times and locations where the fish are gathered for returning to streams to spawn. Neither of these marine mammals is primarily dependent on salmon for prey. Stomach samples from Steller sea lions taken in the Bering Sea in the 1980s did not contain salmon, but this may have been due to the timing or location of the sampling. Northern fur seal and Steller sea lions appear to be affected by fish abundance. Whether and what extent fish abundance is affected by fishing or environmental change are unknown. Nor do researchers know how alteration of fish abundance (either pollock or salmon) influences fur seal or Steller sea lion population trends.

NMFS agrees that the population of northern fur seals continues to decline as seen in decreasing pup counts in the Pribilof Islands. The only Steller sea lion trend site surveyed in the Bering Sea is Bogoslof/Fire Island. This site is grouped with other trend sites in the eastern Aleutian Islands group. Since 2004, the abundance of Steller sea lions in the eastern Aleutian Islands group has consistently increased, averaging 7% annually.

NMFS agrees that salmon play an important role in the coastal terrestrial ecosystems, by bringing marine nutrients into the inland environment as the salmon are taken from the streams and consumed by terrestrial predators. The impact of salmon bycatch on the terrestrial environment will depend on the origin of the salmon caught, and the amount of salmon that is prevented from returning to the natal streams by pollock fishery bycatch. We currently have information to a regional level for the origin of salmon incidentally taken in the pollock fishery. Future genetic research on bycaught salmon should provide finer details on the salmon origin. It is not currently possible to determine the level of effect of salmon bycatch on terrestrial ecosystems, especially to an individual stream level.

## 9.10 Environmental Justice Analysis Comments

These comments are on DEIS Chapter 9; environmental justice. For the Final EIS and Final RIR, the environmental justice analysis was combined with the RIR in Volume II. The environmental justice analysis is now RIR Chapter 8. This change was in large part a response to public comments. Additionally, in response to public comments, a number of substantive changes were made that are detailed in the following comments and responses.

**Comment 9-1:** The environmental justice analysis is inadequate and only describes potential pollock industry employment impacts.

**Response:** The environmental justice analysis in the Final RIR Chapter 8 covers a wide range of impacts to identified low income and minority communities, including impacts associated with subsistence, commercial, and sport harvest of salmon. RIR Section 8.3 describes employment in the shoreside

pollock process sector. This section does include relatively more quantitative descriptive information than other sections of the RIR.

Nevertheless, the environmental justice analysis provides quantitative descriptive information on salmon fisheries permit holder revenues, and directs the reader to the economic analyses for more information on salmon fishing and processing jobs. The RIR contains considerable quantitative information on employment and revenues in non-pollock Western Alaskan fisheries and fish processing industries.

**Comment 9-2:** The DEIS does not adequately analyze the EJ implication of the action. Increased salmon bycatch places a disproportionately high burden on Native Alaskan communities because of the central importance of salmon. The DEIS does identify the impacted minority populations required under Executive Order 12898. However the DEIS is severely inadequate in assessing the disproportionate impacts placed on these populations.

**Response:** NMFS disagrees that the environmental justice section is inadequate. The environmental justice analysis relies on the extensive treatment of the importance of subsistence, commercial, and sport uses of Chinook salmon, the prohibited species donation program, chum salmon, the community development program, pollock deliveries to shoreside processors, marine mammals, seabirds, groundfish, forage fish, and prohibited species, that are provided in other parts of the RIR as well as in RIR Chapter 8 itself. Several of these treatments, including the importance of subsistence use of Chinook salmon and the potential impact on CDQ groups have been expanded, in response to public comments, in the Final RIR. The discussions are meant to provide sufficient background to support the analytical discussions, and are not meant to be encyclopedic. They do clearly describe the significance of Chinook salmon in Western Alaska. The analysis evaluates the impacts of the alternatives for six regions with respect to (a) Chinook uses, (b) CDQ entity impacts, (c) minorities in pollock harvesting and processing, and (d) users of chum salmon, marine mammals, seabirds, and other fish species.

**Comment 9-3:** In the Environmental Justice chapter, characterizing our time immemorial fishing and hunting tradition as an "underground economy" is terribly hurtful and untrue. Underground economies are commonly understood to be illegal, black market, or purposefully hidden. To describe the mixed economy of rural Alaska in this way exposes the ignorance of the agency as to the reality of subsistence and subsistence exchanges. Customary trade is legal laws and regulations exist in both the State and Federal regulatory system that legitimize customary trade transactions.

**Response:** This concern is raised by the following sentence in the Draft EIS. "Significant numbers of transactions also appear to take place in barter or informal trades and exchanges in informal markets which constitute an 'underground economy.'" NMFS meant to emphasize the undocumented nature of these transactions, and did not intend to imply that these were secret or illegal transfers of Chinook salmon. NMFS has rewritten the sentence in RIR Section 8.3 to read, "Significant numbers of transactions also appear to take place through undocumented barter and customary trade."

**Comment 9-4:** The DEIS notes that its analysis is based solely on information from the "above-ground" economy. For all intents and purposes, it is stating that some of the most important aspects of coastal communities, and the ones that are likely to be most impacted by the proposed actions, are being purposefully ignored.

**Response:** NMFS removed the term "above-ground economy" because it was meant to contrast with another expression, "underground economy," that occurred in the preceding paragraph, and that was also removed. See response to comment 9-3. NMFS substituted "undocumented" as a descriptor for transactions in the preceding paragraph, and substituted "documented" as the descriptor in this paragraph.

The purpose of the analysis in which this sentence occurs is to determine whether there are low income communities in the region. Leaving out a source of value in this context can only make it more likely to determine that there are low income populations in the region. Under the circumstances this may be justified as providing a precautionary perspective. In any event, any population engages in undocumented non-market activity that is not entered into income statistics used to make income status determinations. Once the low income determination is made, NMFS does discuss the undocumented barter and customary trade that take place and provide value to local populations.

**Comment 9-5:** NMFS's lack of understanding can be seen in Section 9.4.2 with the repeated uses of the term "evolve." To use the term "evolve" is to imply that a society constantly working towards something better than what it currently is (or was). This linear view of change, as applied in the DEIS, implies that successfully adapting to a monetary economy is the next step in acculturation into a Euro-North American lifestyle (and the "above-ground economy").

**Response:** NMFS used the term "evolve" to refer to the changes in the state of the Native Alaskan cultural system and practices through time as Native communities come in contact with changing outside economic, cultural, or physical influences. NMFS does not believe it has used the term in the sense described in the comment. For example, it refers to the evolution of the pre-contact Native cultures and to evolution of the mixed subsistence-market economies "somewhat independently of the broader culture."

NMFS removed the word "evolve" from the following sentence: "It is possible for hunter/gatherer societies to evolve and successfully adapt during contact with a monetary market economy 'in the sense that the society is maintaining its essential organization around subsistence fishing, hunting, trapping, and gathering activities and traditional exchange, while at the same time, incorporating new forms of market production, wage employment, and imported technologies into the subsistence-based socio-economic system'." The original quotation from Wolfe (1984) referred to adaptation rather than evolution, and the word "evolve" used here may not convey the author's intent.

**Comment 9-6:** The EJ section fails to recognize the history of racism against Native Alaskans in the North Pacific by the seafood industry and the enslaving of Aleut fishermen by the U.S. Bureau of Fisheries. Racial stratification still occurs under this Council's watch. The DEIS proves that this racial discrimination continues with nary a word from the Council, except higher quotas to the corporations practicing racial discrimination. The International Covenant on Civil and Political Rights says "In no case may a people be deprived of its own means of subsistence".

**Response:** The analysis is concerned with the alternatives under consideration and their potential for imposing a disproportionate adverse impact on minority and low income communities. By addressing the impact on western Alaska subsistence and other resources uses, this analysis addresses the requirements of the International Covenant.

**Comment 9-7:** The potential impact to marine mammals is of key concern to our tribal members. The EIS does not adequately describe the effects of the potential loss of marine mammal hunting opportunities, cultural effects, or social effects.

**Response:** NMFS believes the EIS adequately addresses the marine mammal issues raised by the alternatives. Section 8.1 discusses the impacts of the actions on marine mammals themselves. RIR Section 8.4 discusses the subsistence importance of marine mammals, and RIR Section 8.5 draws on Section 8.1 and RIR Section 8.4 to discuss the implications for relevant communities.

**Comment 9-8:** Because the benefits to western Alaska from the Bering Sea pollock fishery have been increasing at a significant pace, it may be difficult to fully describe the situation. Relevant document

include annual reports of all six CDQ groups for the past few years, the State's Blue Ribbon Report on the CDQ program, the 2007 WACDA report on the CDQ program, and the January 2009 Northern Economics study for the Marine Conservation Alliance, which includes a section on the CDQ program. Also, CVRF alone will be providing over 1,000 jobs for region residents in 2009, and continues to provide tens of millions of dollars of benefits to our region annually.

**Response:** NMFS has prepared an expanded CDQ section in the Final RIR Section 2.6. The Final RIR also has a complete listing of references and an expanded description of revenue derived from Bering Sea pollock fishery. Aggregate CDQ royalty data and estimated forgone royalty revenues are also described using the best available information and appear in RIR Section 6.11.3. The new CDQ section includes selected statistics about the aggregate benefits to CDQ communities as well as specific examples of fisheries infrastructure investments that could be affected by a decrease in Bering Sea pollock landings. The Northern Economics Report, January 2009, was not available at the time the DEIS was written but portions of it deemed not bound by data quality act review are incorporated into the revised CDQ section.

**Comment 9-9:** The DEIS presents the associated impacts of each alternative on minority and low income communities through a series of tables. For many readers, it is difficult to understand the scope of impacts when presented in tables. Thus the FEIS should highlight in a clear and descriptive fashion what the impacts are for each alternative. The DEIS fails to provide a meaningful analysis of how each alternative impacts the subsistence harvest and commercial salmon uses. A table highlighting impacts is not analysis. Nor is a table an adequate means of detailing how each alternative will affect western and Interior Alaska communities.

**Response:** Given the complexity of the discussion, which required a review of the impacts of four alternatives (and their components) across six regions with respect to four broad categories of resource users (Chinook salmon users, CDQ entity beneficiaries, minorities in pollock harvesting and processing, and users of other marine resources such as chum salmon, marine mammals, seabirds and other fish species), there is not one obviously best way to summarize the impacts. NMFS used the text tables to present the results of the analysis because they helped keep the various threads of the analysis in view and facilitated comparisons of the information. A text approach would have had to make use of a large number of headings and subheadings to keep the elements in perspective and to that extent would have become somewhat like an extended table.

NMFS believes it has provided a meaningful and understandable analysis of the impacts. The tables are not the analysis, but the method of organizing the analysis in a coherent fashion. The cells in the tables draw on other sections of the Final EIS and Final RIR, and pull together and highlight the differential impacts of the alternatives on different populations of minority and low income resource users in the different areas.

**Comment 9-10:** In considering the issue of meeting the need for food among economically disadvantaged people, it should also be noted that salmon bycatch in the pollock fishery is often used for this exact purpose through the Prohibited Species Donation ("PSD") program which was initiated in 1996 to reduce the amount of protein being lost. The PSD program allows salmon bycatch to be retained and distributed to economically disadvantaged individuals by non-profit hunger relief organizations. While these individuals are not subsistence fishermen in Alaska, the facts are that during the 12 years the PSD program has been in place, the non-profit group administering the program has received a Marine Stewardship Award and has distributed 2 million pounds of steamed and finished salmon to poor and homeless people. DEIS at 527 - 529. This program provides nearly 650,000 meals each year to people who have access to "meager and often inadequate food." Id. at 529. Over its 12 year life, the PSD program has provided approximately 7.8 million meals to the poor and homeless.

**Response:** NMFS agrees, and encourages participation in the PSD program to reduce waste and provide high quality protein to those in need. However, these programs do not necessarily address the special needs of minority populations, or support minority cultures as they would if the fish were harvested in Alaska subsistence fisheries. The volumes supplied are small compared to overall food needs of low income persons in the U.S. Thus, these programs were not considered to be a significant source of disproportionate impacts on minority or low income communities. RIR Section 2.5 provides a more extensive discussion of this program.

**Comment 9-11:** On p.461, the DEIS analyzes the Prohibited Species Donation Program and notes that none of the salmon bycatch donated through the program makes it to Western Alaska villages, who are most affected by increased salmon bycatch. Consider the Tanana Chiefs' proposal presented to the Council at its February 2009 meeting, which would require the pollock fleet to package and ship salmon PSC to Western Alaska villages with the pollock industry absorbing the cost. Although this proposal will not substitute for adult equivalent Chinook salmon that may be available to these communities otherwise, nor provide a substitute to the cultural traditions the members of these communities engage in while harvesting Chinook salmon, analysis of this proposal may uncover whether an economic incentive to reduce salmon bycatch through this mechanism exists.

**Response:** Regulations at 50 CFR 679.26 require any salmon donated to be handled by an authorized distributor. Any organization that can meet the requirements for a PSD program permit may apply to NMFS to become an authorized distributor. To date, only one authorized distributor, SeaShare, is permitted to handle donated salmon. Because of the logistics of handling and shipping the fish and the limited resources for the program, only Pacific Northwest residents have benefited from the donated salmon. The PSD program is currently a voluntary program, with participants paying the cost of handling the fish. Having more authorized distributors that could provide donated salmon to Western Alaska communities would be a good way to reduce salmon waste in the pollock fishery. More information about the PSD program is available at <http://www.fakr.noaa.gov/ram/psd.htm>. A mandatory program, as recommended by the commenter, would require a separate analysis and Council action before rulemaking and implementation.

**Comment 9-12:** The chapter on Environmental Justice is lacking an appropriate scale analysis of the impacts to low-income communities in western Alaska. The EJ analysis fails to apply the EJ principles to Alaska Native coastal communities in detail or to provide much analysis concerning them. Why does the analysis spend more time addressing potential impacts to minority populations working within the pollock industry than on resident Alaska Native populations which are likely to experience far greater impacts?

**Response:** The Environmental Justice section used a regional rather than individual community approach to the analysis. Potentially affected populations were divided among six regions (Kotzebue Sound, Norton Sound, the Yukon River and river delta, the Kuskokwim River and river delta, Bristol Bay, the Alaska Peninsula, Pribilof Islands, and Aleutian Islands, and Persons living outside western and interior Alaska). The division reflected a balance between a consideration of regionally variation and analytical tractability. The analysis does not devote more space to the impacts on pollock industry populations than it does to the impacts on western Alaska Natives.

**Comment 9-13:** For thousands of years, Alaska Native communities have long used the marine resources of the Bering Sea for both subsistence practices and cultural identity. It is also well-documented that those who live in the region year-round have high cost of living expenses. The data on these minority populations should be considered by the Council when considering all alternatives. Although NOAA Fisheries recognizes the importance of the resources to these communities, the agency has inadequately addressed the disproportionate impacts of Chinook salmon bycatch on these communities. As a result of high fuel prices in combination with a rapidly declining economy, the importance of subsistence food to

physical and cultural survival in Western Alaska has become increasingly more important. In this case, salmon bycatch results in a disproportionately adverse economic impact on subsistence and commercial economies in Western Alaska communities dependent on salmon.

**Response:** NMFS believes the EJ analysis, supported by the extensive background information and analysis presented in other chapters of the Final EIS and Final RIR, addresses the issues raised in the comment. The Final RIR discusses the importance of salmon to the regional culture, the importance of subsistence salmon as a food source, and their importance as a source of income, the high cost of living in the region and the high levels of poverty and unemployment and relatively low incomes in Western Alaska. NMFS has more closely integrated the economic analyses with the EJ analysis so that readers of the EJ analysis will be more aware of the socio-economic information contained in other parts of the Final RIR and upon which the EJ analysis depends. This has been done by moving the EJ analysis into a chapter of the Final RIR (Chapter 8) so that it follows other analyses contained in the RIR, as well as by eliminating duplicative of information.

**Comment 9-14:** Chapter 9 states that poverty and income statistics should be adjusted to reflect monetary value of subsistence production to provide a relatively comparable measure of income. The estimation of this measure would illustrate the economic hardship incurred by Alaska Native tribes and communities as a result of potential loss of subsistence salmon resources. For instance, what would be the cost of a person living in Rampart on the Yukon River to replace their subsistence diet with an equivalent proxy protein source? This estimation should also incorporate average income in relation to average food costs as they relate to the cost of harvesting subsistence salmon, a reasonable subsistence proxy that could replace salmon, and a reasonable commercially-purchased proxy that would substitute subsistence salmon. Nonetheless, the Council should not neglect the value of the subsistence harvest of salmon to Native and family traditions, which are considered intrinsic values within the Alaska Native community.

**Response:** Lacking data on subsistence household food expenditures it is not possible to quantify replacement costs. NMFS is not aware of any study, or data source, that documents subsistence household food expenditures in Western Alaska and the available evaluations studies, as discussed in the EIS, are not a suitable proxy. Furthermore, the value of subsistence use of Chinook salmon in Western Alaska likely exceeds replacement food costs due to the cultural significance of the subsistence lifestyle. Thus, replacement cost estimation is neither possible, nor a true representation of the value of subsistence harvest. Nonetheless, in recognition of the apparent imbalance in the treatment subsistence uses of Chinook salmon, subsistence information has been reorganized into a new RIR Section 3.3, and additional information is provided in RIR Section 3.2 to better reflect the importance of subsistence. This information was presented to the Council prior to final action.

**Comment 9-15:** Substantial information for evaluating and estimating subsistence economic values exists and additional information should be sought. On p.453, the DEIS notes that the Magdanz study of 2007 analyzed subsistence consumption for the Norton Sound and Port Clarence areas. It cited that "up to a third of the [subsistence] meat and fish was salmon." There are other studies that show regions in the Bering Sea with even higher consumptions of subsistence salmon. For example, in a study cited by the Alaska Department of Community and Economic Development, on its website at: <http://www.dced.state.ak.us/dca/AEISIBristol/Subsistence/BristolSubsistenceNarrative.htm>, accessed in December of 2007, the Department said that "the average; subsistence fish consumption for Bristol Bay residents' accounts for 55 percent of all subsistence foods utilized."

**Response:** The estimates cited on page 453 and 454 of the DEIS were meant to illustrate the propositions that "Subsistence foods in general are important components of regional diets," and that "Chinook salmon varies in importance in regional diets, and can be significant." NMFS believes that the citations from Magdanz and Ballew at al. adequately supported these propositions. Final RIR Section 8.4, in which this



discussion occurs, also places the importance of subsistence foods in the context of the high cost of living and of alternative food sources in rural Alaska, of their distribution through different types of gifts and exchange, and of their cultural importance to the Native communities. NMFS attempted to access the suggested web site from the Alaska Department of Community and Economic Development in March 2009, and found that the Department had removed the content from the site and had indicated that it removed the material because of concerns about outdated and inaccurate information. The Department of Commerce website was formerly described as the Alaska Economic Information System (AEIS).

**Comment 9-16:** On p.459, the DEIS evaluates the costs of subsistence fishing in Holy Cross and Tanana, which included costs for gas, clothing, equipment and other supplies. These subsistence fishing expenses are expected to stay the same or rise in the future according to economic projections, so it is important to for the Council to consider this in any decision-making. It is also important that the Council continue to evaluate the living expenses for residents of these communities compared to urban centers of Alaska such as in Anchorage. Therefore, while it may be difficult, it is not impossible to conduct an economic analysis of the value of subsistence salmon in the rural Alaska Native economy.

**Response:** The environmental justice analysis reported these examples to illustrate the importance of access to cash or credit for participation in modern capital intensive subsistence harvests. This, in turn, helped to illustrate the importance of income from commercial Chinook salmon fishing. The analysis also discusses the relatively high cost of living in rural Alaska. Much of this information has been enhanced and the Final RIR treatment subsistence uses of Chinook salmon, subsistence information has been reorganized into RIR Section 3.3, and additional information is provide to better reflect its importance in RIR Section 3.2. This information was presented to the Council prior to final action.

**Comment 9-17:** On p, 474, the DEIS notes that increased salmon bycatch may also adversely affect rural and indigenous people on the Yukon River in Canada. Under Executive Order 12898, NOAA Fisheries is only required to address minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Marianas Islands. However, because salmon is a transboundary migratory species, NOAA Fisheries has an ethical and moral obligation to consider the effects of salmon bycatch on low-income populations wherever they occur. If there are available data on subsistence harvest of salmon in Russia or Canada, the EIS should consider these potential impacts. NOAA Fisheries has jurisdiction over the fisheries that affect the ecosystems, species composition, and thus communities throughout the salmon-spawning watersheds that feed into the North Pacific. The Council should therefore consider all available data on the health of the salmon runs in Canada and Russia and the level to which those runs support subsistence harvest. This would allow the Council and the public to further understand the impacts of salmon bycatch for all peoples who depend on salmon for subsistence purposes whether in the Kuskokwim River in Alaska, the Yukon River in Canada, or the Bolshaya River in Kamchatka. While genetic information indicates that the number of Russian salmon captured in the U.S. pollock industry is relatively small, like with the runs of the Pacific Northwest, a small number may constitute the entire run in some cases. Thus, the DEIS should acknowledge the transboundary nature of salmon stocks and the potential implications that it may have on other indigenous cultures.

**Response:** The environmental justice analysis includes a paragraph alluding to potential impacts to minority and low income populations in Canada's Yukon Territory. However, given the explicit instructions at the start of the executive order to examine effects on "on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Mariana Islands," (E.O. 12898) NMFS has not done an environmental justice analysis for the Canadian populations. The instructions of the Executive Order are very clear, and consistent with other common evaluation practices. For example,

cost and benefit analysis is routinely carried out from an accounting stance that restricts it to national residents.

RIR Chapter 3 does discuss historic trends in Canadian Yukon salmon catches. Specifically, Figure 3-24 displays annual commercial Chinook salmon catch for the mainstem of the Canadian Yukon from 1961-2007 and the underlying data, including subsistence and porcupine aboriginal catches, is contained in Table 3-13. In the Final RIR, NMFS generalized the short existing discussion on effects in Canada to note the potential for effects on minority or low income populations outside of the United States and Canada, but NMFS continued to restrict the analysis itself to residents of the U.S.

**Comment 9-18:** The DEIS limits its focus to the direct economic impacts and nourishment losses. However, there are impacts beyond these that must be considered. For example, there is no analysis of the impact of bycatch loss of salmon on the culture and traditions of the villages throughout western and interior Alaska, especially the subsistence way of life and the economic viability and cultural integrity of small communities. The effects of the salmon loss from bycatch reach far beyond the fishermen and the dining table; loss affects families throughout the region, impacting the family unity fostered through the work of harvesting, cutting, smoking and sharing the fish. Additionally, with lower harvest numbers, communities may be forced to spend more time, if possible, harvesting salmon to meet their subsistence needs. Some may not extend the time they spend harvesting salmon because a longer season fails to allow for adequate drying or prevents having enough time to pick berries. These indirect impacts are not addressed in the DEIS. The DEIS cites only public comments for evidence that Chinook salmon are important to the cultural, spiritual and nutritional needs of Alaska Native people, and that strong returns of healthy salmon are critical to the future human and wildlife uses of those fish and to the continuation of the subsistence way of life. What are the impacts along the Yukon and Kuskokwim? The DEIS fails to address this important question in a manner that provides decision makers with enough information to determine whether one alternative is more beneficial than another. There are numerous books and peer-reviewed papers examining this essential role of subsistence in both qualitative and quantitative means.

**Response:** The Final RIR describes subsistence harvests of Chinook salmon and provides detailed descriptions of regional subsistence salmon fisheries throughout western Alaska. NMFS has modified the analysis from the draft with a more extensive discussion of the subsistence economy and culture and has tied the analysis more closely to existing material on subsistence the economic analysis in the RIR. The treatment of subsistence uses of Chinook salmon has been reorganized into a RIR Section 3.3, and additional information is provided to better reflect its importance in RIR Section 3.2. This information was presented to the Council prior to final action.

NMFS believes that the current discussion provides decision makers with sufficient information to evaluate the alternatives before them. The descriptive material in the analysis, and the comparisons of the alternatives, do contrast five regions of Western Alaska with respect to Chinook salmon. Separate regional analyses are provided for the Yukon River and the Kuskokwim River.

**Comment 9-19:** The goal of E.O. 12898 is to identify disparate impacts to minority populations. It is important to note the significantly different impacts on Native populations who depend on salmon for sustenance and livelihood as opposed to non-resident processing workers for whom neither livelihood nor culture is tied to pollock processing communities. Further, in assessing disparate impacts, the median family incomes, which far exceed those in Western Alaska salmon-dependent communities, must be addressed.

**Response:** The environmental justice analysis does provide separate descriptions of the relationships between different minority populations and the resources that might be impacted by this action. The goal of an environmental justice analysis is to identify "disproportionately high and adverse human health or

environmental effects of its programs, policies, and activities on minority populations and low-income populations." (E.O. 12898) Disproportion refers to impacts relative to impacts on the overall society. The analysis did not seek to compare low income and minority populations with one another to determine relative burdens, but it did seek to describe the potential for disproportionate impacts on each population to the extent available information permitted. NMFS is unaware of a source of information on median family incomes for non-resident pollock processing plant workers.

**Comment 9-20:** (9-24) The 2000 census data in Table 9.2 is old and outdated.

**Response:** An environmental justice analysis evaluates the potential for a federal agency to impose "disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." The starting point in this analysis is a threshold analysis to determine whether or not minority or low income populations occur in the action area. RIR Section 8.2 provides this threshold analysis for the presence of low income populations. RIR Table 8-2 provides information on labor force, employment status, unemployment, poverty and income for regional census districts and boroughs. The analysis uses 2000 census data and documents that low income populations are present in the area. The 2000 census data is sufficient for that purpose.

**Comment 9-21:** DEIS Section 9.4.8. on page 464, states that pollock allocations benefit member communities, they do not provide significant benefits to non-member communities. CDQ groups do benefit non-CDQ communities. For example, Coastal Villages Regional Fund (CVRF) provides a market to hundreds of salmon fishermen from Bethel and other non-member villages, paid for with BSAI pollock funds. More than 10 percent of the hundreds of jobs provided in CVRF's seafood plants are held by residents from non-CVRF member western Alaska villages and CVRF conducts regular employment recruitment in Bethel and in other communities outside our member communities. CVRF employs around 40 people at our administrative office in Anchorage, AK. CVRF generated/supports many indirect jobs as a result of our economic activity, such as flights throughout the region and hotels and meals in our regional hub of Bethel.

**Response:** NMFS agrees that CDQ revenues benefit non-member communities. Additional information about the CDQ Program's indirect benefits is included in the Final RIR. An expanded evaluation of CDQ revenue, benefits, and investments and the potential effects of the proposed action on CDQ royalties are also included and was provided to the Council prior to final action in April 2009. This information includes the benefits described in the publicly available CDQ annual reports like, employment, educational opportunities, scholarships, and fisheries related markets.

NMFS has prepared an expanded CDQ section which is presented in RIR Section 2.6. The Final RIR also has a complete listing of references and an expanded description of revenue derived from Bering Sea pollock fishery. Aggregate CDQ royalty data and estimated forgone royalty revenues are also described, using the best available information, and appear in RIR Section 6.11.3. The new CDQ section includes selected statistics about the aggregate benefits to CDQ communities, as well as specific examples of fisheries infrastructure investments that could be affected by a decrease in Bering Sea pollock landings.

## 9.11 Economic Analysis Comments

These comments are on the DEIS Chapter 10; potentially affected salmon fisheries, economic benefits of Chinook salmon savings, and pollock industry revenue and cost effects. For the final document, the RIR was separated from the Final EIS as Volume II. For the Final RIR, the environmental justice analysis was combined with the RIR into a new Chapter 8. This change was in large part a response to public comments. The Final RIR was revised to include an analysis of Alternative 5 in Chapters 5, 6, 7, and 8.

Largely in response to public comments, additional substantive changes were made to the Final RIR in Section 2.6 The CDQ Program, Section 3.2 Importance of subsistence, Section 3.3 Discussions of subsistence harvest by region, Section 5.6 Identification of regions and communities principally dependent on commercial salmon fisheries, and Section 6.11 Potential impacts on pollock fishery dependent communities. The revised sections on subsistence, the CDQ Program, price information, and shoreside impacts were provided to the Council and public as appendices to the preliminary CAR for Council final action in April 2009. Specific changes to the RIR are detailed in the response to comments below.

**Comment 10-1:** The DEIS fails to meet even the minimum standards of adequacy for economic analysis.

**Response:** NMFS acknowledges that the use of potentially forgone first wholesale gross revenues is not an ideal reflection of the expected economic costs (or, conversely, benefits if the catch reduction can be mitigated by actions of the operator) attributable to the proposed changes in Chinook bycatch management. See response to comment 10-83 for an explanation of the reasons for adopting this analytical approach.

In order to estimate "profits", one must have data on costs, not simply revenues. NMFS does not have data to estimate net impacts until such time the Council develops a socioeconomic data collection program that requires the industry to submit cost data under new MSA authority. These gross receipts may, of course, not be, in any meaningful way, indicative of realized net revenues, but by default serve as the best available "proxy" for economic earnings in these fisheries.

It must also be noted that "maximizing profit" is only one, among several possible motivating factors that may be "assumed" to define the objectives of a business enterprise.

Absent accurate, verifiable cost data and operational information for the pollock trawl fleets operating in the Bering Sea, gross revenue estimates constitute the "best" empirical economic information available. NMFS fully acknowledges that changes in first wholesale (or ex vessel, as appropriate) revenues cannot be regarded as indicative of net results. That said, these estimates represent the current limit of NMFS' ability to empirically characterize the expected sectoral outcome in the pollock fishery, attributable to changes in Chinook bycatch management under consideration. And, further, this explains the very extensive reliance upon, and systematic treatment of, "qualitative" cost and benefit analysis, reflected in the RIR, as required under E.O.12866.

The response to this comment has been incorporated into the first several pages of RIR Chapter 6.

**Comment 10-2:** Unfortunately, the quality and comprehensiveness of the economic impacts analysis included in the DEIS are on a par with the welfare analysis in the DEIS. That is to say, they are simply omitted. No changes in employment or economic impacts are provided for any of the alternatives for any of the locations in Alaska or Seattle that are likely to be affected. No changes in employment or investment values are provided for any of the CDQ groups in western Alaska that have substantial ownership investments and gain employment opportunities in the pollock fishery (e.g., see Coastal Villages Regional Fund 2008, p.24). No changes in economic activity are estimated or presented for any of the commercial salmon fisheries that are likely to be affected by reduced salmon bycatch in the pollock fishery.

**Response:** Parts of the response to this comment has been incorporated into the first several pages of RIR Chapter 6. Additionally, this comment has been addressed with the addition of Section 6.11, which includes analysis of potential impacts on shoreside value added processing revenue as well as on CDQ royalties. The CDQ program, including ownership interests and royalties received from the pollock

fishery, is also described in RIR Chapter 2. The limitation of the analysis with regard to defining catches of Chinook salmon by user groups is discussed in RIR Chapter 5. Included in Section 5.6 is the identification of regions and communities that are dependent on salmon fisheries as well as the importance of Chinook salmon to limited entry permit holders in Western Alaska.

**Comment 10-3:** The issue is not a matter of accepting a hard cap; we can see the pressure on the Council to take that step and know that it is a likely action that our member companies must prepare for. The real issue is what can be expected to result from a hard cap set at an arbitrary level. The analysis predicts some of the potential costs and benefits. The predicted costs, while sorely underestimated, are enormous and would include the loss of thousands of jobs. The estimated benefits are not measurably predictable.

**Response:** NMFS disagrees with the assertion that the hard caps defined in the alternative set, including the preferred alternative, are arbitrary. The Council has put forward for analysis an alternative set that encompasses historic Chinook salmon bycatch levels in the pollock fishery. The alternative set includes provisions for sector level allocations, again based on several possible metrics of historic bycatch levels in the pollock fishery. The combinations of these options exceed several hundred in number and the analysis contained in the EIS and RIR has considered a subset of those combinations in order to provide tractable range estimates of potential impacts. This analysis provides the Council with needed information to make an informed choice regarding a practicable level of Chinook salmon bycatch.

In addition, the comment misinterprets the numerical estimates of "potentially forgone gross revenues" and "gross revenues at risk", identified in the RIR. As explained therein, these gross estimates reflect highly simplified assumptions about the outcome of competing alternative bycatch rules. In a sense, they are intended to portray the "worst case" outcome if the pollock fishery was required to forgo a specific catch amount in response to each of the Chinook bycatch prohibition actions being examined. As the text clearly indicates, there is no expectation that this outcome will be realized as a result of any of the proposed Chinook bycatch management measures under consideration. The RIR is very clear that these "techniques" are employed solely to provide a crude approximation of the first wholesale gross dollar value associated with unharvested pollock, by sector, processing mode, etc. In RIR Section 6.6, which details the methods used to calculate potentially forgone gross revenues and/or revenue at risk, the text states "gross revenues at risk are forgone **only** if a fishing fleet is unable to modify its operations to accommodate the imposed (Chinook bycatch) limits and, thus, cannot make up displaced catches elsewhere ..." The analysis goes on to address the expected results of less extreme catch reduction levels, resulting from industry changes in operational practices (e.g., gear changes, location changes, timing changes). In every case, the RIR emphasizes that these estimates are incomplete, owing to the absence of industry cost and operational data, market information, pricing structure, etc. As "gross revenue" measures, these numerical results cannot even be interpreted as being indicative of the net impacts the industry could be expected to incur as a result of implementation of any one of the several bycatch alternatives.

Regarding the benefits that may accrue from the proposed action, NMFS agrees that is only able to assert that the bycatch of Chinook salmon in the pollock fishery 'may' be affecting stocks of western Alaska Chinook and associated subsistence, commercial, and sport fisheries. Our knowledge of these complex ecological, biological, and economic relationships remains incomplete at this time. That being said, these data deficiencies do not remove the NMFS's obligation to use the "best available scientific information" to evaluate, in this case, Chinook bycatch reduction alternative actions in the Bering Sea pollock fisheries.

**Comment 10-4:** The choice of time period (2003 through 2007) for the cost/benefit analysis is inappropriate and should be increased to more accurately represent historical bycatch, rather than the highest five years. In addition, the revenue at risk should be viewed as an upper bound. While this is noted in a footnote (pg 653), this analytical problem should be addressed quantitatively as well by

providing revenue at risk with a set percent reduction in historical levels to account for the behavioral change a hard cap will produce; for example, a 20% bycatch reduction could be applied across the board to account for reductions from using salmon excluder devices, which would likely become more prominent under a hard cap.

**Response:** NMFS disagrees that the time period for the analysis is inadequate. The response to this comment has been incorporated into the first pages of RIR Chapter 6.

### 9.11.1 Comments on CDQ issues

**Comment 10-5:** A hard cap could inflict far more economic pain in western Alaska than economic gain. The DEIS suggests that western Alaska communities will receive very little benefit as a result of the Chinook caps in the Bering Sea pollock fishery. The return of an estimated 9,710 Chinook salmon to the Kuskokwim river and 14,938 Chinook salmon to the Yukon river under the lowest Alternative 2 cap of 29,300 Chinook salmon would have little or no discernible benefit in either subsistence or local commercial fisheries but could have a crippling effect on the tens of millions of dollars entering the economy each year from the Bering Sea pollock fishery.

**Response:** Comment acknowledged.

**Comment 10-6:** The statement on page 498 that "less than 1% of the Bering Sea catch is harvested by vessels owned by Alaska residents" and that this percentage has "remained stable since 2002..." is inaccurate. The CDQ groups are heavily invested in the Bering Sea pollock fishery and the level of investments that the CDQ groups have made in the pollock fishery has increased significantly in recent years. One commenter noted that the CDQ groups own approximately 33% other at-sea pollock processing fleet and that this fleet, when CDQ catch is included, harvests nearly 50% of the Bering Sea pollock quota each year. CDQ groups also have ownership interests in at least one mothership (the MS Golden Alaska), and in numerous pollock catcher vessel. Another commenter noted that a thorough review of Alaskan and CDQ investment in the pollock industry would show that Alaskans have more than a 30% stake in this fishery. The DEIS should be revised to include accurate information about the Alaskan ownership of pollock vessels by the CDQ groups.

**Response:** NMFS agrees that the statement on DEIS page 498 is incorrect. This deficiency was noted by the Council at its June meeting and analysts were requested to include more information about CDQ entity ownership of the Bering Sea pollock fleet. Analysts provided that information in the DEIS in Chapter 9 and Table 9-5 on pages 464 of the DEIS. However, analysts failed to remove the inaccurate statement on page 498. That statement has been removed in the Final RIR.

Although NMFS acknowledges that CDQ entities have investments in BSAI fisheries, it is difficult for NMFS to confirm the figures given for investments in the Bering Sea pollock fishery. CDQ investments by species or group have not been supplied to NMFS since 2005. As mandated by the 2006 reauthorization Magnuson Stevens Act, NMFS is no longer authorized to request this type of data. NMFS also acknowledge that the analysis would benefit from this information and has prepared a new CDQ section including estimation of potentially forgone pollock royalties to the individual CDQ entities under the Alternatives. The revised CDQ treatment appeared as an Appendix to the Preliminary Comment Analysis report presented to the Council in April, 2009 and is included in the Final RIR in Section 2.6 and Section 6.11.3.

**Comment 10-7:** None of the alternatives appear to give the CDQ Program a fair pro rata share of the Chinook salmon bycatch allocations. These alternatives penalize the CDQ group's "clean" fishing history and may also violate the CDQ requirements in the MSA. Section 305(i) (1)(B)(iv) of the MSA requires

that harvest of CDQ allocations for species with fishing cooperatives, as exist under the AFA, shall be regulated no more restrictively than for other participants in the applicable sector, including with respect to the harvest of non-target species.

**Response:** Alternative 2, component 2, option 1 would allocate the same percentage of the Chinook salmon hard cap to each sector as the percentage allocation of pollock that sector receives under the American Fisheries Act. Therefore, this alternative does provide the Council the option of allocating among the sectors a pro rata share of Chinook salmon equal to the sector's pollock allocations. NMFS does not agree that any of the alternatives would be inconsistent with the CDQ regulation of harvest provision of section 305(i) (1)(B)(iv) of the MSA. Each of the alternatives and options analyzed appears to apply the same type of Chinook salmon management measures to the CDQ Program and its allocations of Chinook salmon bycatch as would be applied to the other pollock sectors.

It would be difficult to confirm the statement that the CDQ entities have fished more cleanly, or have harvested pollock with lower salmon bycatch rates than the other sectors because operators of vessels harvesting both CDQ and non-CDQ pollock on the same fishing trip have the option of assigning a haul of pollock to either the CDQ entity's quota or to the vessels quota after the crew assesses the bycatch in that haul. NMFS regulations allow up to 2 hours after the fishing gear is retrieved to record the assignment of the haul in the vessel's logbook. Historically, because the CDQ entities were constrained by multiple hard caps for other groundfish species and prohibited species and the non-CDQ pollock fisheries were not, some CDQ entities would request that the vessel operators assign the lower bycatch hauls to the CDQ entity and the higher bycatch hauls to the non-CDQ pollock fisheries. This would result in it appearing that the CDQ entities were fishing with lower bycatch rates than the non-CDQ pollock fisheries.

**Comment 10-8:** The DEIS fails to incorporate up-to-date and accurate descriptive information regarding the investments of CDQ groups in the BSAI pollock fishery and the benefits to CDQ and non-CDQ communities derived from these investments. CDQ groups are well vested in the BSAI pollock fishery and own 30-40% of the companies involved in the fishery. CDQ entities accrue tens of millions of dollars per year from their investments in the pollock catcher processor fleet in addition to the royalties they derive from leasing their CDQ allocations. This revenue makes it possible for the CDQ groups to invest in local communities. The DEIS fails to account for the benefits of jobs, wages, near shore fishery opportunities, scholarships, and other significant economic development activities in Western Alaska communities that are funded almost entirely by the BSAI pollock fishery.

**Response:** NMFS recognized the need to update and augment the CDQ information in the DEIS. In response to comments, NMFS has conducted a literature review of publicly available information on the investments, royalties, and benefits to communities benefits associated with the CDQ entities. NMFS has also consolidated existing CDQ background information from Section 3.4.4.2 (page 153) and Section 9.4.8 (page 462) of the DEIS into the new RIR Section 2.6. This new section incorporates the best available information regarding vessel ownership, royalty and investment revenue generated for CDQ entities by the Bering Sea pollock fishery, and community benefits such as jobs, wages, near shore fishery investments, scholarships, and other significant economic development activities. In addition, a treatment of the potential effects on CDQ Royalties under the Alternatives 4 and 5 is provided in RIR Section 6.11.3. The Council was provided with this information, as an appendix to the Preliminary Comment Analysis Report, prior to taking final action in April of 2009.

Note that it is difficult for NMFS to confirm the estimates provided in the public comment. Until 2006, NMFS received detailed annual financial audits from each CDQ entity (for 2005 and previous years). The audits included detailed revenue information and royalties paid, by species or species group, for the CDQ allocations. NMFS has not been authorized to require financial audits since the 2006 amendments to the Magnuson-Stevens Act. Therefore, we now rely on information from the CDQ entities publically

available annual reports prepared primarily for residents of the member communities. Some of the CDQ entities choose to include specific information on revenue sources and investments, while others choose not to provide this level of detail in their annual reports.

**Comment 10-9:** Several commenters made specific suggestions for improving the descriptive information about CDQ entities in the FEIS:

- Page 154, Section 3.4.4.2, that states "CDQ groups had a total of \$134 million in revenue in 2005, earned primarily from pollock royalties" is misleading and incorrect.
- CDQ interests own approximately 33% other at-sea (CP) pollock processing fleet—a fleet that, when CDQ catch is included, harvests nearly 50% of the Bering Sea pollock quota each year. CDQ groups also have ownership interests in at least one mothership (the MS GOLDEN ALASKA), and in numerous pollock catcher vessels.
- The CVS Goodnews Bay/Platinum operation is the largest investment in CDQ history at over \$35 million. Over 600 permit holders delivered 412,000 pounds of halibut and 2.8 million pounds of salmon to CVS facilities in 2007. Western Alaska CDQ groups have invested in the pollock industry and have approximately 40% ownership in companies involved with this fishery.
- Add relevant information on CDQ investments in the BSAI pollock fishery and other pollock sectors to tables to the Executive Summary in the sections on the Bering Sea pollock fishery and the costs of forgone harvest in the pollock fishery, and tables ES-20, 21, and 22.

**Response:** Comments acknowledged. See response to comment 10-8.

**Comment 10-10:** In western Alaska, the CDQ Program provides significant (85%) funding to support salmon related infrastructure including processing plants, fishery support centers, and fishing vessels that benefit both CDQ and non-CDQ members. CDQ revenue largely derives from the BSAI pollock fishery; therefore, any measure limiting the pollock fishery could impact salmon fishermen.

**Response:** Comment acknowledged. See response to comment 10-8.

**Comment 10-11:** For many residents of CDQ communities, the opportunities from the CDQ program are an alternative to subsistence. Adoption of restrictions on the pollock fishery of the magnitude under consideration threaten that alternative. Rather than helping subsistence fishermen, Alternatives 2-4 may create subsistence fishermen. The DEIS emphasizes the importance of subsistence harvests, but the DEIS ignores the fact that the CDQ program provides an alternative to subsistence dependency for many people in CDQ communities, an alternative threatened by the proposed restrictions on the pollock fishery. In something of an understatement, the DEIS concedes that "[a]nything that tends to diminish economic activity in these communities ... can do disproportionate harm...." *Id.* at 706. Nevertheless, the DEIS conducts no analysis of, and fails to account for, these acknowledged harms that will flow from restrictions on the pollock fishery.

**Response:** Comment acknowledged. See response to comment 10-8.

**Comment 10-12:** CDQ communities derive tens of millions of dollars per year from revenue derived from the BSAI pollock fishery. These investments are at risk under some of the Chinook salmon bycatch measures under consideration. Funding for CDQ projects could be severely impacted. The failure of the DEIS to evaluate these impacts on the "economic engine" driving the development of opportunities in CDQ and non-CDQ communities is a major flaw in the document, making it inadequate in its role in "informed decision making".



**Response:** In response to this and similar comments, NMFS has revised the analysis in RIR Section 2.6 and RIR Section 6.11.3 take into account pollock revenue and community investments of CDQ entities. Analysis has been expanded drawing from the publicly available annual reports and a recently released economic report. To better inform the public and decision makers, this section incorporates the best available information regarding vessel ownership, revenue generated by investments in the Bering Sea pollock fishery, and community benefits such as jobs, wages, near shore fishery investments, scholarships, and other significant economic development activities. Chapter 10 Section 10.5.2 (page 652) and Chapter 10 Section 10.5.6 (page 706) of the DEIS addressed the impacts of hard caps and reduced pollock landings on fishery dependent communities including CDQ entities and other entities well vested in onshore processing. This information is now contained in RIR Section 2.6 and RIR Section 6.11.3. In addition, the Final RIR provides analysis of the potential impacts on shoreside value added processing revenue in Section 6.11.2. The discussion in response to comment 10-6 may also be relevant.

**Comment 10-13:** DEIS Section 9.4.8, states that CDQ groups have invested in inshore processing plants for salmon and halibut. This section does not mention that these operations are fully subsidized by the pollock fishery. This section also incorrectly states that CVRF made loans to two aluminum welding businesses for boat repair and buildings in Eek and Hooper Bay. The CVS is completing the construction of a \$35 million salmon processing facility in Goodnews Bay/Platinum operation is the largest investments in CDQ history at over \$35 million. Over 600 permit holders delivered 412,000 pounds of halibut and 2.8 million pounds of salmon to CVS facilitates, including the Quinhagak plant, in 2007. CVRF planned, constructed, and operates a total of 14 Fisheries Support Centers in the communities of Scammon Bay, Hooper Bay, Chevak, Tununak, Toksook Bay, Nightmute, Mekoryuk, Chefonak, Kwigillingok, Kongiganak, Napakiak, Napaskiak, Eek, and Goodnews Bay. In addition CVRF operates six halibut plants in the region. Annually, CVRF employs approximately 340 workers at 7 processing plants in the region, with an additional 120 expected with the opening of the Goodnews Bay/Platinum salmon plant. All of these benefits were paid for with earnings from the BSAI pollock fishery. The 2007 WACDA report includes more detailed data on the CDQ investments and benefits.

**Response:** NMFS has revised the CDQ background information in the Final RIR take into account CVRF's comments. See response to comment 10-8.

### 9.11.2 Comments on the importance of Chinook salmon

**Comment 10-14:** One of the major categories of benefits the DEIS cites as justifying restrictions on the pollock fleet is "passive use (or non-use) benefits." DEIS at 625. There are multiple conceptual and analytical defects in relying on non-use values to justify restricting the pollock fleet. The DEIS defines "passive (or non-use)" values as the value of knowing that the resource exists "and will continue to exist in perpetuity." DEIS at 627. The General Accountability Office defines nonuse values as the "pleasure of knowing that the resource exists." General Accounting Office, Natural Resource Damages of the Department of Energy, GAO/RCED-96-260R, August 16, 1996, at 19. In short, passive use values are the psychological value of knowing that the resource exists. However, the DEIS offers no proof that such values exist as to Chinook salmon specifically and, if they exist as to Chinook, that they are damaged, and if they are damaged, by how much. Nevertheless, the DEIS concludes, without analysis, evidence, or support, that non-use values can be used to justify bycatch restrictions. Such "analysis" does not comply with NEPA.

**Response:** The comment pertains specifically to DEIS Section 10.5.1.1 (now contained in the Final RIR Section 5.1). This discussion of passive-use values is an element of the RIR. The RIR is mandated by Executive Order 12866 (E.O.12866), which states, in relevant part:

In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating. Costs and benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nonetheless essential to consider. Further, in choosing among alternative regulatory approaches agencies should select those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach.

As the E.O. passage specifies, all costs and all benefits must be included in a regulatory impact analysis, not only those that are market-based and/or readily amendable to monetization. In point of fact, passive-use values are not, as the commenter suggests, "psychological", but instead reflect economic value (in the classic sense of that term) held by individuals. While the estimation of these values is challenging, there is no serious dispute that passive-use values are real measures of human welfare (i.e., utility), which is the foundation of microeconomic science. Attribution of passive-use value(s) has been adopted and widely employed in the field of natural resource management; empirical estimation techniques have been endorsed for use by NOAA's Blue Ribbon Panel (ca., 1990); and the use of these techniques and resulting passive-use estimates sanctioned by the U.S. Federal Courts.

To the assertion by the commenter that the analysis "offers no proof that such values exist as to Chinook salmon...", NMFS points to the significant expression of public interest and concern, especially by non-commercial fishing interests, in the matter of Chinook (and chum) salmon bycatch. While several examples can be readily cited, perhaps the most unambiguous of these is the extraordinary cultural and social value held for Chinook salmon, by many American Native peoples (and non-natives, alike). Documentation of these Chinook salmon values are reflected in treaty agreements, both between Native American Tribal entities and the U.S. government, as well as internationally (e.g., numerous U.S.-Canada, historically, U.S.-Japan-U.S.S.R. salmon treaties).

Finally, a careful reading of Section 5.1, cited by the commenter, does not suggest, as asserted, that "non-use values justify restricting the pollock fleet." Instead, the referenced section merely observes that changes in Chinook salmon bycatch will likely result in a wide range of human welfare impacts and, among these, are welfare changes attributable to those who hold passive-use (or non-use, existence, bequest, etc.) value for this species. NMFS believes this is a reasonable, fully justified, and wholly supported conclusion and, notes further, in full compliance with E.O. 12866 requirements.

**Comment 10-15:** The first fundamental problem with relying on existence values to justify restricting the pollock fishery is that there is no threat to the existence of the Chinook salmon resource caused by the pollock fishery. One searches the DEIS in vain for any claim, let alone proof, that the incidental take of Chinook salmon in the pollock fishery threatens the existence of that species. Any psychological existence values that are alleged to exist are satisfied if the resource exists.

**Response:** This comment reflects a misunderstanding of the meaning of "existence value." The response to this comment has been incorporated into the Final RIR in Section 5.1.1, Passive Use Benefits. Perhaps use of an alternative, but equivalent term, "passive-use value", will resolve the confusion. Fundamentally, passive-use value reflects the utility an individual derives from knowing that the resource of interest (e.g., Chinook salmon) exists in a given state of being, even though no use is ever expected to be made of it by the holder of the value. Such values are not, in any way, correlated with the risk of "extinction", as implied by the commenter. Indeed, the "source" of the passive-use value need not even be a living thing (i.e., the earliest work on passive-use described values placed on free flowing rivers by individuals who reported no intention of ever visiting these rivers). Passive-use values are actual, measurable, and legitimate aspects of society's preferences for, in this case, fishery resource management.

As such, passive-use values must be accounted for, to the extent practicable, in evaluating the benefits and costs of the proposed Chinook bycatch action. Along with the other sources of "benefits" and "costs", passive-use values contribute to a full accounting of the net benefit to the Nation (possibly negative) accruing from the tradeoff of Chinook bycatch for pollock harvests in the Bering Sea. This is a requirement of Presidential Executive Order 12866.

**Comment 10-16:** The second fundamental problem with relying on existence non-use values to justify restrictions on the pollock fishery is that people generally do not place an existence value on Chinook salmon per se. The DEIS admits that "few" people who attribute existence values to marine resources "would likely be able to either explicitly recognize or express" such values for the living marine resources of the Bering Sea. DEIS at 628. If people are unable to "express," or even recognize, non-use values for the living marine resources of the Bering Sea, how can there be an identifiable and distinct existence value for just one species of salmon? The DEIS admits this analytical defect when it states that "isolating a passive-use value unique to Chinook salmon taken in the Bering Sea ... presents conceptual problems." Id. The DEIS states that salmon has a cultural existence value to the Native peoples of Alaska. Id. at 627. No one disputes, diminishes, or disrespects the cultural values of Alaska's Native Americans. The problem is that the DEIS contains not one shred of evidence that the Chinook salmon bycatch in the pollock fishery prevents Native peoples from harvesting sufficient Chinook salmon to meet their cultural needs.

**Response:** The commenter appears to misunderstand the concept of "passive-use" (e.g., as most clearly reflected in the final sentence of the comment). Passive-use values (or, existence values, or non-use values) exist completely independent of, and in addition to, "use-values". Therefore, whether (as the comment asserts) "... the Chinook salmon bycatch in the pollock fishery prevents Native peoples from harvesting sufficient Chinook salmon to meet their cultural needs", is completely irrelevant to the existence, size, and source of non-use values. Furthermore, whether "few" or many people are able to express or even identify attributable non-use values for Chinook salmon taken as bycatch in the pollock trawl fishery is an empirical question, still open to exploration. As such, NMFS has not sought to characterize the size or scope of such non-use values, only identify their probable existence within the context of the proposed Chinook bycatch reduction action. To do the former might bias the assessment. To fail to do the latter would result in an incomplete and technically deficient RIR, based upon the requirements of E.O.12866.

**Comment 10-17:** Compounding the fundamental analytical defects in the non-use values analysis is the statement in the DEIS that non-use values are measured by contingent valuation methodology ("CVM") and that CVM has been "carefully reviewed and accepted (when employed appropriately) by the federal courts." DEIS at 627, citing *Ohio v. United States Department of the Interior*, 880 F.2d 432 (D.C. Cir. 1989). The argument appears to be that non-use values must exist as to Chinook salmon because the courts have said CVM is a way to measure non-use values. Such logic begs the question of whether non-use values actually exist as to Chinook salmon. In fact, the DEIS admits there has been no study of non-use values for Chinook salmon and, therefore, non-use values "cannot be further analyzed." Id. at 628.

Even if a CVM study were undertaken, there would be serious doubts about the results. The DEIS, after admitting that the Ohio court found CVM a valid procedure only "when employed appropriately," neglects to mention that no court reviewing a CVM study has found it was employed appropriately. In the only two court cases flowing from the Ohio decision where CVM was employed as a separate basis for damage claims, the courts rejected the results because the CVM analysis produced such unrealistic valuations.

**Response:** To the extent this commenter argues that contingent valuation method is generally inappropriate, NMFS disagrees but notes that it did not conduct a CVM analysis. The section on Passive-Use Benefits concludes:

Therefore, at present, it is not possible to provide a specific monetary estimate of the passive-use value that is hypothesized to be associated with one or another of the proposed salmon bycatch minimization alternatives or, therefore, to differentiate passive use benefits by alternative. Thus, while this analysis recognizes their existence, passive use benefits cannot be further analyzed. (DEIS at 628, Final RIR Section 5.1.1).

Because monetary estimates of passive uses cannot yet be derived, NMFS has assiduously avoided any suggestion of the potential magnitude of non-use impacts, choosing instead only to identify their likely existence. This is fully consistent with requirements contained in E.O. 12866 and NOAA Fisheries Guidance for Preparation of Economic Impact Analyses.

To the extent that this commenter argues that the non-use values of Chinook salmon are zero, NMFS also disagrees. While the RIR notes that NMFS is not aware of passive-use value estimates specifically for Chinook salmon lost to pollock bycatch in the Bering Sea, there have been several peer reviewed analyses, employing a range of estimation techniques, directed at measuring the passive-use value of Chinook (as well as other species of salmonids). See, for example, Passive Use Values of Wild Salmon and Free-Flowing Rivers. Dr. John Loomis, Agricultural Enterprises Inc. October 4, 1999, and the accompanying references thereto, available at: [http://www.nww.usace.army.mil/lsr/reports/misc\\_reports/passive.htm&nbsp;](http://www.nww.usace.army.mil/lsr/reports/misc_reports/passive.htm&nbsp;)

In short, while NMFS notes the likely existence of passive-use values for Chinook salmon, NMFS did not attempt to analyze what those values may be in the context of Chinook taken as bycatch in the pollock fishery since there is no existing information on that issue of which NMFS is aware.

### 9.11.3 Comments on correcting specific items

**Comment 10-18:** DEIS Table 10-59 (pg 632) is incorrect. The "windows" subsistence fishing schedule 26 has been in place since 2000 on the Yukon River. This schedule restricts subsistence fishing time throughout the Yukon. Commercial fisheries were greatly reduced from 2003-2007, with harvests well below historical averages. In 2007 the commercial harvest was 33,629 Chinook, 30 percent below the recent 10-year average. These same comments apply to the text on page 633.

**Response:** NMFS disagrees with the assertion that the Table, now RIR Table 7-4 (also Table ES-14) and the text are incorrect. Regarding the Yukon River, this table specifically states that some key escapement goals were not met but that additional management measures were not put in place during 2003-2007. The "windows" fishing schedule referenced in the comment was depicted in Table 10-32 and as the comment indicates, "has been in place since 2000 on the Yukon River." Thus, the RIR documented this schedule, clearly identifies how it was set for the 2008 season, and notes, in Table 7-4 that no additional management measures were put in place from 2003-2007. Further, the commenter is correct in citing the downward trend in commercial Chinook harvest on the Yukon River. The RIR documents this trend in the Section 3.4 covering Commercial Fishery Situation and Outlook.

In an attempt to clarify what was intended by the summary of potential management implications in DEIS Table 10-59, this table was a revised for the Final RIR as Table 7-4 and DIES Table 10-32 was deleted to eliminate confusion. Changes from the previous version in Table 7-4 include further clarification on the difference between escapement goals on the Yukon and Treaty passage goals with Canada (and resulting

Canadian restrictions), clarification on more restrictive management measures in place prior to (and extending through) the time period being characterized in the analysis (Yukon and Kuskokwim), and specific measures in Norton Sound that were not specified in the previous draft of this table.

**Comment 10-19:** Correct the phrase "because subsistence enjoys a 'priority use' privilege . . ." used in the DEIS. ANILCA requires that non-wasteful subsistence uses of fish and wildlife resources shall be the priority consumptive use on the public lands of Alaska. Therefore, use of the words "privilege" and "enjoy" is a misrepresentation of the subsistence priority. These words should be deleted. The correct phrase should be "because subsistence is the priority use, superseded only by escapement needs, under both Federal and State regulations. . ."

**Response:** Comment acknowledged, and the Final RIR has been amended accordingly to provide: "Because the taking on public lands of fish for non-wasteful subsistence uses is accorded priority over the taking on such lands of fish for other purposes, superseded mainly by escapement needs, Chinook salmon bycatch savings from better control and avoidance of Chinook salmon interceptions in the trawl fisheries could accrue to subsistence users."

**Comment 10-20:** Page 537, last paragraph: It is likely that the subsistence harvests in 2008 was lower than in 2007 because the 2008 Chinook return was the lowest on record. Reference page 2 of ADF&G's 2008 Norton Sound season summary at:

<http://www.cf.adfg.state.ak.us/region3/finfish/salmon/catchval/08nssalsum.pdf>.

**Response:** NMFS agrees that referenced run summary does indeed identify 2008 as the poorest Norton Sound Chinook salmon run on record. This information has been included in the Final RIR.

**Comment 10-21:** Page 530, last paragraph: makes a reference to "...approximately 4,500 households residing in 38 communities in the region..." this is incorrect. An accurate accounting of communities and households throughout the affected AYK region needs to be included throughout the EIS.

**Response:** NMFS agrees that an accurate accounting of communities and households in the AYK region should be included in the analysis and added the following information to the Final RIR in Chapter 3 to better address subsistence issues. According to ADF&G, the subsistence salmon harvests in the Arctic-Yukon-Kuskokwim region have cultural and practical significance to many of the approximately 120 communities, representing approximately 14,711 households and approximately 58,596 residents (in 2007) in the AYK region, in addition to the more than 57,000 residents in the Fairbanks North Star and Denali Boroughs, many of whom also depend upon AYK salmon stocks for dietary and other cultural needs. There are also Canadian residents who rely on AYK salmon stocks.

#### 9.11.4 Comments on impacts to salmon users

**Comment 10-22:** S.E. Alaska communities are also impacted by bycatch in the BSAI pollock fishery. Communities like Sitka depend on the troll caught winter Chinook that are worth between 8 and 10 dollars per pound.

**Response:** NMFS acknowledges that some Chinook salmon taken as bycatch in the Bering Sea pollock fishery are of Southeast Alaska, British Columbia Canada, and Pacific Northwest origin. However; the available genetic data is not sufficient to attribute numbers of bycaught Chinook salmon to specific river systems or harvest fisheries. As a result, it is not possible to estimate impacts of past Chinook salmon bycatch, or potential benefits in terms of Chinook salmon that may be "saved" by the proposed action, on harvest fisheries by individual river systems in Southeast Alaska, British Columbia, or the Pacific Northwest. Instead, general trends may be inferred in aggregate for these regions.

**Comment 10-23:** The DEIS assumes there are benefits to the sport fisheries without conducting any analysis to determine if the facts support that assumption. If the DEIS had done the analysis, it would have discovered there is no factual basis to support the assumption that sport fishermen will derive measurable benefits from restricting the pollock fishery. The facts do not justify the DEIS's assumption that Chinook salmon is a major contributor to in-river sport fisheries, let alone that these fisheries will derive measurable benefits from restrictions on the pollock fishery, particularly given the small numbers of AEQ salmon that would return to the rivers and other end uses of these fish.

**Response:** Based upon the best available scientific information, NMFS has asserted that the bycatch of Chinook salmon in the pollock fishery 'may' be affecting stocks of western Alaska Chinook and associated subsistence, commercial, and sport fisheries. Our knowledge of these complex ecological, biological, and economic relationships remains incomplete at this time. That being said, these data deficiencies do not remove NMFS's obligation to use the "best available scientific information" to evaluate, in this case, Chinook bycatch reduction alternative actions in the Bering Sea pollock fisheries, and their potential to benefit those with historical Chinook salmon allocation rights, including sport fishermen.

**Comment 10-24:** The importance of subsistence harvests, and the benefits of reductions in salmon bycatch are well characterized on page 531. This type of qualitative description accurately describes the potential impacts in a manner which many of the quantitative analyses miss and should be repeated and stressed throughout the analysis.

**Response:** NMFS appreciates the comment and, based on this and other comments, NMFS has revised the discussion on the subsistence harvest of Chinook salmon and the impacts to subsistence users. See Final RIR Sections 3.1 through 3.3 for this coverage.

**Comment 10-25:** Under any scenario Nome subsistence fishermen will be dealt a heavy blow to their lifestyle and all of western Alaska will carry the entire burden of NMFS management.

**Response:** NMFS acknowledges the comment.

**Comment 10-26:** The DEIS does not sufficiently discuss the potential economic impacts to coastal communities. The contribution of the pollock industry to the declining salmon runs in western Alaska is not sufficiently analyzed. While there is a lack of data on certain topics such as determining the river of origin for each bycaught fish, this information is vital to assessing impacts to coastal communities reliant on subsistence harvests. This is particularly important because declining salmon returns have already had impacts on coastal communities. If anything, this lack of data should make NMFS extremely conservative when it comes to assessing allowable bycatch, which is not the case with this EIS.

**Response:** NMFS cannot provide community-level impact analysis for this action, due to the inability to directly link Chinook salmon bycatch with in-river runs of Chinook in any particular community. The RIR uses the best available information on subsistence (Section 3.2 and 3.3), commercial (Section 3.4), and sport and personal use (Section 3.5) Chinook salmon fisheries, which is provided and presented by region. The section provides extensive background information on the subsistence (and commercial and recreational) Chinook salmon fisheries in western Alaska river systems likely most affected by Chinook salmon bycatch. The regions are based on the ADF&G management areas (Kotzebue, Norton Sound, Kuskokwim River/Bay, Yukon, and Bristol Bay). In addition, information on regions and communities that are dependent on salmon fisheries is provided in RIR Section 5.6.

The estimates of Chinook salmon saved are used as the measure of economic benefits of the alternatives and options, as described in RIR Chapter 5 as well as in the comparative analysis of RIR Chapter 7.

While not possible to resolve on a community level, the analysis states that it is reasonable to assume that any additional Chinook salmon (i.e., 'salmon saved') would benefit escapement and harvest to the identified river systems, and the communities located and/or dependent upon those river systems.

The comment notes the need to assess impacts on coastal communities specifically reliant on subsistence harvests. While NMFS is limited to a regional assessment of potential impacts to subsistence users, NMFS agrees that the analysis needed to further emphasize the significance of subsistence harvests and attempt to identify those communities that have had historical Chinook salmon subsistence harvests. As a result, Section 3.3, Subsistence Harvests by Region, was included in the Final RIR.

**Comment 10-27:** The DEIS does address the costs of forgone harvest in the pollock fishery but makes no assessment of the costs of forgone subsistence salmon harvests. Unfortunately, the DEIS seems to disproportionately focus on the practicability of bycatch as it relates to the pollock sector. Communities such as Unalakleet have, at various times, forgone subsistence salmon fishing in order to help conserve stocks in the hope of increasing future returns. This is necessary due, in part, to the high incidence of bycatch in the pollock fishery which intercepts Chinook and other salmon prior to them reaching subsistence fishing grounds. There is no such thing as "surplus" fish that can be sacrificed for bycatch because every fish that returns to our rivers is important for meeting our subsistence needs and continuing our traditional way of life. The issue of practicability of bycatch levels becomes much more acute when considering the economic conditions of the remote Alaska communities with comparatively limited food and economic resources.

**Response:** The Final RIR, in Section 5.1, discusses the difficulties in estimating the costs of forgone subsistence salmon harvests, and the reasons why this assessment was not made. RIR Section 5.1 states that the AEQ estimates represent the potential benefit in numbers of adult Chinook salmon that would have returned to individual river systems and aggregate river systems as applicable over the years from 2003 to 2007. These benefits would accrue within natal river systems of stock origin as returning adult fish that may return to spawn or be caught in either commercial, subsistence, or sport fisheries.

Exactly how those fish would be used (i.e., in what fishery would they have been caught; whether they would have returned to spawn, etc.) is the fundamental, and very difficult, question to answer in order to provide a balanced treatment of costs and benefits. Measuring the potential economic benefit of Chinook salmon saved, in terms of effects on specific subsistence, commercial, sport, and personal use fisheries is problematic. The proportion of AEQ estimated salmon that might be taken in each of the various fisheries is a function of many variables, as discussed in RIR Section 5.1. Lacking estimates of the proportion of AEQ Chinook salmon that would be caught by each user group, it is not possible to estimate economic benefits in terms of gross revenues or other monetary values for those user groups due to changes in AEQ Chinook salmon under each alternative.

Further, the total social and cultural value of subsistence Chinook salmon catch cannot be evaluated in a way that is directly comparable to the monetary value of potential increases in commercial Chinook salmon catch or forgone gross revenues from the pollock fleet. Making estimates of changes to the gross revenues to the commercial Chinook salmon fishery may even bias the true subsistence value, when the non-monetary value of subsistence harvests is significant and not reflected in terms of gross revenues. In sum, RIR Section 5.1 outlines the reasons why the economic analysis does not provide estimates of a monetary value of forgone subsistence salmon harvests. The analysis relies on a discussion of subsistence use and AEQ estimates of Chinook salmon saved as the measure of economic benefits of the alternatives and options.

**Comment 10-28:** The bycatch of Chinook salmon has a negative impact to the coastal areas of Bristol Bay, Yukon-Kuskokwim coastal and rivers, Norton Sounds and Canada, that depend on the Chinook

salmon resources for subsistence and commercial fishing. The bycatch of Chinook salmon in 2007 is very alarming and it is no wonder that Chinook salmon numbers are declining in these coastal areas.

**Response:** NMFS acknowledges the comment. The degree to which levels of bycatch are related to declining returns to salmon streams in western Alaska and elsewhere is not well known and the potential benefits of the proposed action, in terms of Chinook salmon not taken as bycatch are analyzed in Final RIR in Sections 5.3 through 5.5.

**Comment 10-29:** Cumulative impacts on salmon populations, coupled with a lack of a cap on bycatch for BSAI salmon can potentially be devastating to local communities, especially indigenous peoples throughout Alaska, Russia, and Canada, as well as Pacific Northwest residents who were dramatically affected by the Pacific Coast salmon fishery shutdown in 2008.

**Response:** NMFS acknowledges the comment.

**Comment 10-30:** The economic analysis does not include the ability of salmon to multiply at an exponential rate. Salmon intercepted by the pollock fishery would have recruited exponentially in the rivers. The analysis does not cover the economic impacts to the coastal communities from the loss of increased salmon returns.

**Response:** Regarding the impact on numbers of salmon allowed to spawn, NMFS appreciates that salmon spawning output affects subsequent returns. However, the estimates of reduced numbers of returning salmon due to bycatch are provided in the analysis as are escapement goals and directed salmon harvest (subsistence and commercial) levels. The bycatch may more closely affect catch allowances for salmon fisheries since escapement goals are direct management targets (i.e., the managers set the salmon fishery allowance after accounting for the desired level of salmon escapement). If bycatch mortality of returning salmon was completely discounted from escapement levels (i.e., salmon fishery managers did not follow escapement goals) then subsequent returns may be affected. However, the relationship between spawning abundance and subsequent recruitment for nearly all fish stocks (and in particular for salmon) is highly variable due to environmental conditions. This level of variability is much higher than the variability caused by a few percentage point differences in spawning escapement (unless the stock is critically endangered).

**Comment 10-31:** The dramatic rise in Chinook salmon bycatch by the pollock fishery cannot be allowed to continue to threaten the future sustainability of the Yukon River salmon stocks and the continuation of a subsistence way of life in Interior Alaska.

**Response:** NMFS acknowledges the comment. The degree to which levels of bycatch are related to declining returns to salmon streams in western Alaska and elsewhere is not well known. Based on the analysis in RIR Section 5.1, the most that can be concluded with available information is that (1) a portion of the salmon caught in the Bering Sea pollock fishery is from the Yukon River, (2) an estimate the amount of that salmon that could return to Yukon under different bycatch levels, and (3) these additional Chinook salmon would have likely increased escapements and contributed to subsistence and commercial harvests. The maximum amount of AEQ Chinook salmon estimated to return to the Yukon under the alternatives would have been 14,938 Chinook salmon in 2007, which can be compared to the 2007 combined subsistence, commercial, and sport catch of 92,876 Chinook salmon in the Yukon River (see Final RIR Table 7-6).

**Comment 10-32:** The DEIS is written from a commercial fisheries perspective and that is not lost on those whose livelihoods rely on subsistence resources like Chinook salmon. DEIS goes to great lengths to analyze economic impacts the alternatives will have on the pollock industry. No similar approach is taken



to estimate the cultural and economic impacts to WAK including the cost of replacing subsistence with store-bought foods. A more comprehensive examination is needed.

**Response:** NMFS agrees that the analysis provides extensive treatment of a wide range of alternatives and their associated options. This treatment is necessary due to the expansiveness of the alternative set that the Council put forward for analysis in the EIS and RIR. It is also important to recognize that the proposed action is to directly regulate Chinook salmon bycatch in the Bering Sea pollock fishery. Thus, the economic impact analysis is necessarily focused on potential impacts on pollock fishery participants due to the fact that they are the entities that will be directly regulated under the proposed action. A similar approach to estimating impacts on Chinook salmon users is not possible because the alternatives do not directly regulate salmon fisheries.

The analysis does include extensive treatment of existing conditions in western Alaska Chinook salmon fisheries. This information begins in the Final RIR in Chapter 3. This information is presented by river system with further breakout by district where available information warranted. The Norton Sound area for example is further broken down by Shaktoolik and Unalakleet Rivers and the Alaska Yukon river information is provided by district for all six districts. This information was provided to document, to the best of our ability and with the best available scientific information, trends in Chinook salmon catch in Western Alaska subsistence, commercial, sport, and personal use fisheries and serves to inform the Council and the public of those trends.

The analysis also develops estimates of potential benefits in terms of AEQ Chinook salmon "saved" under the alternatives. The benefits estimates are provided (see RIR Table 7-1) for the preferred alternatives and a subset of hard cap alternatives. The analysis also compares AEQ Chinook salmon savings for major river systems (Kuskokwim, Yukon, Bristol Bay) with ADF&G reported commercial, subsistence, and sport catches of Chinook salmon (see RIR Tables 7-5 through 7-8). However, available genetic information does not allow estimation of AEQ Chinook salmon savings at the natal stream level of resolution. Thus, presently available scientific information does not allow estimation of potential increases in escapement or of potential numbers of Chinook salmon that may be made available for harvest in subsistence, commercial, sport, or personal use fisheries. As a result, it is not possible to estimate effects on subsistence food supply, commercial harvest and associated revenue, or sport and personal use catches. It is likewise not possible to estimate effects on fishing opportunities that may occur.

NMFS is not aware of any study, or data source, that documents subsistence household food expenditures in Western Alaska and the available evaluations studies are not a suitable proxy. Furthermore, the value of subsistence use of Chinook salmon in Western Alaska likely exceeds replacement food costs due to the cultural significance of the subsistence lifestyle. Thus, replacement cost estimation is neither possible, nor a true representation of the value of subsistence harvest. Nonetheless, in recognitions of the apparent imbalance in the treatment subsistence uses of Chinook salmon, a reorganizing subsistence information section has been developed and appears in the Final RIR in Sections 3.2 and 3.3. A draft of the new subsistence section was included, and provided to the Council, in the Preliminary Comment Analysis Report as Appendix 9.

**Comment 10-33:** WAK Chinook salmon fisheries have been severely cut back for several years to the point of complete closure in some districts. Solutions to the bycatch problem have been unfairly placed on salmon fishermen and the burden should be shared by the pollock industry. Any action should place priority on preservation of salmon runs and subsistence fishermen over that of preserving the profits of the pollock fishery.

**Response:** NMFS acknowledges the comment.

**Comment 10-34:** In lieu of analysis, the DEIS points to the importance of subsistence. The DEIS asserts that fish comprise as much as 85% (by weight) of the subsistence fish and wildlife harvested in western Alaska and, of that amount, salmon contributes as much as 53%, or 650 pounds per capita (p. 531). The issue is not the importance of subsistence but whether restricting the pollock fishery makes a real difference in the amount of fish that would be available for subsistence.

**Response:** The purpose of the analysis is to estimate and/or characterize the potential impacts of the alternative measures to minimize Chinook salmon bycatch in the pollock fishery on the levels of Chinook salmon bycatch of in-river returns of adult Chinook salmon. Understanding importance of subsistence to the people that live in western and interior Alaska is fundamental to understanding the impacts of the alternatives on subsistence users because it provides an understanding of the intensity of the unique risks when the degree of possible effects are uncertainty. While NMFS is limited to a regional assessment of potential impacts to subsistence users, NMFS agreed that the analysis should be improved and, to that end, has developed an improved subsistence information section in RIR Sections 3.2 and 3.3.

As explained in the Final RIR in Chapter 5, NMFS cannot provide a quantitative analysis of the impacts on subsistence harvest, due to the inability to directly link Chinook salmon bycatch with in-river runs of Chinook salmon in any particular river system. The RIR uses the best available information, which is provided and presented by region (RIR Chapter 3). This section provides extensive background information on the subsistence (and commercial and recreational) Chinook salmon fisheries in western Alaska river systems likely most affected by Chinook salmon bycatch. The regions are based on the ADF&G management areas (Kotzebue, Norton Sound, Kuskokwim River/Bay, Yukon, and Bristol Bay). RIR Section 5.1 states that it is not possible with presently available information to determine the proportions of river-specific AEQ estimates of returning adult Chinook salmon that would be caught in subsistence fisheries (or commercial or recreational fisheries) in the various river systems of western Alaska, and further, in any particular community, under the proposed range of alternatives. The analysis relies on a discussion of subsistence use and AEQ estimates of Chinook salmon saved, with a particular focus on river systems in western Alaska, given the ability to resolve some of those river systems singularly. The estimates of Chinook salmon saved are used as the measure of economic benefits of the alternatives and options. The analysis states that it is reasonable to assume that any additional Chinook salmon (i.e., 'salmon saved') would benefit escapement and harvest to the identified river systems, and the individual dependent upon those river systems for subsistence.

**Comment 10-35:** DEIS does not recognize the subsistence way of life. If the pollock catch is reduced, it costs the fleet money. If salmon do not return to our rivers, subsistence fishermen do not have enough to eat. When the offshore fleet takes salmon without appropriate restraints, subsistence families from the Bering Sea to Canada pay the price. A qualitative analysis of impacts must be included in the analysis to accurately assess the impacts of the proposed action on Native populations.

**Response:** NMFS agreed that the analysis contained in the DEIS could be improved and, to that end, has developed an improved subsistence information section in the Final RIR in Sections 3.2 and 3.3. Note that NMFS cannot provide a community-level impact analysis for this action, due to the inability to directly link Chinook salmon bycatch to any particular natal stream (due to data limitations). The analysis assesses the amount of 'salmon saved' under each alternative scenario, by river system, but cannot go so far as to assess the number of Chinook salmon saved that would then be used by a particular user group (e.g., subsistence, commercial, recreational salmon fishermen). The Final RIR uses the best available information, which is provided and presented by region (RIR Section 3.3). This section provides extensive background information on the subsistence (and commercial and recreational) Chinook salmon fisheries in western Alaska river systems likely most affected by Chinook salmon bycatch.

**Comment10-36:** One weakness of the commercial fisheries catch data presented in the DEIS is that there is no distinction for Chinook caught in a directed fishery. This understates the potential impact of returning more Chinook to the nearshore environment were they could contribute to a directed Chinook fishery. The difference in value to the fisherman can be profound. For example on the Nushagak, in 2006 the average price for Chinook in the June directed fishery was \$2.50-3.50/lb depending on market, while for the year as a whole it averaged \$0.71/lb. Nearly all of the Chinook were caught incidentally in the sockeye fishery at far less value. In 2007, the RIR shows a commercial harvest of 51,350 Chinook, but there was essentially no directed fishery.

**Response:** NMFS acknowledges that the available commercial catch data does not differentiate between Chinook taken in a directed fishery versus incidentally in a directed fishery for another salmon species. As a result, the available data may, as the commenter asserts, understate the commercial value of Chinook salmon if they were all taken in a directed Chinook salmon fishery. This would be a fundamental problem if the analysis relied on the average price to value potential increases in commercial harvest of Chinook salmon. However, available genetic information does not allow estimation of AEQ Chinook salmon savings at the natal stream level of resolution. Thus, presently available scientific information does not allow estimation of potential increases in numbers of Chinook salmon that may be made available for harvest in commercial fisheries, much less whether they would be taken in a directed fishery or incidental to another fishery. As a result, it is not possible to estimate effects on commercial revenue. Thus, underestimation of potential value is not a problem in the analysis; however, it is an issue to be noted in the historical treatment of commercial Chinook salmon values contained in RIR Section 3.4. NMFS has included this annotation in the Final RIR in the opening paragraphs of Section 3.4, Commercial Chinook Salmon Fisheries by Region.

**Comment 10-37:** The Magnuson-Stevens Act requires that management "minimize bycatch to the extent practicable." A high Chinook salmon bycatch cap is not practicable for salmon-dependent communities. The DEIS focuses on what is practicable for the pollock sector. The document considers the cost to the pollock fleet if a bycatch cap causes the pollock fleet to forego some of the pollock allowable catch. But there is a stark contrast between wealth in the pollock fleet and small village economies.

Little consideration is given in the document to what is practicable for salmon-dependent villages. Enduring a situation in which there is not enough salmon for subsistence or small-scale commercial harvest, or failure to even meet Yukon River escapement to Canada, is not practicable for the villages. The cultural and economic costs are high to all people living a subsistence way of life along the rivers and especially the Yupik, Inupiaq and Athabaskan peoples who have thrived on the land for thousands of years in ways that are inseparable from natural resources including Chinook salmon. That this cannot be measured in monetary terms is not a reason to bypass the effect of continued interception of Chinook salmon in the pollock fishery. Any salmon that is allowed to be taken as bycatch at sea is a reallocation of those fish away from the rivers and the people who historically rely on them.

**Response:** Comment acknowledged. The EIS and RIR do not offer any final determination on practicability in terms of applying National Standard 9 to the alternatives under consideration or in conjunction with the balancing of all National Standards. Instead, the EIS and RIR endeavor to analyze all impacts from the alternatives in order to disclose such information to the public and provide the decision-makers with the necessary information to balance the National Standards and render a final decision.

NMFS appreciates the comment emphasizing the importance of Chinook salmon to subsistence users and their cultures. With respect to the practicability determination under National Standard 9, NMFS has promulgated guidelines which provide that a "determination of whether a conservation and management measure minimizes bycatch or bycatch mortality to the extent practicable, consistent with other national

standards and maximization of net benefits to the Nation, should consider" ten factors, three of which are: changes in the economic, social, or cultural value of fishing activities and non-consumptive uses of fishery resources; changes in the distribution of benefits and costs; and social effects. 50 C.F.R. § 600.350(d)(3)(i) (H)-(J). Further, those guidelines provide that, when faced with uncertainty, the "Councils should adhere to the precautionary approach . . ." Id. § 600.350(g)(3)(ii). Accordingly, the Council made this determination and considered each relevant factor when it took final action to recommend Alternative 5 as Amendment 91. Likewise, NMFS will make this determination and consider each relevant factor when making the decision to approve, partially approve, or disapprove Amendment 91 and issue the Record of Decision.

**Comment 10-38:** Not only does the DEIS offer no proof to support its assumption that it is taking subsistence fishermen longer to catch their subsistence harvest and that bycatch is the cause of any such delay, but the DEIS studiously ignores, and does not analyze, other factors that might be contributing to any slower subsistence harvest that may be occurring, such as food limitations, water pollution, habitat degradation, and ichthyophonous. Rather than examining these factors to determine if they are the real cause of any increased time required to take the subsistence harvest, the DEIS just assumes any problem is caused by the pollock fishery.

**Response:** The EIS and RIR do not assume that the Chinook salmon bycatch in the pollock fishery has caused an increase in the time required to harvest Chinook salmon for subsistence, nor does it explain the many factors involved in the amount of time a given subsistence user spends harvesting Chinook salmon. The EIS and RIR provide information that there is a relationship between Chinook salmon abundance and the length of time necessary to harvest salmon for subsistence as one factor in understanding the costs associated with subsistence harvests. The commenter is misinterpreting the description of existing conditions as an impacts analysis of the status quo level of bycatch. The document makes it clear that, based on existing information, we do not have a causal link between the number of salmon caught as bycatch and the annual in-river abundance of salmon which means we do not know how any given level of bycatch would change the amount of time necessary to harvest Chinook salmon. The EIS explains this uncertainty and provides the best available information. The EIS impacts analysis provides an estimate of the number of Chinook salmon saved by major river system under each alternative and the RIR discusses what that could potentially mean to the subsistence users.

However, NMFS recognized the the subsistence information in the DEIS should be augmented. To that end, NMFS has developed a reorganized subsistence information section that appears in the Final RIR in Sections 3.2 and 3.3. A draft of the new subsistence section was included, and provided to the Council, in the Preliminary Comment Analysis Report as Appendix 9.

**Comment 10-39:** The DEIS does not provide the basic data about how many subsistence fishermen actually have commercial salmon limited entry permits in order to support the assumption in the DEIS that subsistence fishermen could enter the commercial fishery if they could finish their subsistence harvest in less time. At the outset, the claim that this benefit exists hardly seems supportable when it is likely that eliminating the entire Chinook bycatch by the pollock fleet would increase the subsistence harvest by between one-tenth of a fish and 1.7 fish per household in the Norton Sound, Kuskokwim and Yukon regions, and by less than three fish per permit holder in Bristol Bay. The DEIS'S assumption of benefits is further eroded by the fact that a person can participate in the commercial salmon fishery only if that person holds a limited entry salmon commercial fishing permit. If one compares the number of subsistence households with the number of commercial fishing permits, one finds little support for the DEIS'S assumption that subsistence fishermen can shift into the commercial salmon fishery. And assuming 100% of the Chinook salmon bycatch stops, the DEIS does not explain how increasing the subsistence harvest by less than three fish per subsistence permit holder really shortens the time needed to complete the subsistence harvest for a subsistence fishermen.

**Response:** The commenter has failed to identify text in the RIR that asserts that "subsistence fishermen could enter the commercial fishery if they could finish their subsistence harvest in less time." The RIR identifies current subsistence fishing schedules and, using information from ADF&G annual management reports, identifies the fact that in many areas commercial and subsistence fishing openings do not occur simultaneously. To our knowledge, data linking subsistence fishing households with commercial limited entry permits does not presently exist. Furthermore, the commenter's assertion that this linkage is meaningful is not accurate for several reasons. First, it ignores the fact that each limited entry permit holder may have crew members, several in some cases, which may also be members of separate (from the limited entry license holder) subsistence use families. There is no data collection mechanism in place to document crew member participation by limited entry permit. Furthermore, the crew member's home address, as identified on the crew member license, may not be in close proximity to the location of the commercial and/or subsistence fishery they participate in. Second, the assertion ignores the reality that subsistence harvesting activities are highly collaborative. In extended families there may be several subsistence families working together and the funding of their subsistence harvesting activity (e.g. fuel and equipment costs) may be dependent on commercial fisheries revenue from a single limited entry permit holder, or even a single commercial crew member. For these reasons, the assertion that there is a direct relationship between limited entry licenses and numbers of subsistence families is without merit.

**Comment 10-40:** The DEIS, without explanation or analysis, states that Chinook bycatch reduction could be "quite important" to commercial fishermen. DEIS at 629. Given the minimal contribution of Chinook salmon to western Alaska commercial salmon fisheries, and the small amount of AEQ fish that would actually return to western Alaska, the DEIS'S optimism is without factual foundation. The DEIS assumes benefits will flow to commercial salmon fishermen and bases the bycatch reduction plan, in part, on that assumption. However, the DEIS contains no analysis to support that assumption. If the DEIS had done the analysis, the DEIS would have found the facts do not support the assumption that commercial salmon fishermen will benefit from restrictions on the pollock fishery. Apparently doubting whether the facts support its assumption, the strongest statement in the DEIS on this issue is that an increased number of in-river Chinook "may" enhance commercial fishery opportunities. DEIS at 629.

The assumption that commercial fishermen will benefit from Chinook salmon bycatch reduction fails for three reasons. First, the AEQ mortality by river system is so small that eliminating 100% of the Chinook bycatch in the pollock fishery will offer little benefit to commercial salmon fishermen. In fact, the increase in the number of fish taken by commercial fishermen would be less than one to under three fish annually per commercial fisherman depending on the area. This is hardly the economic boom assumed in the DEIS. Second, in many river systems commercial Chinook salmon fisheries "have not occurred in recent years." DEIS at 626. There can be no expectation that a commercial fishery will suddenly become a possibility if a bycatch reduction plan is implemented, particularly given the low numbers of additional Chinook that would return to rivers. Third, Chinook salmon is simply not a large contributor to the in-river commercial fishery and to the income of commercial fishermen relative to income from other salmon fisheries. Reductions in Chinook salmon bycatch in the pollock fishery will, even under the most optimistic hopes, have only limited effects on the income of in-river commercial fishermen. Even then, it is difficult to see how successful a commercial fishery for Chinook salmon could be given the high levels of ichthyophonous infestation in western Alaska rivers such as the Yukon.

**Response:** The commenter prefaces the argument challenging statements, contained in the RIR, regarding the potential importance of commercial Chinook salmon harvests in western Alaska with the statement "Given the minimal contribution of Chinook salmon to western Alaska commercial salmon fisheries..." NMFS disagrees with this assertion. The statement ignores the fact that historically the numbers and value of Chinook salmon taken in Western Alaska commercial fisheries have been considerably larger than at present. Further, the commercial value of Chinook salmon catches has

historically represented a large proportion of total commercial salmon fishery value in several regions. This fact is clearly documented in the Final RIR in Section 3.4.

RIR Chapter 3 depicts a trend of sharp declines in commercial Chinook salmon catches during the late 1990s and through the 2000s in all regions of Western Alaska except Bristol Bay. These declines coincide with increased salmon bycatch in the Bering Sea pollock fisheries and available genetic data has linked Chinook salmon taken in the Bering Sea pollock fishery with the major river systems of the Kuskokwim, Yukon, and Bristol Bay. A lack of genetic data precludes linkage to Norton Sound. Thus, the statement "Given the minimal contribution of Chinook salmon to western Alaska commercial salmon fisheries..." is incorrect in light of the factual historic information provided in the analysis.

The commenter goes on to say "...and the small amount of AEQ fish that would actually return to western Alaska, the DEIS'S optimism is without factual foundation." The analysis contained in the RIR Chapter 7 provides a comparison of the AEQ Chinook salmon savings, by river system, with the numbers of Chinook salmon caught in subsistence, commercial, and sport fisheries (See RIR Tables 7-5 through 7-8). The AEQ Chinook salmon savings estimates will, of course, show the highest numbers of salmon saved in years when the bycatch is highest, and considerably smaller numbers when bycatch is relatively low. A careful review of RIR Table 7-8 shows that in 2007, the highest bycatch year, the AEQ Chinook salmon savings for the Kuskokwim, Alaska Yukon, and Bristol Bay combined, under the most restrictive hard cap, would have been 37,345 fish, which is nearly 40 percent of the total commercial harvest of 96,483 Chinook salmon for that combined area in 2007. It is true that when disaggregated to river systems these numbers appear small. However, the fact remains that in the highest bycatch year in the analytical timeframe and under the most restrictive hard cap 40 percent of the commercial harvest in 2007 would have been returned to Western Alaska rivers as adults. Thus, the statement made by the commenter that "Given....and the small amount of AEQ fish that would actually return to western Alaska, the DEIS'S optimism is without factual foundation" is, itself, without factual foundation. Furthermore, 40 percent of the total commercial catch of Western Alaska Chinook salmon is clearly an "important" amount of potential commercial harvest. In light of the factual information provided above, NMFS disagrees with the assertion of failure on the three parts offered by the commenter.

**Comment 10-41:** The DEIS contains no analysis to support its assertion that if there were more Chinook salmon in Alaska's rivers, the time and resources expended by subsistence fishermen to meet their subsistence needs would be reduced, thus allowing subsistence fishermen to pursue other subsistence or income producing activities. DEIS at 531, ES 21. Given that the benefit of catching subsistence fish faster is the principal benefit relied upon to justify severe restrictions on the pollock fishery, it is curious that the DEIS offers no proof to support the existence of this benefit. The DEIS does not, for example, provide even the most basic data to show that subsistence fishermen are actually needing more time to catch their subsistence harvest, let alone that any such delay is caused by the loss of between one-tenth of a fish and three fish a year to pollock bycatch.

**Response:** The text included in the executive summary, states that "No subsistence fishery restriction occurred in the Kuskokwim, Yukon, or Bristol Bay from 2003 to 2007; however some fishermen reported that it took them longer to catch their needed number of Chinook salmon." This information is taken directly for ADF&G official run summaries and represents the official reporting of subsistence harvest conditions. It is logical to assume that if more time is needed to harvest needed subsistence catch that less time will be available to subsistence harvesters for other opportunities, such as in wage earning employment.

**Comment 10-42:** Adequately assess the full direct, indirect, and cumulative impacts to the subsistence way of life for western and Interior Alaska villages. Little attempt was made to address the impacts of the

alternatives on subsistence users. The ADF&G Subsistence Division would be an invaluable asset to help NMFS improve the significant deficiencies throughout the DEIS.

**Response:** NMFS agrees and provided a more complete description of subsistence users their Chinook harvest, and the significance of this fishery to western Alaska in the Final RIR. Subsistence uses of wild resources are defined in Alaska state law as 'noncommercial, customary, and traditional uses' for a variety of purposes, including: direct personal or family consumption; for the making and selling of handicraft articles out of non-edible byproducts of resources; and for the customary trade, barter, or sharing for personal or family consumption. The analysis has been revised to better emphasize that subsistence is a complex system that is tied to Alaska Native peoples food, traditions, and culture, and typically involves the community, not just the individual fisherman. We have developed a reorganized subsistence information section that appears in the Final RIR in Sections 3.2 and 3.3.

NMFS cannot provide community/village level impact analysis for this action, due to the inability to directly link Chinook salmon bycatch with in-river runs of Chinook in any particular community. The Final RIR uses the best available information, which is provided and presented by region (RIR Section 5.3). This section provides extensive background information on the subsistence (and commercial and recreational) Chinook salmon fisheries in western Alaska river systems likely most affected by Chinook salmon bycatch. The regions are based on the ADF&G management areas (Kotzebue, Norton Sound, Kuskokwim River/Bay, Yukon, and Bristol Bay). In addition, RIR Section 5.1 states that it is not possible with presently available information to determine the proportions of river-specific AEQ estimates of returning adult Chinook salmon that would be caught in subsistence fisheries (or commercial or recreational fisheries) in the various river systems of western Alaska. This section notes that while it is difficult to assess the specific impacts of additional AEQ Chinook to a given river system, it is reasonable to assume that any additional fish would benefit escapement and harvest.

**Comment 10-43:** moved to comment 1-6

**Comment 10-44:** How can any American defend giving Japan and Norway more fishing quotas than the local villages?

**Response:** This question is out of the scope of the management measures currently being considered. NMFS notes that this document is intended to provide decision-makers and the public with an evaluation of the predicted environmental, social, and economic effects of alternatives measure to minimize Chinook salmon bycatch in the Bering Sea pollock fishery.

### 9.11.5 Comments on the importance of salmon and existing conditions

NMFS acknowledges the following comments on the importance of Chinook salmon and the current status of the Chinook salmon resource and the individuals who rely on Chinook salmon.

- The 2008 Chinook salmon run was very poor on the Yukon River, as well as throughout Western Alaska. On the Yukon, subsistence fishing time was reduced by half in Alaska part way through the season, and people met 40 percent of less of their subsistence needs in some places. In Canada, subsistence (aboriginal) fishers voluntarily restricted themselves to half of their historic take. In one community these voluntary restrictions resulted in a total Chinook harvest of only 160 Chinook salmon. The aboriginal harvest for the entire Canadian portion of the run was 2,766 fish, based on preliminary data. There was no directed commercial Chinook salmon fishery on the Yukon in 2008, and the commercial chum fishery was delayed to allow Chinook salmon to pass through, reducing the chum salmon harvest as well. Despite these restrictions, estimated

Chinook salmon spawning escapement into Canada was only 32,700 fish, 27 percent below the Yukon River Panel agreed upon goal of 45,000 fish. The outlook for this coming summer is no better: ADF&G and U.S. Fish and Wildlife Service are preparing users for further subsistence restrictions in 2009, and have already stated that it is unlikely that a commercial Chinook salmon fishery will be allowed. Fishermen and women throughout the watershed are participating in teleconferences to develop management measures which can be used to restrict their own subsistence harvest to provide escapements to ensure health salmon runs in the future.

- Many Yukon River drainage fishers have been reluctant to consider in-river regulatory gear changes. When they see that, in 2007, approximately 29,000 Yukon River-bound Chinook salmon were harvested as bycatch in the BSAI pollock fishery. That bycatch amount equates to 57% of the total U.A. Chinook salmon subsistence harvest in the Yukon River, and exceeds the 2007 Canadian border passage mark/recapture estimate of 24,000 Chinook salmon. In 2008, the spawning escapement goal in Canada of not less than 45,000 Chinook was not met. The 2009 salmon run is projected to be very low, with restrictions on subsistence fishing and no commercial fishing likely.
- In the past, Chinook salmon provided not only for summer and fall subsistence harvest, but also as a source for jobs for many youth in villages in the region. Before 1998, commercial fishermen had harvest guidelines up to 225,000 Chinook salmon. Last year, there was not Chinook fishery. Commercial fishermen harvested approximately 4,000 Chinook only in incidental catches to the chum fishery. Before 1998, the subsistence fishermen would achieve their goals relatively quickly after the arrival of the Chinook salmon. Now, it takes longer due to the harvest windows and areas restrictions, which limits time available to pursue other critical activities essential to subsistence based life.
- A healthy and thriving salmon fishery is vital to the Native communities of the Yukon and Kuskokwim Rivers' traditional subsistence way of life. Chinook salmon is the major harvested fish for people of the Yukon and Kuskokwim Rivers. The Native villages of the area are among the poorest in the United States as measured by monetary income and jobs. The Lower Yukon and Lower Kuskokwim Rivers also support a small commercial salmon fishery that serves as a crucial income source for the people who live there. However, Chinook and other salmon fisheries are in decline on the Yukon River and the State has shut down the commercial fishery due to poor runs. As a result, the Yukon River communities have lost a major income source from commercial salmon fisheries.
- Subsistence users carry the burden of conservation, even though the causes of the salmon decline are definitely not the result of our subsistence users along the Yukon River. To our understanding, there may not be enough Chinook salmon for our subsistence users this coming summer. Since the mid 1980's, subsistence users have been first hand dealing with the task of rebuilding our salmon stocks by reducing the amount of salmon available for subsistence fishing.
- The subsistence and commercial in-river fishermen and their communities are incurring extreme expense from the increasing fishing restrictions, high fuel costs, and their decreasing catch per unit of effort from the pollock fishery's salmon bycatch. Rural villages are declining in population because of the increasing high cost of living in rural Alaskan communities. Couple these challenges with the declining size of the returning Chinook salmon and fewer large females reaching the spawning grounds and we may be looking at a serious conservation concern that may result in a serious burden on subsistence fishermen that they are unable to withstand.



Continuation of a subsistence way of life and the economic underpinnings of our villages depend on viable and sustainable salmon stocks.

- Salmon is an irreplaceable resource that must be protected by all means. The recent high salmon bycatch in the pollock fishery threaten salmon and the Alaska Native way of life. Salmon serves an important cultural and economic role in Alakanuk and throughout Western Alaska. Salmon provides a primary source of food for local residents, and the commercial salmon harvest provides the only means of income for many who live in the remote villages of the Yukon River.
- Chinook salmon are a fully allocated species, vitally important to subsistence, commercial, and recreational users throughout Alaska. They remain a cornerstone resource in meeting the needs of rural Alaskans, and have been the foundation of subsistence and commercial economies in remote Alaska for many generations.
- Significant reduction in bycatch is necessary to preserve the subsistence way of life. The incredibly high bycatch numbers associated with the pollock fishery in recent years is alarming to say the least. Bycatch of Chinook salmon threatens the western Alaska salmon populations and those that depend on these salmon to maintain their subsistence way of life as well as commercial harvests. Those in the western Alaska villages are witnessing a troublesome decline in what was once a sustainable subsistence harvest. Additionally, because of the decline, regulation of subsistence fisheries continues to tighten, increasing the difficulty for families to harvest salmon, especially in upriver villages. The continued interception of Chinook salmon in the Bering Sea will continue to keep these traditional fisheries depressed.

#### 9.11.6 Comments on consumers and markets

**Comment 10-45:** Pollock buyers have been willing and able to accept supply uncertainty due to changing biomass size, the type of uncertainty and risk associated with bycatch-related closures will likely cause some of the large end-users to shift usage from pollock to other species. Chapter 10 suggests that if the pollock fishery were shut down prematurely due to a hard bycatch cap or if the fishery were unable to catch the quota due to a large area closure, there would be a loss of revenue due to the forgone production, but that loss would be mitigated by an increase in price as a result of the reduced supply. This severely understates the negative impact of such a closure on the market for U.S.-produced pollock products. We believe strongly that a bycatch management system which substantially increases the risk that the fishery will be closed prior to reaching the quota with little or no advance notice removes the strongest advantage the fishery holds in world wild whitefish markets, the reliability of the supply. Without the confidence that the quota will be taken, large restaurant chains and large processors that produce breaded and battered products will be unwilling to enter into long-term agreements or create marketing campaigns or promotions that require a stable supply of raw material. Single-frozen pollock fillet blocks from the U.S. fishery will lose their current advantage in the marketplace and large customers who are unwilling to risk abruptly running out of product will convert to the more reliable supplies of aqua-cultured finfish or simply drop whitefish menu offerings altogether. The negative effect on prices and quantities demanded from the fishery would be dramatic-and perhaps permanent.

**Response:** It is not disputed that a reduction in harvest of pollock would have impacts on pollock product supply in domestic and export markets. The RIR qualitatively discusses the general implications for markets and consumers. However, presently available data and models do not allow estimation of consumer surplus and/or producer surplus in final product markets and these measures are the appropriate economic welfare measures to consider. See response to comment 10-99.

More importantly, the proposed action is not to close the pollock fishery it is to incentivize the avoidance of Chinook salmon bycatch and that is why the impacts are reported as potentially forgone revenue or revenue at risk, depending on alternative. The RIR does not identify these impact estimates as lost revenue specifically because mitigation of the impacts via harvesting behavior changes are expected as that is the point of incentivizing avoidance of prohibited species bycatch. Furthermore, the Council's preferred alternative, Alternative 5, modifies the strict hard cap formulations contained in Alternative 2 by including provisions for an industry managed IPA to reduce Chinook salmon bycatch to levels below the strict hard cap via industry derived incentives and a performance standard. Clearly, the Council's intent is to incentivize Chinook salmon bycatch avoidance in order to minimize bycatch and the hard cap used in the potentially forgone revenue analysis is one part of the incentive. The implication is that the pollock industry will change behavior so that they do not face all of the potential forgone revenue, and/or revenue at risk estimated in the analysis as direct losses in revenue due to direct contraction in pollock harvest.

**Comment 10-46:** Closure of the directed pollock fishery due to Chinook salmon bycatch regulations would deprive the U.S. and world of substantial quantities of high-quality, relatively low-cost protein. Assuming an average of four ounces of fish per meal, for every 100,000 mt of pollock lost, we forego protein for more than 250 million meals, or enough to feed the combined populations of Dallas, Detroit, Indianapolis, Seattle, San Francisco, and Anchorage one meal per week for an entire year. Source: National Marine Fisheries Service Processed Product Reports.

**Response:** It is not disputed that a reduction in harvest of pollock would have impacts on pollock product supply in domestic and export markets. The RIR qualitatively discusses the general implications for markets and consumers. However, presently available data and models do not allow estimation of consumer surplus and/or producer surplus in final product markets and these measures are the appropriate economic welfare measures to consider. See response to comment 10-99.

More importantly, the proposed action is not to close the pollock fishery it is to incentivize the avoidance of Chinook salmon bycatch and that is why the impacts are reported as **potentially** forgone revenue or revenue **at risk**, depending on alternative. The RIR does not identify these impact estimates as **lost** revenue specifically because mitigation of the impacts via harvesting behavior changes are expected as that is the point of incentivizing avoidance of prohibited species bycatch. Furthermore, Alternatives 4 and 5 modify the strict hard cap formulations contained in Alternative 2 by including provisions for an industry incentive plan to reduce Chinook salmon bycatch to levels below the hard cap via industry derived incentives. Clearly, the Council's intent is to incentivize Chinook salmon bycatch avoidance in order to reduce it and the hard cap used in the potentially forgone revenue analysis is one part of the incentive. The implication is that the pollock industry will change behavior so that they do not face all of the potential forgone revenue, and/or revenue at risk estimated in the analysis as direct losses in revenue due to direct contraction in pollock harvest.

One final response to this comment is in order. The RIR was developed in compliance with Executive Order 12866. The Executive Order specifies a cost-benefit analytical framework, either qualitatively or quantitatively where possible, and consideration of the implications for net national benefits. It is important to understand that the Office of Management and Budget has determined that effects on non-us citizens do not enter into the net national benefit calculation defined as the appropriate analytical metric in Executive Order 12866. Thus, implications on world markets, world food supply, and non-US consumers are not appropriate considerations in the analysis contained in the RIR.

**Comment 10-47:** The DEIS does not consider or evaluate the market implications of premature closures or the effects such closures would have on the U.S. balance of payments in seafood products. Nor does it consider the effect that such closures would have on the viability of members as reliable suppliers to the world market for seafood. The DEIS is devoid of such considerations even though food production and

seafood exports were principal objectives of Congress when the Magnuson Act was passed in 1976, and when the "maintenance of optimum yield on a continuing basis" requirement of National Standard 1 was first implemented.

**Response:** As discussed in response to comment 10-46, the appropriate metric for evaluation in a RIR is the cost-benefit metric with a consideration of effects on net national benefits. The U.S. Balance of Payments is an accounting metric that is outside the scope of the required economic analysis. And, as pointed out in the response to comment 10-46, the world market for seafood products is also not an appropriate consideration in an RIR. As to the viability of seafood suppliers, we reference the discussion in response to comment 10-46 regarding the intent of the Council to incentivize Chinook salmon bycatch avoidance as opposed to an intent to prematurely close the pollock fishery.

**Comment 10-48:** The DEIS fails to analyze the job loss and revenue implications of the market disruption that will occur because of additional bycatch restrictions. The DEIS ignores the fact that "forgone revenue" comes from forgone product - and forgone product means end use purchasers will need to secure alternative sources of supply. Forgone product of the magnitude envisioned by Alternatives 2-4 will cause end use purchasers to turn away from the Alaska market as a source of supply, multiplying the economic impacts and hardships caused by Alternatives 2-4. Again, the DEIS does not even recognize the issue, much less analyze it. The net result for Alaska, its workers, and the nation, is that Alaska's fish products will not be as desirable as they are today. Simple supply and demand economics means prices for Alaska's fish will fall. The well settled business principle that end users need assured supplies to support production lines and marketing programs means less demand and fewer purchase orders. Lower prices and less demand means fewer jobs. It also means lower revenue for those who remain in the fishery. Finally, it means lower revenue for CDQ communities and for other communities that depend on fish taxes. And absolutely none of these issues are considered in the DEIS.

**Response:** The statement that the "The DEIS ignores the fact that "forgone revenue" comes from forgone product - and forgone product means end use purchasers will need to secure alternative sources of supply" is a misstatement of fact. The EIS evaluates the effect of the alternatives on pollock harvest. The RIR then converts potential forgone pollock harvest to potential forgone revenue using the round weight equivalent first wholesale price per metric ton of retained pollock harvest (see response to comment 10-71 for more information on prices used in the analysis). Thus, the analysis addresses potential forgone revenue at the first wholesale product market level, which clearly identified potential effects on all first wholesale products derived from Bering Sea pollock.

As indicated in the response to comment 10-46, the proposed action incentivizes bycatch avoidance and identifies "potential" forgone revenue with the expectation that industry will attempt to mitigate these losses by avoiding bycatch. Thus, these impacts are worst case upper bound impacts and would only occur if industry does not modify harvesting behavior to avoid Chinook salmon bycatch. As such, the commenter's assertion of a cascading negative effect on pollock markets relies on a series of questionable assumptions. First, given the large size of the pollock fishery, it is no simple matter for world purchasers to "turn away" from Alaska pollock. It is just as likely that contraction in pollock supply will drive pollock prices up considerably. An increase in pollock prices were observed, for example, in 2007 when TAC was reduced and comments 10-85 have asserted significant price increases have occurred since 2005. Thus, it has been observed that contraction in pollock supply, as predicted by basic supply and demand economics, drives prices up, not the other way around. As a result, assertions of job losses due to reduced prices are questionable and NMFS does not agree with this highly assumptive projection of impacts in absence of consideration of the likelihood that industry will modify harvesting behavior to minimize Chinook salmon bycatch when faced with a binding constraint of a hard cap.

**Comment 10-49:** Forgone revenue does not capture the impact that unanticipated interruption in the production of pollock-based products would have on the market for the products produced by the nation's largest fishery or on the role that Alaska pollock currently plays as the "whitefish of choice" in seafood markets around the world. In terms of food production alone, every one thousand tons of forgone pollock catch equates to approximately 2.4 million meals of low-cost seafood that would otherwise be available to US and other consumers around the world. In terms of food production alone, every one thousand tons of forgone pollock catch equates to approximately 2.4 million meals of low-cost seafood that would otherwise be available to US and other consumers around the world. Based on recent catch and bycatch rates as depicted in the DEIS, the difference between a "hard" bycatch cap of 68,392 and a cap of 47,591 Chinook could result in hundreds of thousands of tons of forgone pollock harvest. To put that in perspective, each hundred thousand tons of forgone harvest represents enough raw material to provide every man, woman and child in Alaska a seafood dinner once a week for more than seven years. The forgone revenue analysis fails to disclose that such a stunning reduction in seafood production would result from the choice of one cap over the other. It must be remembered that seafood production is one of the most important objectives insofar as National Standard 1 of the Magnuson Stevens Act is concerned.

**Response:** The RIR does discuss market implications; however, presently available data and models do not allow estimation of consumer surplus and/or producer surplus in final product markets, and these measures are the appropriate economic welfare measures to consider. It must also be remembered that in balancing National Standard 1, the Council must consider National Standard 9 which requires minimization of bycatch to the extent practicable. It is up to the Council, and ultimately the Secretary of Commerce, to determine the practicable level of Chinook salmon bycatch reduction in consideration of all of the national standards.

NMFS disagrees with the characterization of potentially forgone pollock harvest as potential pollock consumption in Alaska. Very little pollock harvested in the Bering Sea is consumed in Alaska. Much of the product is exported, as the commenter has already confirmed in several related comments on importance of pollock in world markets. As has been pointed out in the response to comment 10-46, it is inappropriate for a RIR analysis to consider effects on pollock harvest that accrue to non-us citizens. Thus, this characterization is misleading at best as few Alaska resident consumers benefit directly from pollock production.

**Comment 10-50:** The DEIS ignores the fact that the U.S. exports close to \$1 billion of Bering Sea pollock products annually to countries around the world. "Forgone revenue" comes from less product, and fewer exports means an increased U.S. trade deficit. The DEIS does not analyze this issue.

**Response:** NMFS disagrees that the RIR ignores the importance of exports of pollock fishery products. RIR Section 2.3 provides data compiled by the Alaska Fisheries Science Center on the Market Disposition of Alaska Pollock, which includes discussion of exports. Furthermore, as discussed in response to comment 10-46, the appropriate metric for evaluation in a RIR is the cost-benefit metric with a consideration of effects on net national benefits. The U.S. trade deficit is an accounting metric that is outside the scope of the required economic analysis. And, as pointed out in the response to comment 10-46, the world market for seafood products is also not an appropriate consideration in an RIR.

**Comment 10-51:** On page 702, the reader is led to believe that welfare changes cannot be measured with current information about the demand for different fish species and products. Yet, for the past 30 years NMFS has collected and analyzed information about fish prices and the quantities consumed by the public. Indeed, NMFS is the nation's pre-eminent source for information about seafood markets and trade. The current version of the Economic Status of the Groundfish Fisheries Off Alaska, 2008, produced by the NMFS Alaska Fisheries Science Center, is approximately 300 pages and documents the prices paid and catch quantities landed for all groundfish off Alaska (Hiatt et al. 2008). The current Fisheries of the

United States 2007 (NMFS 2008) includes data and information on U.S. commercial fishery landings, world fisheries, U.S. production of processed fishery products, U.S. imports, U.S. exports, and the U.S. supply fishery products, including per-capita estimates of consumption and value added. It is not correct to state that welfare changes cannot be measured with the available information. The DEIS simply does not do the analysis.

**Response:** The ability to mathematically derive welfare measures is fundamentally dependent upon empirical data on, among others, input prices, costs, capital investment, debt service, consumer demand, sources of supply, market structure, substitutes and complements, measures of consumer responsiveness to changes in price, quantity, quality, income, tastes, and preferences. Exogenous factors also influence rigorous derivation of these welfare measures, such as, currency exchange rates, tariffs, political and economic instability. Very few of these necessary data are available to NMFS, at present. NMFS does not have data to estimate net impacts until such time the Council develops a socioeconomic data collection program that requires the industry to submit cost data under new MSA authority. At present, the analysts must employ methods and strategies predicated on extremely limited data and virtually non-existent economic modeling of these resources and uses.

**Comment 10-52:** The DEIS also fails to recognize, let alone analyze, the inflationary and consumer impact of "forgone revenue." Revenue is forgone because there is less product to sell. Basic supply and demand principles suggest the consumer is the victim in that the consumer will now pay higher prices.

**Response:** The RIR does discuss the potential for effects on consumers (RIR Section 6.3) and identifies that reductions in product supply will likely lead to inflationary pressures on prices, resulting in improvements in producer surplus that will, to an unknown extent, offset reduced consumer surplus. However, as pointed out in the response to comment 10-51, our ability to mathematically derive these changes in welfare measures is limited by a lack of data on industry costs. Both comments cite "basic supply and demand principles" for these assertions.

**Comment 10-53:** The DEIS provides even less information about changes in consumer welfare than it does about producer welfare. The only mention of consumer surplus is a brief summary of the results of several studies on the estimated values of subsistence and sport catches of salmon. DEIS at 532. Apparently, the results are dismissed simply because they show very low implicit values (consumer surplus) for subsistence and sport-caught salmon. The only mention of consumer benefits is the single occurrence within a brief discussion about costs to consumers. DEIS at 702. As such, the DEIS contains no information about the potential for and/or scale of the changes in consumer welfare that may accompany the bycatch management alternatives. DEIS at 702. In particular, the DEIS contains no mention of the suspected size of the changes in U.S. consumer welfare for any alternative of lower pollock catches, or how these changes might compare to changes in the welfare of salmon users due to assumed increases in Chinook salmon returns to western Alaska river systems.

The DEIS goes on to state that: The second part, corresponding to a reduction in consumer benefits because consumers have to pay higher prices for the fish they continue to buy, would be offset by a corresponding increase in revenues to industry (i.e., producers' surplus gains). While a loss to consumers, this is not a loss to society. It is a measure of the benefit that consumers used to enjoy, but that now accrues to industry in the form of increased prices and additional revenues. DEIS at 702. However the market conditions under which this assertion could be considered even approximately correct are so restrictive that the statement does nothing but mislead the public (e.g., see Just, Hueth, and Schmitz, Chapter 9 Multimarket Analysis and General Equilibrium Considerations).

**Response:** The RIR examines the few available studies that have attempted to value subsistence and sport caught catches using non-market analysis methods in Section 5.1. The RIR provides a clear reason why a "benefits transfer" approach is not appropriate in this case. The DEIS at page 532 stated:

"Unfortunately, the range of consumer surplus benefits found in the above mentioned studies could not be directly applied (e.g., via benefits transfer) to subsistence activity in western Alaska. This is largely because it is difficult to define a similar "trip" in western Alaska, due to differing transport modes (e.g., riverboat vs. car) and duration (e.g., a week or an opening vs. a day or a weekend). The results of these studies do, however, suggest the importance of subsistence salmon harvests to rural residents is higher than non-rural residents, and that subsistence harvest has a "market-based" economic equivalent value potentially as high as replacement cost. It is likely, however, that this "market-based" equivalent value estimate does not full capture the benefits subsistence users derive from the harvesting of salmon, especially in western Alaska. More comprehensive and accurate evaluation of these values must await future empirical research."

Note that the actual value of the consumer surplus estimates was not mentioned. Thus, the commenter's assertion that "the results were dismissed simply because they show very low implicit values (consumer surplus) for subsistence and sport-caught salmon" is not a statement of fact and seriously misrepresents what is contained in the RIR.

The remainder of the comment has previously been treated. See responses to comments 10-51, 10-52, and 10-83. However, this comment and others regarding the coverage of the importance of subsistence contained in DEIS Chapters 9 and 10 indicated a need to combine those treatments and clarify the importance of subsistence to Western Alaska residents. Initially that re-draft was provided in an appendix to the Preliminary CAR and was subsequently inserted in the Final RIR in Section 3.2 and 3.3. The new information contained in section 3.2 replaces the quoted text identified above and provides considerably expanded treatment of subsistence use.

#### **9.11.7 Comments on other costs**

**Comment 10-54:** Monitoring of hard caps on an individual vessel by vessel basis will require additional observers. DEIS should evaluate the number of extra observers needed to monitor vessel-specific salmon bycatch numbers and the costs associated with such extra coverage.

**Response:** The Final RIR in Section 6.4.1 evaluates the number of extra observers necessary under the alternatives and the costs associated with that extra coverage.

**Comment 10-55:** These economic costs, never examined by the DEIS, represent only one part of the overall costs of being forced to travel long distances to fish. The economic costs pale in comparison to the possible human costs. The Bering Sea is a dangerous place at any time of the year. In the winter "A" season, it is particularly forbidding. Forcing fishermen to travel farther in freezing temperatures and icing conditions increases the risk of injury and loss of life, issues the DEIS does not examine except to say this might be an issue. Human safety is indeed an issue, codified in National Standard 10 of the MSA, 16 U.S.C. § 1851(a)(10).

**Response:** The RIR does discuss vessel safety (Section 6.2) and NMFS acknowledges that human safety is of critical importance in the management of fisheries. Unfortunately, it is not possible to predict the changes in behavior that the industry might undertake to avoid Chinook salmon bycatch and the effect on vessel, and human, safety. It is important to recognize that the AFA pollock fishery is a rationalized

fishery operating under a cooperative structure. A careful review of the alternative set reveals that Alternatives 2, 4, and 5 contain provisions for cooperative level allocations, rollovers, and transfers. Thus, the alternative set includes measures to mitigate the possibility for a "race for fish" that could occur under unallocated bycatch caps. These provisions also provide some mitigation of the associated impacts on vessel, and human, safety that might exist if a "race for fish" were created due to a bycatch cap.

**Comment 10-56:** The costs and lost revenues that have been incurred by the pollock fleet over the years, and those that will be incurred to avoid and minimize Chinook bycatch in the future have not been adequately characterized in the DEIS. The industry has independently changed fishing practices in an effort to reduce salmon bycatch. They have developed the salmon excluder device for their trawl gear, and they have voluntarily closed areas even though such closures have reduced revenues and increased expenses. The industry, through Sea State, Inc., has developed a real-time monitoring system for the fleet. The harvesters have also developed and implemented all of the inter-cooperative agreements and continue to work on incentive plans to reduce Chinook bycatch, and they have participated in funding many other research projects. These costs and lost revenues have been and will continue to be huge.

**Response:** NMFS acknowledges the attempts that industry has made to avoid Chinook salmon bycatch. In fact, the Final RIR in Section 2.4 contains most of the content of the Sea State report to the Council on the operation of the Voluntary Rolling Hotspot System through 2007. Unfortunately, cost of production data with which to evaluate the costs to industry of their efforts to avoid Chinook salmon bycatch via the VRHS has not been provided by industry. Thus, it is not possible to estimate operating cost impacts of the VRHS system or of similar costs that might occur under the alternatives under consideration in the proposed action. NMFS acknowledges the work the industry has undertaken to develop, and maintain, the intercooperative agreements. And, while it is understood that those activities are not costless, the information needed to assess these costs, such as attorney fees and contracted bycatch monitoring fees are proprietary and have not been provided by industry. Finally, NMFS also acknowledges the work that has been done to develop salmon excluder devices. However, such devices are in experimental stage of development and it is not presently clear how effective they will be, how many vessel operators will voluntarily use them, and what average reduction in bycatch might be brought about via their use.

**Comment 10-57:** The DEIS suggests that pollock fishing vessels, catcher processors and/or motherships can mitigate losses imposed by salmon bycatch caps by shifting to other groundfish fisheries. DEIS at 692. The DEIS is wrong. The opportunities for pollock vessels to participate in non-pollock fisheries have been severely limited by (1) the "sideboard" restrictions imposed on pollock fishing vessels and processors by Section 211 of the AFA, 16 U.S.C. § 1851, Note, (2) restrictions imposed by the license limitation provisions of the BSAI Groundfish Fishery Management Plan, (3) the provisions of Amendments 80 and 85 that allocate opportunities to participate in non-pollock groundfish fisheries to vessels that do not also fish for pollock, and (4) Steller sea lion mitigation measures that establish seasonal restrictions on the fishery. The net effect of these "sideboards" and other restrictions is that pollock vessels and processors cannot make up lost pollock harvest by transferring to new groundfish fisheries.

**Response:** NMFS acknowledges that the ability of AFA pollock vessels to shift to other groundfish fisheries is limited by the cited regulatory amendments and sideboards. However, the RIR did not assert that pollock operations could switch to a new groundfish fishery. The RIR states that pollock vessels may mitigate by "... (3) switching to a different target fishery (e.g. yellow fin sole)." It is true that AFA pollock operations have very limited access to other groundfish fisheries in the Bering Sea and that situation has been acknowledged in the EIS and RIR.

**Comment 10-58:** The DEIS fails to consider the loss in value of the raw fish due to decreases in fish quality caused by the extended travel time that would be required to deliver the fish to the processor.

Generally, a catcher vessel seeks to deliver its fish within 48 hours of its first tow on the fishing grounds. If this delivery time is extended beyond 48 hours, the value of the fish is reduced because of the quality or grade of final product the processor can produce. This is particularly true in the "A" season when roe quality decreases with the additional time fish are held on the vessel.

**Response:** The Final RIR, in Section 6.3.1., Product Quality and Revenue Impact, contains a discussion of the implications of longer travel time on quality and value of pollock. That discussion notes that longer travel time may lead to reduced quality and value. Unfortunately, the potential impact cannot be addressed quantitatively because it is not possible to predict exactly how changes in harvesting behavior to avoid Chinook salmon bycatch will affect the spatial and temporal patterns of future pollock harvesting.

**Comment 10-59:** The DEIS assumes pollock fishermen will move to new pollock fishing grounds if Alternative 2, 3, or 4 is adopted. DEIS at 165. Since the pollock fleet is already fishing the most productive and economic areas, it goes without saying that Alternatives 2-4 will impose additional costs on the fleet, but the DEIS does not analyze these costs. Nor does it examine the impacts of increased energy consumption. The DEIS fails to consider the enormously increased energy usage that will flow from Alternatives 2-4 at a time when energy conservation is a national priority, and these additional energy costs do not include all the additional operational and repair costs associated with longer trips. The DEIS does not provide the basis for making an informed decision regarding these issues because the DEIS has no analysis of these issues.

**Response:** This comment response has been inserted in the Final RIR in Chapter 6, Pollock Industry Impact Analysis, to clarify the limitation of the analysis as well as the obligation of NMFS under the various legal mandates identified here. Quantitative estimation of the cost impacts of the proposed alternatives requires extensive data on operating costs, including, but not limited to, expenditures and consumption of fuel. However, the pollock fishing sectors operating in the U.S. EEZ off Alaska have, over many years, consistently (although, certainly not uniquely) refused to provide company level, much less operational level, cost data that would permit NMFS to empirically estimate the operational cost impacts on the sector, attributable to this proposed action. In the absence of these data, it is not possible to estimate cost effects, including increased fuel consumption. Thus, at present, the analysts must employ methods and strategies predicated on extremely limited data and virtually non-existent economic modeling of these resources and uses.

Confronted with these facts, NMFS is nonetheless legally obligated to analyze, to the fullest extent practicable, the benefits and costs (as well as their expected distribution) of the proposed management actions being considered. These mandates (e.g., E.O.12866, OMB Circular A-4, MSA) recognize and explicitly provide for adoption of qualitative analytical strategies and approaches to evaluating benefits and costs in the absence of fully adequate empirical data and quantitative models. The RIR provides a qualitative discussion of the potential effects on variable costs (Section 6.1.2) and provides information on rising fuel costs in western Alaska in recent years (RIR Figure 6-1). Thus, the RIR adheres to the requirements of the aforementioned mandates and does provide, using the best scientific information, a basis for making an informed decision.

### **9.11.8 Comments on pollock-dependent communities**

**Comment 10-60:** Salmon bycatch limits that prematurely close the pollock fishery or otherwise reduce landings and associated tax revenues will be felt throughout Alaska, but particularly in rural areas that depend on the pollock industry. Between 2000 and 2007, the two state fisheries taxes applied to the pollock fishery generated an average of \$9,875,000 in annual revenue to the State from landings in the Aleutians/Pribilof region alone. DEIS at 502, Table 10-4. Although the DEIS admits that implementation



of Alternative 2 could have resulted in lost tax revenue to the State of up to \$5.8 million in 2007, and that implementation of Alternative 4 could have resulted in lost tax revenue to the State of up to \$3.5 million in 2007 (Id. at 708, Table 10 - 114:709, Table 10-1 15), the DEIS makes no effort to examine the impacts on local governments and their residents of revenue reductions of this magnitude. Local governments provide a wide array of services including schools and public health programs. All of those programs could be at risk from limitations on the pollock harvest. And none of these consequences are considered in the DEIS.

**Response:** The commenter correctly identifies the available information on tax revenue impacts contained in the RIR. The Final RIR provides this information in Chapter 2 and Chapter 6. It is important to note that this information was gathered via special request from the Alaska Department of Revenue. NMFS requested a breakout of this data by community and/or ports. However, as stated in the RIR "Unfortunately, confidentiality restrictions do not allow tax data to be shown for specific ports or communities." The Alaska Department of Revenue simply will not release the pollock specific tax impact data contained in the RIR at anything other than the aggregated level shown. Thus, it is not possible to show community level tax effects.

**Comment 10-61:** The dependence of different communities on fish taxes to provide essential services to community residents will vary but, for many communities, it is very significant. Although the DEIS admits that these fishery dependent communities "rely heavily upon tax revenues associated with fishing activities" (DEIS at 705-706), the DEIS makes no effort to quantify or evaluate the impacts notwithstanding the fact that data is available. For example, in the City of Unalaska, the fishing industry accounts for over 90% of all jobs and, in FY 2006, the city's share of the two state fishery taxes plus the city's raw fish tax totaled \$11,371,533, or 43% of the city's general revenues. Northern Economics 2009 at 55. In Akutan, over 70% of the community's tax revenue is pollock related. In King Cove that number is 20% and in Sand Point it is 50%.

**Response:** As noted in the response to comment 10-60, it is not possible to disaggregate pollock fishery taxes to the community level without violating confidentiality restrictions. NMFS has identified the importance of these tax revenues at the regional level and has included estimated impacts to tax collections under the alternatives in the Final RIR in Section 6.11.4. NMFS does not dispute the importance of fishing industry jobs in dependent communities and has provided information compiled by ADOL on the seafood processing workforce and wage earnings in the Aleutian and Pribilof Islands region in the Final RIR in Section 6.11.1.

Analysis of potential employment effects is problematic for several reasons. First, employment data for pollock harvesting sectors is not systematically collected. Thus, it is not possible, with presently available data, to equate potentially forgone revenue estimates with employment impacts. Second, there is no systematic data collection underway to document shoreside expenditures in the support sectors. Thus, it is not possible to equate estimated potentially forgone revenue with shoreside expenditures and subsequent effects on the services and support sectors. Third, employment in shoreside plants, though estimated by ADOL and reported in the RIR is not reported specifically for pollock processing operations. Thus, it is difficult to determine the level of employment effects that might occur from potential contraction of the pollock fishery.

NMFS disagrees with the assertion that data available in "Northern Economics 2009" was available to the analysts. The referenced report is dated January of 2009. The DEIS was made available to the public in December of 2008 and, thus, was completed prior to the availability of the Northern Economics report. In addition, the Northern Economics report is an industry funded analysis that provides coverage of the aggregated groundfish fishery but not specifically of the pollock fishery. Thus, specific effects on, and associated with, the pollock fishery cannot be directly determined from the information provided in the

referenced report. Furthermore, the Northern Economics report is not published in a peer reviewed professional journal, and has not previously been vetted through, for example, the Council's Scientific and Statistical Committee. Thus, the input-output (multiplier analysis) modeling contained in the Northern Economics report does not meet agency requirements for peer review under the Data Quality Act and cannot be considered "best scientific information" without meeting peer review requirements.

**Comment 10-62:** A salmon bycatch cap that could close the Bering Sea pollock fishery will have significant economic impacts on Alaskan communities, particularly villages in rural areas that have no way to offset revenue losses from the closure of such a significant fish as pollock. The impact of a drop in fish harvests is amply demonstrated by what happened to the City of St. Paul in the Pribilof Islands when Bering Sea snow crab landings fell. In 1999, the operating revenue for St. Paul was \$11,672 per capita. When the snow crab fishery collapsed in 2000, St. Paul's operating revenue fell almost 50% to \$6,491 per capita. Northern Economics 2009 at 55. The impact of that revenue loss on the City and its residents was enormous and some of the effects are felt in the community even today.

**Response:** NMFS does not dispute that a contraction in fishery landing will have economic impacts on fishing communities. The analysis of potentially forgone revenue for the shoreside sector documents these potential effects. That analysis uses the total round weight equivalent first wholesale value derived from all pollock products processed by shoreside processors for each of the years analyzed divided by total retained tons of pollock harvested by catcher vessels delivering to shoreside processors. The price that results is inclusive of all processing value added to the first wholesale level by shoreside processing plants. Multiplication of this price by the potentially forgone pollock harvest estimated under the alternatives provides an estimate of impact that is inclusive of many community level impacts. In other words, the total value added at first wholesale level is inclusive of payment to labor and capital. It is difficult with available information to disaggregate those effects. NMFS acknowledges that the presentation of this information in the DEIS was not sufficiently clear and has expanded the community effects information for Council final action and in the Final RIR in Sections 5.6 and 6.11.

**Comment 10-63:** The DEIS makes no effort to examine the job losses that will occur because of lost revenues. It is elementary economics that when employers have less product to harvest, process, and sell (i.e., forgone revenue) they need fewer workers. Forgone revenue is not some abstract figure. It is a figure that means lost jobs. The DEIS, so concerned about increasing the subsistence harvest by one or two fish per household, ignores the fact that the price of that gain is that thousands of men and women will lose their jobs in the pollock industry and in the related and dependent support, service, and distribution sectors. And many of these people will be in economically stressed CDQ communities. The insensitivity of the DEIS to this aspect of Alternatives 2-4 is appalling. Having chosen to ignore the human impact of "forgone gross revenue," the DEIS also ignores the cascading impact of higher unemployment in terms of lower income tax revenues, reduced governmental services, increased unemployment compensation claims, and associated social costs.

**Response:** The proposed action is not to close the pollock fishery, it is to incentivize the avoidance of Chinook salmon bycatch and that is why the impacts are reported as **potentially** forgone revenue or revenue **at risk**, depending on alternative. The RIR does not identify these impact estimates as **lost** revenue specifically because mitigation of the impacts via harvesting behavior changes are expected as that is the point of incentivizing avoidance of prohibited species catch. Furthermore, Alternatives 4 and 5 modify the hard cap formulations contained in Alternative 2 by including provisions for an industry incentive plan to reduce Chinook salmon bycatch to levels below the strict hard cap via industry derived incentives. Clearly, the Council's intent is to incentivize Chinook salmon bycatch avoidance in order to reduce it and the hard cap used in the potentially forgone revenue analysis is one part of the incentive. The implication is that the pollock industry will change behavior so that they do not face all of the

potential forgone revenue, and/or revenue at risk estimated in the analysis as direct losses in revenue due to direct contraction in pollock harvest.

Analysis of potential employment effects is problematic for several reasons. First, employment data for pollock harvesting sectors is not systematically collected. Thus, it is not possible, with presently available data, to equate potentially forgone revenue estimates with employment impacts. Second, there is no systematic data collection underway to document shoreside expenditures in the support sectors. Thus, it is not possible to equate estimated potentially forgone revenue with shoreside expenditures and subsequent effects on the services and support sectors. Third, employment in shoreside plants, though estimated by ADOL and reported in the RIR, is not reported specifically for pollock processing operations. Thus, it is difficult to determine the level of employment effects that might occur from potential contraction of the pollock fishery.

The analysis of potential forgone revenue for the shoreside sectors uses value data, and hence prices, that are inclusive of many community level impacts. See response to comment 10-62. In other words, the total value added at first wholesale level is inclusive of payment to labor and capital. It is difficult with available information to disaggregate those effects. NMFS acknowledges that the presentation of this information in the DEIS is not sufficiently clear and has expand the discussion of community effects for Council final action and in the Final RIR in Section 5.6 and Section 6.11.

**Comment 10-64:** The FEIS should include an analysis of the financial impacts on the ability of stakeholders to repay loans. Banking institutions that provide financing to companies and vessels engaged in the Bering Sea pollock fishery will be impacted in the tens of millions of dollars. For banking institutions to continue financing fishing operations, vessels must be able to generate sufficient cash flow to service debt. Likewise, companies engaged in servicing the fleet look to banks to fund their operations until the fleet is able to repay them for services rendered. Depending on the option chosen, caps might result in forgone pollock harvest worth hundreds of millions of dollars to the pollock industry. Such losses would have significant impacts in terms of lost revenues, jobs, and other economic activity including banks.

**Response:** Financing of operations via various banking arrangements, such as loans and operational lines of credit, are wholly proprietary arrangements. Thus, it is not possible to assess potential impacts on these functions. Furthermore, the purpose of the proposed action is to minimize Chinook salmon bycatch, not to prematurely close the pollock fishery. To this end, the industry is expected to modify behavior to avoid Chinook salmon bycatch and, in so doing, mitigate potential forgone revenue. Further, reductions in pollock product supply may actually increase prices and total revenue, thereby improving the ability of pollock fishery participants to repay debt.

**Comment 10-65:** Support sector businesses in pollock-dependent communities could be devastated by a restrictive hard cap on Chinook bycatch that could potentially close the pollock fishery.

**Response:** The purpose of the proposed action is to minimize Chinook salmon bycatch, not to prematurely close the pollock fishery. To this end, the industry is expected to modify behavior to avoid Chinook salmon bycatch and, in so doing, mitigate potential forgone revenue. It is true that harvesting behavior changes may result in increased variable operating costs for pollock harvesting operations and such cost effects may actually result in greater shoreside support sector expenditures. NMFS acknowledges that the presentation of this information in the DEIS is not sufficiently clear and has expand the discussion of community effects for Council final action and in the Final RIR in Section 5.6 and Section 6.11.

**Comment 10-66:** The DEIS thoroughly analyzes the benefits of the proposed Chinook bycatch hard caps that are designed to provide additional fish for salmon fishermen in Western Alaska, however, the DEIS is altogether lacking in any meaningful analysis of the direct and indirect economic consequences that could cost hundreds of millions of dollars in lost revenues for pollock-dependent communities in Southwest Alaska and the State of Alaska. Expand the analysis of the preferred alternative to include a full cost benefit analysis of the impacts to all areas of western Alaska, including all fisheries-dependent communities and CDQ groups, before the Council takes final action on the proposed Chinook bycatch amendment.

**Response:** NMFS does not agree with the assertion that the "DEIS is altogether lacking in any meaningful analysis of the direct and indirect economic consequences that could cost hundreds of millions of dollars in lost revenues for pollock-dependent communities in Southwest Alaska and the State of Alaska."

Shoreside processing sector potential forgone revenue impacts are estimated in the RIR and include impacts inclusive of value added processing and associated payments to labor and capital within communities. This is because the price used to estimate impacts on the shoreside sector is inclusive of all value added processing, at shoreside plants, to the first wholesale level. See response to comment 10-71. Thus, it is important to note that the analysis does include shoreside processing impacts, just not at the port or community level. Unfortunately, confidentiality restrictions prevents providing shoreside sector impacts at the port or community level.

Analysis of potential employment effects within communities is problematic for several reasons. First, employment data for pollock harvesting sectors is not systematically collected. Thus, it is not possible, with presently available data, to equate potentially forgone revenue estimates with employment impacts. Second, there is no systematic data collection underway to document shoreside expenditures in the support sectors. Thus, it is not possible to equate estimated potentially forgone revenue with shoreside expenditures and subsequent effects on the services and support sectors. Third, employment in shoreside plants, though estimated by ADOL and reported in the RIR, is not reported specifically for pollock processing operations. Thus, it is difficult to determine the level of employment effects that might occur from potential contraction of the pollock fishery.

The RIR also contains available information on tax revenue impacts. It is important to note that this information was gathered via special request from the Alaska Department of Revenue. NMFS requested a breakout of this data by community and/or ports. However, as stated in the RIR, "Unfortunately, confidentiality restrictions do not allow tax data to be shown for specific ports or communities." The Alaska Department of Revenue simply will not release the pollock specific tax impact data contained in the RIR at anything other than the aggregated level shown. Thus, it is not possible to show community level tax effects, which would be a large component of state and local revenues the comments is asserting must be considered. NMFS has identified the importance of these tax revenues at the regional level and has included estimated of impacts to tax collections under the alternatives in Section 6.11.4 of the Final RIR.

**Comment 10-67:** The economic analysis must be expanded to consider the direct and indirect costs associated with each of the proposed alternatives before the Council takes final action. Specifically, the analysis should describe the impacts, in terms of lost revenues (including lost city and state tax revenue), jobs and other economic activity, for companies that provide goods and services to the pollock industry. Without a full understanding of the potential costs of the proposed alternatives, the Council will not have the information it needs to make an informed decision as to what the appropriate balance should be between the benefits that the proposed caps might provide to salmon fisheries on the one hand and the costs to the pollock fishermen and their related support industries on the other.

**Response:** As noted in the response to comment 10-60, it is not possible to disaggregate pollock fishery taxes to the community level without violating confidentiality restrictions. NMFS has identified the importance of these tax revenues at the regional level and has included estimated of impacts to tax collections under the alternatives in Section 6.11.4 of the Final RIR.

Analysis of potential employment effects is problematic for several reasons. See response to comment 10-66.

The purpose of the proposed action is to minimize Chinook salmon bycatch, not to prematurely close the pollock fishery. To this end, the industry is expected to modify behavior to avoid Chinook salmon bycatch and, in so doing, mitigate potential forgone revenue. It is true that harvesting behavior changes may result in increased variable operating costs for pollock harvesting operations and such cost effects may actually result in greater shoreside support sector expenditures. NMFS acknowledges that the presentation of this information in the DEIS is not sufficiently clear and has expand the discussion of community effects for Council final action and in the Final RIR in Section 5.6 and Section 6.11.

### 9.11.9 Comments on the balance of costs and benefits

**Comment 10-68:** Perhaps the most telling statement in the DEIS is the admission that the bycatch of Chinook salmon in the pollock fishery "may" be affecting stocks of western Alaska Chinook and associated subsistence, commercial and sport fisheries. DEIS at 625. In a 762 page document, the DEIS can only conclude there "may" be an effect. Had the DEIS done a complete analysis, it would have found that the adverse effects it assumes "may" exist are illusory or of no measurable significance. In stark contrast, the DEIS admits that the proposed restrictions on the pollock fishery will have clear and identifiable adverse impacts that reach up to \$500,000,000 in lost revenue. However, had the DEIS done a complete and accurate analysis, it would have found that these adverse economic impacts were significantly and measurably understated in the DEIS. The actual impact to the nation is well over \$1 billion. Had the DEIS done a complete analysis as required by NEPA, it would have found that these numbers mask the impact of job losses. Had the DEIS done a complete and accurate analysis, it would also have found that the proposed restrictions on the pollock fleet will impose severe hardships on economically disadvantaged CDQ communities, many residents of which find CDQ related jobs as an alternative to subsistence.

**Response:** The comment opens with a statement of fact. Based upon the best available scientific information, the most NMFS is able to assert is "that the bycatch of Chinook salmon in the pollock fishery 'may' be affecting stocks of western Alaska Chinook and associated subsistence, commercial, and sport fisheries." Our knowledge of these complex ecological, biological, and economic relationships remains incomplete at this time. That being said, these data deficiencies do not remove the Agency's obligation to use the "best available scientific information" to evaluate the alternatives. Whether impacts on western Alaska Chinook, attributable to bycatch losses in the pollock fisheries, are "illusory or of no measurable significance", as asserted by the commenter, is first and foremost a policy determination. Essentially, the Secretary of Commerce, with advice from the Council, must decide what society is "willing-to-pay", in terms of numbers of Chinook salmon lost to bycatch, to harvest the pollock TAC. Monetized, quantified, and/or qualitative descriptions of the suite of likely impacts (positive and negative) are mandated by law and executive order, to inform the decision-makers and the public of the expected trade-offs being contemplated. Armed with this analysis, and other relevant information, the Secretary of Commerce, on behalf of the American people, will weight the relative importance of competing needs and interests on making a final decision. What one group may regard as illusory or of no measurable significance, others may weight as critically important.

The comment misinterprets the numerical estimates of "potentially forgone gross revenues" and "gross revenues at risk", identified in the RIR. As explained therein, these gross estimates reflect highly simplified assumptions about the outcome of competing alternative bycatch rules. In a sense, they are intended to portray the "worst case" outcome if the pollock fishery was required to forgo a specific catch amount in response to each of the alternatives being examined. As the text clearly indicates, there is no expectation that this outcome will be realized as a result of any of the proposed alternatives under consideration. The RIR is very clear that these "techniques" are employed solely to provide a crude approximation of the first wholesale gross dollar value associated with unharvested pollock, by sector, processing mode, etc. The RIR states "As noted above, gross revenues at risk are forgone only if a fishing fleet is unable to modify its operations to accommodate the imposed (Chinook bycatch) limits and, thus, cannot make up displaced catches elsewhere ..." The analysis goes on to address the expected results of less extreme catch reduction levels, resulting from industry changes in operational practices (e.g., gear changes, location changes, timing changes). In every case, the RIR emphasizes that these estimates are incomplete, owing to the absence of industry cost and operational data, market information, pricing structure, etc. As "gross revenue" measures, these numerical results cannot even be interpreted as being indicative of the net impacts the industry could be expected to incur as a result of implementation of any one of the alternatives. The commenter's assertion that the "actual impact to the nation is well over \$1 billion", is simply not subject to objective evaluation, given available data.

Finally, NMFS disagrees that the RIR has not addressed the adverse impacts that may accrue to CDQ communities, although those impacts could have been more effectively presented. Thus, NMFS has revised the presentation of impacts on communities, including explicit treatment of CDQ communities in the Final RIR in Section 6.11.3.

**Comment 10-69:** Healthy pollock resources off Alaska provide benefits to the State of Alaska. Further work is needed to improve stock of origin and age distribution estimates of Chinook salmon taken in the pollock fishery and to better understand the relationship of Chinook salmon encounters in the pollock fishery with abundance.

**Response:** NMFS acknowledges the comment.

**Comment 10-70:** Given all that is missing from the putative analysis of costs and benefits contained in the analysis, it strains credulity to read that any action taken to reduce salmon bycatch in the pollock fishery" will result in an aggregate welfare improvement to society, offsetting any apparent welfare reduction in the retail/wholesale domestic seafood/fish products commercial marketplace." DEIS at 702.

**Response:** NMFS is the first to agree that the quality, quantity, and availability of reliable, verifiable, and consistent cost and benefit data, supported by empirical studies of key aspects of: (1) the commercial pollock fishery, (2) those of Chinook salmon users and uses, and (3) their intersection within the context of Chinook salmon bycatch in the Bering Sea pollock fishery, are severely limited. Notwithstanding these facts, NMFS is required by law to utilize the "best available data and information", supported by relevant theory, interpretation, and accepted practice, to prepare an objective analysis of the expected costs and benefits (and, in addition, their likely distribution) across users and uses. Whenever meaningful quantification of such benefits and costs can be made, NMFS has done so. When quantification is not feasible, all relevant costs and benefits must still be considered, even if only qualitatively. Only through a systematic and comprehensive accounting of every relevant economic and socioeconomic element of the proposed suite of actions can the public be informed of the trade-offs it is contemplating. That is, the RIR is intended to inform, to the fullest extent practicable, the public (and those charged with decision making on their behalf) of the costs and benefits that can be anticipated from each competing alternative action being considered... and to whom each is likely to accrue. NMFS believes it has prepared an analysis that

meets both the spirit and letter of this mandate. NMFS does acknowledge that portions of the analytical presentation would benefit from reorganization, and has undertaken these changes in the Final RIR.

#### 9.11.10 Comments on the forgone revenue analysis

**Comment 10-71:** The use of 2005 or 2006 prices in Chapter 10 significantly understates the value of the pollock fishery in Alaska. The market data, including wholesale price data, cited in Chapter 10 is taken from the "2007 Economic SAFE Report." Wholesale prices, and hence, the wholesale value of the fishery, are derived from product prices through 2005, or at best, 2006. Given that prices for fillets made from U.S. pollock have increased substantially since 2006, the use of 2005 or 2006 prices significantly understates the value of the pollock fishery in Alaska. The product market values used in Chapter 10 to calculate forgone revenues greatly understates recent pricing and consequently, even the limited forgone revenue analysis makes projections that are far below predicted actual losses. The DEIS's computations grossly underestimate the revenue loss to the pollock fishery caused by Alternatives 2-4.

**Response:** The analysis of potential forgone revenue has estimated the date on which the pollock fishery would have hit the various Chinook salmon bycatch caps in each of the years 2003-2007 in order to conduct a retrospective analysis to answer the question of what would have happened had the proposed action been in place in those years. The estimate of potentially forgone pollock harvest that results is then multiplied by a price to estimate potentially forgone revenue. Since the impact estimate is calculated in terms of the metric tons of pollock catch potentially forgone, it is necessary to use a price that is reflective of the total value of that catch. This process is necessarily complicated by the fact that pollock is processed into several product forms, not just fillet block, and is processed both at sea (CPs and Motherships) and in shoreside processing facilities that receive deliveries from Catcher Vessels. Thus, reported values in the offshore sector (CPs and Motherships) are inclusive of all processing value added to the first wholesale level, which is also the point of departure for export of pollock products. And, as has been pointed out in responses to comment 10-46, effects in export markets are not an appropriate consideration in a RIR. Thus, this is a logical level at which to value potential impacts because exports and effects on export markets is exogenous to this level of valuation. Further, potential welfare impacts in domestic markets cannot be determined with available data. See response to comment 10-83. Thus, first wholesale value is an appropriate value to capture the total quantifiable domestic market effect on potential forgone pollock harvest and revenue.

The analysis is complicated by the fact that deliveries to shoreside plants by Catcher Vessels are paid an ex-vessel price that is considerably less than, and thus not comparable to, the first wholesale value. To provide comparable first wholesale values for both the offshore and inshore sectors, the analysis does not use ex-vessel value and, instead, calculates a shoreside sector price that is inclusive of all processed value added. This is done by annually aggregating the total value of all pollock products processed by shoreside processors, as reported by industry to NMFS in the COAR report and compiled by the NMFS AFSC, and dividing that value by the total round weight of retained metric tons of pollock harvested by Catcher Vessels in the Bering Sea pollock fishery as reported in the e-landings catch accounting system.

This calculation provides a round weight equivalent first wholesale value for the shoreside sector that can be multiplied by estimates of potentially forgone pollock harvest, in round metric tons, to determine potentially forgone revenue at the first wholesale level. This is done annually from 2003 through 2006 in the RIR for each of the sectors and these prices are reported in Table 6-4. These are the prices that are applied by year for each year from 2003 through 2007. Note however, that the 2007 price was not yet available when the analysis was completed for the DEIS. Updated pricing data for 2007 has been obtained and was provided to the Council prior to final action and is updated in the the Final RIR in Chapter 6.

NMFS disagrees with the assertion that the prices used are outdated and underreport pollock impacts. The total valuation used in the analysis is that provided by industry. Further, it accounts for the first wholesale value of all product forms, not just the highest valued product forms. Finally, it is applied at a level that is consistent across sectors and complies with agency obligations under Executive Order 12866. This comment response has also been inserted into Final RIR in Section 6.6, Calculation of Potentially Forgone Pollock Revenue and Pollock Revenue at Risk, in order to clarify the methodology used in this analysis as well as to reiterate the agency's obligations under E.O 12866.

**Comment 10-72:** Chapter 10 relies on outdated wholesale values as the indicator of the value of the investment at risk in the pollock industry and ignores employment in the industry and support sectors, fuel costs, government benefits, and so on. The analysis uses out of date wholesale values when current values are available. Chapter 10 relies on outdated wholesale values as the indicator of the value of the investment at risk in the pollock industry and ignores employment in the industry and support sectors, fuel costs, government benefits, and so on. The analysis uses out of date wholesale values when current values are available. Chapter 10's estimate of forgone wholesale revenue understates the loss by 49%-69% because Chapter 10 uses prices that no longer reflect the marketplace. The Urner Barry Price Report, a widely respected and relied upon data source, shows that pollock fillet block prices have increased 49% since 2006 and 69% since 2005. This increase is confirmed by the rise in prices for exported product. The two largest European destinations for pollock fillets are Germany and the Netherlands. Between 2005 and 2008, the price of Alaska pollock fillets exported to the Netherlands FOB Alaska increased from \$0.99 to \$1.53 per pound (63%). In Germany, the price FOB Alaska increased in the same years from \$1.05 to 1.65 per pound (64%). These export prices understate the price of pollock fillet blocks because there are piece block and lower price items included. In other words, computation of forgone wholesale revenue is significantly underestimated because Chapter 10 fails to use the best and most current data. Even using outdated prices that underestimate forgone revenue by 49% - 69%, Chapter 10 states that the proposed bycatch reduction measures could cost up to \$500,000,000. DEIS at 656-687.

**Response:** See response to comments 10-71.

**Comment 10-73:** Pollock accounts for more than one-third of all U.S. fisheries landings by volume. Northern Economics Inc., *The Seafood Industry in Alaska's Economy*, January 2009 ("Northern Economics 2009") at ES 2, 18. In 2007, the first wholesale value of the pollock harvest was \$1.248 billion. DEIS at ES 2. However, this number does not reflect the multiplier effect of additional economic activity generated by the pollock fishery. The U.S. seafood industry generates an additional \$600,000 in direct and indirect outputs for every \$1 million of wholesale value. See, *The Seafood Industry in Alaska's Economy*, a recent report by Northern Economics, Inc, January 2009, at p. 44. Thus, the 2007 dollar value of Alaska's pollock fishery to the nation was \$2.029 billion. And that number understates current value because wholesale pollock prices increased in 2008. The forgone revenue analysis does not include any consideration of the economic multipliers that are associated with revenue generated from the fishing industry in Alaska.

**Response:** Executive Order 12866 clearly defines the cost-benefit framework of applied welfare economics as the appropriate analytical framework for assessing impacts of Federal regulations. Multiplier analysis is derived generally from models that account for the flow of transfers of goods and services in an economy and are not consistent with the cost-benefit theoretical framework. In fact, multiplier, or Input-Output analysis as it is called, is not identified in the Executive Order.

Further, the referenced multiplier estimate is not specific to the pollock fishery and is not specific to the Bering Sea region. It is a statewide multiplier that combines all sectors of the seafood industry together. In addition, the Northern Economics report is an industry funded analysis that provides coverage of the aggregated groundfish fishery but not specifically of the pollock fishery. Thus, specific effects on, and



associated with, the pollock fishery cannot be directly determined from the information provided in the referenced report. Furthermore, the Northern Economics report is not published in a peer reviewed professional journal, and has not previously been vetted through, for example, the Council's Scientific and Statistical Committee. Thus, the Northern Economics report does not meet agency requirements for peer review under the Data Quality Act and cannot be considered "best scientific information" without meeting peer review requirements.

**Comment 10-74:** The second reason Chapter 10 grossly underestimates the actual forgone revenue caused by adopting Alternatives 2-4 is that it does not include all the items that must be accounted for in calculating revenue loss to the nation. Chapter 10 completely ignores the multiplier effects of economic activity. Chapter 10 defines the term "forgone lost revenue" as the "revenue that the fleet, or sectors within it, would be allowed to earn..." DEIS at 656. This definition alone documents the incomplete and inadequate analysis in Chapter 10. Chapter 10 fails to recognize, and therefore excludes, the economic multipliers associated with this revenue loss. Applying these multipliers, the loss to the nation approaches \$1 billion using Chapter 10's outdated wholesale revenue calculations. Using current wholesale prices, the loss to the nation is well over \$1 billion.

**Response:** See response to comment 10-73.

**Comment 10-75:** Using forgone revenue as a measure of the economic impact of the premature closure of the BSAI pollock fishery is a gross over simplification that significantly understates the economic consequences of the proposed alternatives under consideration. fails to inform the Council, the agency and the public of the true distributional and other impacts that such closures would have on: seafood production, international trade and the US balance of payments, jobs, markets, consumers, support industries (e.g., banks, fuel suppliers, shipping companies, equipment manufacturers, cold storages, airlines, travel agencies and other such vendors who supply goods and services to the industry), invested capital, and a host of other consequences that would flow from such a closure.

**Response:** NMFS acknowledges that the use of potentially forgone first wholesale gross revenues is not an ideal reflection of the expected economic costs (or, conversely, benefits if the catch reduction can be mitigated by actions of the operator) attributable to the proposed changes in Chinook bycatch management. An explanation of the reasons for adopting this analytical approach is summarized in response to comment 10-83.

In order to estimate "profits", one must have data on costs, not simply revenues. NMFS does not have data to estimate net impacts until such time the Council develops a socioeconomic data collection program that requires the industry to submit cost data under new MSA authority. In the absence of these data, it is possible only to report empirical estimates of gross revenues. These gross receipts may, of course, not be, in any meaningful way, indicative of realized net revenues, but by default serve as the best available "proxy" for economic earnings in these fisheries. It must also be noted that "maximizing profit" is only one, among several possible motivating factors that may be "assumed" to define the objectives of a business enterprise.

Absent accurate, verifiable cost data and operational information for the pollock trawl fleets operating in the Bering Sea, gross revenue estimates constitute the "best" empirical economic information available. NMFS fully acknowledges that changes in first wholesale (or ex vessel, as appropriate) revenues cannot be regarded as indicative of net results. That said, these estimates represent the current limit of NMFS' ability to empirically characterize the expected sectoral outcome in the pollock fishery, attributable to changes in Chinook bycatch management under consideration. And, further, this explains the very extensive reliance upon, and systematic treatment of, "qualitative" cost and benefit analysis, reflected in the RIR, as required under E.O.12866.

**Comment 10-76:** Chapter 10 overstates the impact to pollock fleet as there is sufficient certainty about behavior changes. Industry will not sit passively when a hard cap is in place. In developing their ICAs, they have already identified a grocery list of options to help them remain below a hard cap. Clearly, savings will occur. Even in 2007, it may have been possible to stay under a 68,392 hard cap. To do that the industry would use the fixed A season closure, and not fish in late September and October. The increased closure areas in the 2008 VRHS system would have saved additional salmon, and that curtailing the fishery in late September probably wouldn't have been necessary. Adding a hard cap would surely have incentivized the fleet to not fish around the edges of closures, etc., which would make staying under the hard cap fairly easy for the average performer. More importantly, per Kochin et al., "A hard cap of 47,591 appears to be a reasonable balance between protecting Chinook salmon and allowing the pollock fishery to be harvested." We feel that taking additional measures to get down to that level, while difficult, is a reasonable goal. Mostly, substandard performers are going to have to mend their ways. The fleet will have to make Chinook avoidance a priority. Given the situation in western Alaska, we feel that is warranted.

**Response:** NMFS acknowledges the comment. NMFS disagrees with the comments that the estimates of impact to the pollock fleet are overstated. See response to comment 10-68.

**Comment 10-77:** Parts of the pollock industry may struggle to harvest their TAC share under the Alternative 4 47,591 hard cap, but most operators will be impacted far less than Chapter 10 suggests. Using a retrospective analysis similar to that used in Chapter 10, but assuming savings similar to those suggested by Kochin et al., shows that only seasons similar to 2006 and 2007 A seasons would have been challenging. A 47,591 hard cap would focus the necessary minds on the problem of Chinook bycatch and the likelihood of forgone harvest is low.

**Response:** The analysis of impacts of Alternative 4 and Alternative 5, in terms of potentially forgone revenue is presented in the Final RIR in Table 6-26 and 6-27. This analysis shows, as the commenter has pointed out, that there are potential impacts to the A season pollock fishery in 2003, 2006, and 2007. In the B season, potential impacts are spread across 2004, 2005, 2006 and 2007, depending on rollover provisions. As discussed in the response to comment 10-46, the proposed action is not to close the pollock fishery it is to incentivize the avoidance of Chinook salmon bycatch and that is why the impacts are reported as potentially forgone revenue or revenue at risk, depending on alternative. The RIR does not identify these impact estimates as lost revenue specifically because mitigation of the impacts via harvesting behavior changes are expected as that is the point of incentivizing avoidance of prohibited species bycatch.

**Comment 10-78:** The pollock industry will react to a hard cap by mending their behavior. The better performing cooperatives do enough better than the average that their losses would be far less than their prorata share of the Chinook salmon bycatch. The worst performers should be able to match the best.

**Response:** NMFS acknowledges the comment.

**Comment 10-79:** The industry will make considerable efforts to avoid Chinook when faced with a hard cap. Using historic bycatch with no savings due to avoidance measures greatly overstates the impact of a hard cap. The industry could have stayed under a hard cap of 68,600 if they'd had the current VRHS system, including the fixed A season closure in place, and had not fished in October.

**Response:** The analytical timeframe of 2003 through 2007 was chosen because it represents a range of Chinook salmon bycatch conditions that accurately represent the status quo conditions. Those status quo conditions include observed high levels of Chinook salmon bycatch under present regulations that provide an exemption to Chinook salmon savings area closures for operators that participate in the VRHS. The

analytical period encompasses years when the VHRS was in place, either via industry initiative, via an experimental fishery, or as a formal program under present regulations. Thus, NMFS does not agree with the implication that the analysis did not include effects of the VRHS.

**Comment 10-80:** While we recognize the limits the analysts must deal with, using gross wholesale value for any forgone harvest as the primary metric greatly overstates the impact of forgone harvest. Earnings Before Interest, Taxes, Depreciation and Amortization or EBITDA per marginal ton is far more useful for evaluating the impacts to the direct participants. If a measure of impact to indirect participants is needed that should be developed separately.

**Response:** EBITDA is a measure of net income calculated by subtracting expenses (excluding tax, interest, depreciation, and amortization), from revenue. Thus, calculating EBITDA requires information on cost of production, which is not available for the pollock fishery. NMFS does not necessarily disagree that, were cost data available, the EBITDA measures would be a potential representation of effects on net income. However, it is also important to recognize that, as discussed in the response to comment 10-46, the proposed action is not to close the pollock fishery it is to incentivize the avoidance of Chinook salmon bycatch and that is why the impacts are reported as potentially forgone revenue or revenue at risk, depending on alternative. The RIR does not identify these impact estimates as lost revenue specifically because mitigation of the impacts via harvesting behavior changes are expected as that is the point of incentivizing avoidance of prohibited species bycatch. Thus, NMFS does not agree with the assertion that the analysis overstates impacts.

**Comment 10-81:** The "forgone revenue" test in Chapter 10 is simply inadequate to inform the Council of the economic consequences that would flow from the adoption of a cap that the industry cannot practicably accommodate the "practicability" test imposed by National Standard 9's bycatch reduction requirement. The Guidelines for National Standard 9 specifically require that consideration be given to "Changes in the distribution of benefits and costs" in determining whether or not bycatch reduction measures are "practicable" (See, National Standard Guidelines, 50 CFR. 600.350 (3)(1)). The forgone revenue test does not enable the Council to make such determinations.

**Response:** NMFS's guidelines for National Standard 9 provides that any determination of whether a conservation and management measure minimizes bycatch or bycatch mortality to the extent practicable should consider 10 factors, one of which is the "Changes in the distribution of benefits and costs." 50 C.F.R. § 600.350(d)(3)(i) (I). The other factors include:

population effects for the bycatch species; ecological effects due to changes in the bycatch of that species (effects on other species in the ecosystem); changes in the bycatch of other species of fish and the resulting population and ecosystem effects; effects on marine mammals and birds; changes in fishing, processing, disposal, and marketing costs; changes in fishing practices and behavior of fishermen; changes in research, administration, and enforcement costs and management effectiveness; changes in the economic, social, or cultural value of fishing activities and non-consumptive uses of fishery resources; and social effects.

NMFS acknowledges that the use of potentially forgone first wholesale gross revenues is not an ideal reflection of the expected economic costs (or, conversely, benefits if the catch reduction can be mitigated by actions of the operator) attributable to the proposed alternatives. An explanation of the reasons for adopting this analytical approach is summarized in response to comment 10-83.

In order to estimate "profits", one must have data on costs, not simply revenues. NMFS does not have data to estimate net impacts until such time the Council develops a socioeconomic data collection program that requires the industry to submit cost data under new MSA authority. These gross receipts

may, of course, not be, in any meaningful way, indicative of realized net revenues, but by default serve as the best available "proxy" for economic earnings in these fisheries.

It must also be noted that "maximizing profit" is only one, among several possible motivating factors that may be "assumed" to define the objectives of a business enterprise. The RIR is very clear that these "techniques" are employed solely to provide a crude approximation of the first wholesale gross dollar value associated with unharvested pollock, by sector, processing mode, etc. In Section 6.6, the Final RIR text states "As noted above, gross revenues at risk are forgone only if a fishing fleet is unable to modify its operations to accommodate the imposed (Chinook bycatch) limits and, thus, cannot make up displaced catches elsewhere ..." The analysis goes on to address the expected results of less extreme catch reduction levels, resulting from industry changes in operational practices (e.g., gear changes, location changes, timing changes). In every case, the RIR emphasizes that these estimates are incomplete, owing to the absence of industry cost and operational data, market information, pricing structure, etc. As "gross revenue" measures, these numerical results cannot even be interpreted as being indicative of the net impacts the industry could be expected to incur as a result of implementation of any one of the several bycatch alternatives.

In addition, the proposed action is not intended to close the pollock fishery; it is intended to minimize Chinook salmon bycatch and that is why the impacts are reported as potentially forgone revenue or revenue at risk, depending on alternative. The RIR does not identify these impact estimates as lost revenue specifically because mitigation of the impacts via harvesting behavior changes are expected as that is the point of incentivizing avoidance of prohibited species bycatch. Furthermore, Alternatives 4 and 5 modify the hard cap formulations contained in Alternative 2 by including provisions for an industry incentive plan to give the industry flexibility in complying with the hard cap. Clearly, the Council's intent is to incentivize Chinook salmon bycatch avoidance in order to minimize it to the extent practicable and the hard cap used in the potentially forgone revenue analysis is one part of the incentive. The implication is that the pollock industry will change behavior so that they do not face all of the potential forgone revenue, and/or revenue at risk estimated in the analysis as direct losses in revenue due to direct contraction in pollock harvest.

Absent accurate, verifiable cost data and operational information for the pollock trawl fleets operating in the Bering Sea, gross revenue estimates constitute the "best" empirical economic information available. NMFS fully acknowledges that changes in first wholesale (or ex vessel, as appropriate) revenues cannot be regarded as indicative of net results. That said, these estimates represent the current limit of NMFS' ability to empirically characterize the expected sectoral outcome in the pollock fishery, attributable to the alternatives under consideration. And, further, this explains the very extensive reliance upon, and systematic treatment of, "qualitative" cost and benefit analysis, reflected in the RIR, as required under E.O.12866.

**Comment 10-82:** By assuming no change in behavior on the part of the pollock fleet in response to possible closure before the TAC is harvested, the methodology is patently false, and this is explicitly recognized in the DEIS. Citing a lack of good data, however, the DEIS refuses to explore the impacts of a reasonable range of increased costs of the fleet of catch all or most of the TAC. Instead, the DEIS offers an approach that systematically exaggerates the costs of bycatch reduction by a very large, but indeterminate amount, and ultimately mislead any effort to understand the impacts of the alternatives.

**Response:** The comment misinterprets the numerical estimates of "potentially forgone gross revenues" and "gross revenues at risk", identified in the RIR. As explained therein, these gross estimates reflect highly simplified assumptions about the outcome of competing alternatives. In a sense, they are intended to portray the "worst case" outcome if the pollock fishery was required to forgo a specific catch amount in response to each of the Chinook bycatch prohibition actions being examined. As the text clearly

indicates, there is no expectation that this outcome will be realized as a result of any of the proposed alternatives under consideration. The RIR is very clear that these "techniques" are employed solely to provide a crude approximation of the first wholesale gross dollar value associated with unharvested pollock, by sector, processing mode, etc. In Section 6.6, the Final RIR states "As noted above, gross revenues at risk are forgone only if a fishing fleet is unable to modify its operations to accommodate the imposed (Chinook bycatch) limits and, thus, cannot make up displaced catches elsewhere ..." The analysis goes on to address the expected results of less extreme catch reduction levels, resulting from industry changes in operational practices (e.g., gear changes, location changes, timing changes). In every case, the RIR emphasizes that these estimates are incomplete, owing to the absence of industry cost and operational data, market information, pricing structure, etc. As "gross revenue" measures, these numerical results cannot even be interpreted as being indicative of the net impacts the industry could be expected to incur as a result of implementation of any one of the several bycatch alternatives.

**Comment 10-83:** The purpose of the DEIS is to provide decision-makers and the public with an evaluation of the environmental, social, and economic effects of alternative measures to minimize Chinook salmon bycatch in the Bering Sea pollock fishery. As such, its theoretical basis and methods should correspond to those generally accepted and employed by practitioners of applied welfare economics. The main components of welfare economics can be summarized as the concepts of producer and consumer welfare and the development of methods for their measurement. Producer welfare concepts include producer surplus, economic rent, and profits. Consumer welfare concepts include primarily product demand curves, consumer willingness to pay, and consumer surplus. The DEIS contains very little of substance concerning these concepts and their measurement. On these grounds alone, it simply cannot be considered a sufficient or satisfactory accounting of the changes in producer and consumer welfare that are likely to accompany the alternative management measures contemplated to reduce Chinook salmon bycatch. It provides very little if any useful input into the policy-making process as regards potential welfare changes to U.S. citizens.

**Response:** NMFS acknowledges the absence of empirical estimates of consumer surplus and producer surplus changes that might be expected in response to one or another of the suite of proposed Chinook bycatch management actions. The ability to mathematically derive these welfare measures is fundamentally dependent upon empirical data on, among others, input prices, costs, capital investment, debt service, consumer demand, sources of supply, market structure, substitutes and complements, measures of consumer responsiveness to changes in price, quantity, quality, income, tastes, and preferences. Exogenous factors also influence rigorous derivation of these welfare measures, such as, currency exchange rates, tariffs, political and economic instability. Very few of these necessary data are available to NMFS, at present. Similarly, economic modeling, specific to Chinook bycatch in the Bering Sea pollock fishery, is also presently unavailable, although work is underway at NMFS AFSC on aspects of these analytical needs. NMFS does not have data to estimate net impacts until such time the Council develops a socioeconomic data collection program that requires the industry to submit cost data under new MSA authority. At present, the analysts must employ methods and strategies predicated on extremely limited data and virtually non-existent economic modeling of these resources and uses.

Confronted with these facts, NMFS is nonetheless legally obligated to analyze, to the fullest extent practicable, the benefits and costs (as well as their expected distribution) of the proposed management actions being considered. These mandates (e.g., E.O.12866, OMB Circular A-4, MSA) recognize and explicitly provide for adoption of analytical strategies and approaches to evaluating benefits and costs in the absence of fully adequate empirical data and quantitative models. These provisions can be found in the introductory paragraphs of the RIR, describing Executive Order 12866 procedural requirements. The subject RIR adheres to these requirements.

**Comment 10-84:** The DEIS adopts forgone pollock revenue as its measure of the costs and benefits to the pollock fishery of the alternative bycatch management options under consideration. Adoption of forgone pollock revenue as a measure of costs and benefits is misleading because the measure is neither a cost nor a benefit. Additionally, this measure bears no direct relationship to generally accepted concepts of producer welfare that have been in use since the 1940s.

**Response:** NMFS acknowledges that the use of forgone first wholesale gross revenues is not an ideal reflection of the expected economic costs (or, conversely, benefits if the catch reduction can be mitigated by actions of the operator) attributable to the proposed changes in Chinook bycatch management. An explanation of the reasons for adopting this analytical approach is summarized in response to comment 10-83. Absent accurate, verifiable cost data and operational information for the pollock trawl fleets operating in the Bering Sea, gross revenue estimates constitute the "best" empirical economic information available. NMFS fully acknowledges that changes in first wholesale (or ex vessel, as appropriate) revenues cannot be regarded as indicative of net results. That said, these estimates represent the current limit of NMFS' ability to empirically characterize the expected sectoral outcome in the pollock fishery, attributable to the alternatives under consideration. And, further, this explains the very extensive reliance upon, and systematic treatment of, "qualitative" cost and benefit analysis, reflected in the RIR, as required under E.O.12866.

**Comment 10-85:** Even the most introductory text on welfare economics will point to profits as the most obvious measure of producer welfare, given that maximizing profit is the assumed objective of any business enterprise. No discussion of pollock producer profits or their relationship to forgone revenues appears in the DEIS. Evidently it is the opinion of the DEIS that the statement on page 264 is sufficient to support the omission of any serious discussion of producer welfare concepts and changes other than forgone pollock revenues.

**Response:** NMFS notes that even the most introductory text on welfare economics will also recognize that, in order to estimate "profits", one must have data on costs, not simply revenues. NMFS does not have data to estimate net impacts until such time the Council develops a socioeconomic data collection program that requires the industry to submit cost data under new MSA authority. In the absence of these data, it is possible only to report empirical estimates of gross revenues. These gross receipts may, of course, not be, in any meaningful way, indicative of realized net revenues, but by default serve as the best available "proxy" for economic earnings in these fisheries.

It must also be noted that "maximizing profit" is only one, among several possible motivating factors that may be "assumed" to define the objectives of a business enterprise.

**Comment 10-86:** The discussion of variable cost changes in the DEIS contains no discussion of the concept of rent as it relates to changes in producer welfare. DEIS at 695-697. An alternative to profit, defined by Marshall as the excess of gross receipts over their prime cost --- that is, over the extra cost that the firm incurs in order to produce those things which it could have escaped if it had not produced them, is termed rent. Marshall, A., Principles of Economics, 1930. The concept is called rent because it is a rent on fixed factors employed by the firm but, unlike factor rent, may not persist over a long period of time. Specifically, rent is defined as the excess of gross receipts over total variable costs. Marshall went on to suggest the area below the price line and above the supply curve, commonly called producer surplus, as a measure of this benefit.

**Response:** The comment correctly identifies the concept of "rents" (also termed quasi-rent) in the context of marginal productivity theory. Quantitative estimation of rents requires comparison of a firm's gross revenues and its costs. As the commenter also notes, the graphic representation of this economic concept is approximated (at least under specific assumptions) by the area above the supply curve, below

the price line (i.e., producer's surplus). As has been explained in the RIR, and treated elsewhere in the response to comments, fixed and variable cost data are not available for use in this impact analysis. Absent firm-level cost data, empirical estimation of changes in producer's surplus, or quasi-rents, or the Marshallian expression of "rent" (referenced in the comment), is not possible. The RIR does, notwithstanding the empirical limits on estimation, explicitly treat the topic of "producer's surplus" impacts and their relevance to an evaluation of the Chinook bycatch reduction action alternatives. Therefore, NMFS finds that the absence of an explicit use of the term "rents" does not constitute a deficiency in the document.

**Comment 10-87:** If the DEIS had informed the public as to the nature and composition of producer welfare measures, then it might have been discovered that the pollock CDQ groups collect royalty payments from the lease of pollock harvest privileges, and that these royalty payments could be used as a basis for approximating changes in producer welfare (profits or rent) due to the alternative management measures. A very simple assumption in this regard would be that producer rents are approximately twice the annual per-ton pollock lease values received by the CDQ groups (i.e., it could be assumed that a competitive negotiation leads to an approximate splitting of the rents). NMFS has access to information on pollock lease values received by the CDQ groups to fulfill its responsibilities as regards CDQ program administration and oversight. The advantage of this approach is that it does not mislead the public by (1) declaring that a revenue is a cost, and (2) stating that the analysis is based on the best available science and data.

**Response:** The commenter makes an interesting observation. However, contrary to the assertion that NMFS has access to CDQ pollock lease data, the agency actually received information about royalties paid, by species or species group, for the CDQ allocations only until 2005. NMFS lost the authority to require the accurate submission of annual reports that provided this specific information, as a result of the 2006 amendments to the Magnuson-Stevens Act. For 2006 and beyond, NMFS has been limited to reliance upon unverifiable information about royalties, published by the CDQ entities in annual reports prepared primarily for residents of the member communities. These annual reports are available to the public. Some of the CDQ entities choose to include specific information about royalties, while others choose not to provide this level of detail in their annual reports.

On the technical reasoning presented in the comment, NMFS agrees that, if consistent, comprehensive, and reliable data were currently available, CDQ royalty payments might be employed as a baseline "proxy" from which to extrapolate rents, although only within the CDQ-portion of the pollock directed fishery. It is less clear that these results, were they amenable to estimation, would be generalizable across the majority of the pollock fishery (i.e., the non-CDQ seasons). Historically, CDQ allocations have been available for harvest during periods and in areas not open to non-CDQ operations. Precisely how these factors would impact accrual of rents is, by-in-large, purely speculative. It also suggests that the use of royalty payments to approximate resource rents could, under the best of circumstances, only inform one of the gross magnitude of "rents" uniquely attributable to CDQ pollock harvests in that time period/area. That is, if CDQ pollock is taken where and when non-CDQ fishing is closed, it could be argued, its value (and, thus, any rent generated) is not generalizable to periods when commercial fishing is occurring. While this represents an interesting hypothesis to contemplate, empirical evaluation would require data which are not currently available for use in this analysis.

NMFS also recognizes that fractional ownership interests (and other forms of "affiliation") are not well documented in available data, making interpretation of the "selectively" (and wholly voluntarily) reported CDQ royalty payment information difficult to objectively assess. Nonetheless, to better inform the decision making process, NMFS prepared additional background information on the CDQ groups, their ownership interests in the pollock fishery, their royalty revenue history, and an assessment of how CDQ

royalties may be affected by the proposed action. The additional CDQ information is contained the Final RIR in Sections 2.6 and 6.11.3.

**Comment 10-88:** Although changes in producer profits are a useful measure of changes in producer welfare for many regulatory changes, this is not the case for a policy change that prevents a firm from producing during a period. In such case, a firm would be willing to pay more than its current profits to remain in production because its fixed costs cannot be avoided even if production is shut down. The DEIS discussion regarding fixed costs contains no discussion of this concept as it relates to changes in producer welfare. DIES at 693.

**Response:** NMFS agrees that regulatory closure of the pollock fishery during a period when fishing would otherwise voluntarily occur requires an operator to incur the full fixed cost of that period of inactivity. This outcome represents precisely the economic incentive to avoid Chinook bycatch in the pollock fishery that the Council envisioned for this action. A more elaborate treatment of the theory of production under output constraints is unnecessary.

Fundamentally, it does not matter whether, as the comment asserts, "... a firm would be willing to pay more than its current profits to remain in production...", if it fails to remain under the Chinook bycatch cap. In effect, society has expressed its "willingness-to-pay" (i.e., its maximum tolerance for losses of PSC to bycatch) as a fixed "cap" on Chinook bycatch mortality. If a firm (or, as appropriate, sector, industry) exceeds that threshold, it must cease operation, incurring whatever costs (e.g., fixed, variable, penalties, fines) that may accrue, no matter what the "price it would be willing to pay to continue operation". This is, after all, the purpose of PSC limits and, in the present context, the unambiguous source of the economic incentive for pollock operators to undertake any action required to remain below that Chinook bycatch closure threshold.

**Comment 10-89:** After admitting that Alternative 4 will result in forgone catch, Chapter 10 fails to examine the economic impact of lost harvest on the economics of catcher vessels, catcher processors, and onshore processors. For example, many processing facilities were constructed based on economic assumptions associated with a certain product throughout. Reductions in the pollock harvest forced by salmon bycatch restrictions could fundamentally alter the basic economic viability of many parts of the pollock fishery - and that too will be reflected in lower wages and lost jobs.

**Response:** NMFS disagrees with the assertion that the analysis "fails to examine the economic impact of lost harvest on the economics of catcher vessels, catcher processors, and onshore processors." The analysis provides estimates of potentially forgone revenue, under the alternatives, for the Catcher Processor sector, the Mothership Sector, and the Shoreside sector at the first wholesale level of economic value. This analysis is conducted retrospectively by year for 2003-2007 and provides seasonal breakout, CDQ breakout, the effect of transferability provisions and the effects of rollovers on the estimated potential forgone revenue. This information is included in the Final RIR in Chapter 6.

It is important to note that shoreside processing sector potential forgone revenue impacts estimated in the RIR, are embedded within the overall shoreside sector impacts. That is, both the Catcher-Vessel impacts and the shoreside processor impacts are combined at the first wholesale level. See response to comment 10-71 for justification of this methodology. This is because the price used to estimate impacts on the shoreside sector is inclusive of all value added processing, at shoreside plants, to the first wholesale level. Thus, it is important to note that the analysis does include shoreside processing impacts, just not at the port or community level. Confidentiality prevents taking the shoreside impacts to the port or community level. However, an analysis of the potential effects on the shoreside value added processing component, as a subset of the overall shoreside sector impacts was prepared for the Final RIR in Section 6.11.2. This analysis was presented to the Council in an appendix to the Preliminary Comment Analysis Report.



As has been stated in the response to comment 10-46, the proposed action is not to close the pollock fishery it is to incentivize the avoidance of Chinook salmon bycatch and that is why the impacts are reported as potentially forgone revenue or revenue at risk, depending on alternative. The RIR does not identify these impact estimates as lost revenue specifically because mitigation of the impacts via harvesting behavior changes are expected as that is the point of incentivizing avoidance of PSC species.

**Comment 10-90:** The forgone revenue analysis does not adequately inform the Council as to the costs associated with management measures that could result in premature closures of the pollock fishery. Using forgone revenue as a measure of the economic impact of the premature closure of the BSAI pollock fishery is a gross oversimplification that significantly understates the economic consequences and does not include any consideration of economic multipliers. The DEIS fails to inform the Council, the agency and the public of the economic consequences that would flow from the proposed alternatives to close the fishery prematurely. The economic impact of an unanticipated interruption in pollock production does not accommodate the 'practicability test' imposed by National Standard 9.

**Response:** NMFS acknowledges that the use of potentially forgone first wholesale gross revenues is not an ideal reflection of the expected economic costs (or, conversely, benefits if the catch reduction can be mitigated by actions of the operator) attributable to the proposed changes in Chinook bycatch management. An explanation of the reasons for adopting this analytical approach is summarized in response to comment 10-83.

In order to estimate "profits", one must have data on costs, not simply revenues. NMFS does not have data to estimate net impacts until such time the Council develops a socioeconomic data collection program that requires the industry to submit cost data under new MSA authority. These gross receipts may, of course, not be, in any meaningful way, indicative of realized net revenues, but by default serve as the best available "proxy" for economic earnings in these fisheries.

It must also be noted that "maximizing profit" is only one, among several possible motivating factors that may be "assumed" to define the objectives of a business enterprise.

Absent accurate, verifiable cost data and operational information for the pollock trawl fleets operating in the Bering Sea, gross revenue estimates constitute the "best" empirical economic information available. NMFS fully acknowledges that changes in first wholesale (or ex vessel, as appropriate) revenues cannot be regarded as indicative of net results. That said, these estimates represent the current limit of NMFS' ability to empirically characterize the expected sectoral outcome in the pollock fishery, attributable to the alternatives under consideration. And, further, this explains the very extensive reliance upon, and systematic treatment of, "qualitative" cost and benefit analysis, reflected in the RIR, as required under E.O.12866.

**Comment 10-91:** Any analysis of costs that examines only industry-wide or sector level consequences is certain to grossly underestimate aggregate costs incurred by individual operators. Chinook salmon bycatch is highly variable annually and varies among vessels. The DEIS has not analyzed the impact of protective measures on individual fishing companies or individual vessels.

**Response:** NMFS agrees with the comment and acknowledges that sector or industry-wide aggregation within an analysis will tend to "smooth" the variability of impacts that actually exist within the assessed population (i.e., highs offset lows). Unfortunately, the analysis of "... costs incurred by individual operators" and/or impacts "... on individual fishing companies or individual vessels", requested by the commenter, (1) cannot be performed, given the composition and detail of the empirical data available to NMFS, and (2) could not be presented, even if the necessary data were available, owing to data

confidentiality laws. For these reasons, qualitative and descriptive treatment of expected economic and socioeconomic impacts, their distribution, and intensity are a fundamental part of preparation and presentation of an RIR.