

# Alaska Groundfish Fisheries Programmatic Supplemental Environmental Impact Statement

## 2014 Supplemental Information Report

**DRAFT**

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*North Pacific Fishery Management Council  
National Marine Fisheries Service, Alaska Region*

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## 1 Introduction

The Council developed its groundfish management policy in 2004, following a comprehensive review of the BSAI and GOA groundfish fisheries. The *Alaska Groundfish Fisheries Programmatic Supplemental Environmental Impact Statement* (2004 PSEIS; NMFS 2004) evaluated the cumulative changes in the management of the groundfish fisheries since the implementation of the Fishery Management Plans (FMPs) around 1980, and considered a broad array of policy-level programmatic alternatives. On the basis of the analysis, the Council adopted a management approach statement, and 9 policy goal statements, with 45 accompanying objectives. The management policy is included in full in Appendix 1.

Once a year, the Council conducts a review of the management policy objectives to assess how they are being implemented, and see whether changes are warranted.<sup>1</sup> This review occurred most recently at the February 2012 meeting, when the Council also reviewed a discussion paper identifying factors that may influence the timing for supplementing or updating the 2004 PSEIS. An expanded discussion paper was again reviewed in June 2012. To determine if a revision or supplement to the PSEIS is necessary at this time, the Council and NMFS decided first to conduct a “non-NEPA” evaluation of the PSEIS using a supplementary information report (SIR).

A SIR is a tool to evaluate the need to prepare a new environmental impact statement (EIS) to supplement a previous EIS. NEPA requires agencies to prepare a supplemental EIS (SEIS) to either draft or final EISs if the agency (1) makes substantial changes in the proposed action that are relevant to environmental concerns; or (2) there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts (40 CFR 1502.9(c)). An SEIS is required if the new information is sufficient to show a proposed or remaining action will affect the quality of the human environment in a significant manner or to a significant extent not already considered. If a subsequent related federal action occurs, and new information indicates that that subsequent action will affect the quality of the human environment in a significant manner or to a significant extent not already considered, an SEIS must be prepared. Courts have upheld the use of SIRs, and similar non-NEPA evaluation procedures, for the purpose of determining whether new information or changed circumstances require the preparation of a supplemental EIS.

With this SIR analysis, the Council and NMFS can determine whether the triggers for supplementing the PSEIS have been met. If, based on the information in this SIR, the Council and NMFS find that none of the conclusions from the PSEIS have been invalidated, then no further action would be required by the Council. NMFS would prepare a SIR determination, affirming that the 2004 PSEIS continues to provide NEPA compliance for the groundfish FMPs.

On the other hand, if the Council and NMFS find that the PSEIS needs to be revisited based on this SIR, then a further NEPA analysis would be required. This could take the form of a new, comprehensive PSEIS or a more focused supplement to the 2004 PSEIS. If a new or supplemental EIS is required, the SIR would help inform the scope of that future analysis. A supplemental EIS would not need to repeat all of the information and analysis from the 2004 PSEIS. A supplemental EIS would focus on those areas, identified through the SIR, which require new analysis based on new circumstances or information (or represent a substantial change to the management of the fisheries relevant to environmental concerns).

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<sup>1</sup> Note that changes to the policy objectives require an FMP amendment.

## 2 Considerations for Supplementing the 2004 PSEIS

### 2.1 What triggers the need to prepare an EIS?

NEPA requires that an EIS be prepared on proposals for legislation and other major federal actions significantly affecting the quality of the human environment (40 CFR 1502.3). EISs are also prepared: (1) when the proposed action is novel, (2) when there is controversy in the underlying science used to understand the impacts of the alternatives, or (3) when the potential impacts are unknown. Courts have also found that significant scientific differences of opinion, controversy, and uncertainty require preparation of an EIS.<sup>2</sup>

### 2.2 What is a programmatic EIS?

A ‘major Federal action’ includes adoption of official policy, formal plans, programs, and specific projects (40 CFR 1508.18). When the EIS addresses a policy, plan or program, it is called a programmatic EIS or PEIS. PEISs should focus on broad federal proposals and be timed to coincide with meaningful points in planning and decision making. Preparing a PEIS presents an opportunity to evaluate cumulative impacts of past, present, and reasonably foreseeable future actions under the program or within a geographical area. NEPA’s legal requirements for a PEIS are the same as those for an EIS.

### 2.3 What triggers the need to prepare a supplemental EIS?

NEPA requires agencies to prepare an SEIS to either draft or final EISs if the agency (1) makes substantial changes in the proposed action that are relevant to environmental concerns; or (2) there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts (40 CFR 1502.9(c)). An agency need not supplement an EIS every time new information comes to light. Not every change requires the preparation of an SEIS; only those changes that cause effects which are significantly different from those already studied require supplementary consideration.<sup>3</sup> The Supreme Court explained that “an agency need not supplement an EIS every time new information comes to light after the EIS is finalized. To require otherwise would render agency decision-making intractable.”<sup>4</sup>

An SEIS is required if the new information is sufficient to show a proposed or remaining action will affect the quality of the human environment in a significant manner or to a significant extent not already considered.<sup>5</sup> If a subsequent related federal action occurs, and new information indicates that that subsequent action will affect the quality of the human environment in a significant manner or to a significant extent not already considered, an SEIS must be prepared.<sup>6</sup>

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<sup>2</sup> State of Alaska v. Lubchenco, No. 3:10-CV-00271-TMB, order requiring plaintiffs to prepare an EIS at 8 n.36 (D. Alaska, filed March 5, 2012). See footnote 36.

<sup>3</sup> See Davis v. Latschar, 202 F.3d 359, 369 (D.C. Cir. 2000).

<sup>4</sup> See Marsh v. Oregon Natural Resources Council, 490 U.S. 360, 373 (1989); Oregon Natural Resources Council v. Marsh, 845 F.Supp. 758, 766-69 (D. Ore. 1994), *aff'd in part, reversed in part*, Oregon Natural Resources Council v. Harell, 25 F.3d 1499 (9<sup>th</sup> Cir. 1995)

<sup>5</sup> Marsh 490, at 374. Colorado Environmental Coalition v. Dombeck, 185 F3d 1162, 1177-78 (10<sup>th</sup> Cir. 1999), Nat'l Resources Defense Council v. Lujan, 768 F. Supp 870, 885-89 (D.D.C. 1991)

<sup>6</sup> See Marsh, 490 U.S. at 374.

## 2.4 What is the history leading to the 2004 PSEIS?

The Council and NMFS prepared EISs for the original Bering Sea and Aleutian Islands (BSAI) and Gulf of Alaska (GOA) groundfish FMPs, finalized in 1981 and 1979, respectively. In March 1997, NOAA Fisheries issued a Notice of Intent to prepare an SEIS on “the Federal action by which total allowable catch specifications and prohibited species catch limits in the groundfish fisheries that are conducted in the Bering Sea and Aleutian Islands Area and the Gulf of Alaska are annually established and apportioned.” (62 FR 15151, March 31, 1997). NMFS explained why the SEIS was needed:

The fisheries have evolved [ ] through the Council process including FMP amendments, regulations, and continued compliance with other Federal laws and executive orders. The frequencies of marine mammal, marine bird, and fish species in the biological assemblage present now are different from frequencies that existed and were displayed in [the EISs prepared for the original FMPs]. Several marine species have been listed under the Endangered Species Act, some of which may be affected by fishery management actions. New information about the ecosystem, impacts of the fisheries, and management tools has become available since the EISs were prepared (62 FR 15152, March 31, 1997).

Given these changes and new information, NMFS stated that the SEIS would incorporate the following:

... the amendments to the FMPs; the annual process for determining the [total allowable catch] TAC specifications; and the public processes for in place for implementing new regulations, revising existing ones, and incorporating new information. ... The SEIS will analyze the process by which annual TAC specifications and prohibited species catch limits are determined, together with the procedures for implementing changes to those processes. The processes encompass decisions about location and timing of each fishery, harvestable amounts, exploitation rates, exploited species, groupings of exploited species, gear types and groupings, allocations, product quality, organic waste and secondary utilization, at-sea and on-land organic discard, species at higher and lower trophic levels, habitat alterations, and relative impacts to coastal communities, society, the economy, and the domestic and foreign groundfish markets. Effects of these decisions are manifested over many years in multifaceted social and biological arenas. Inherent in implementing groundfish fisheries management regime are commitments to provide in-season management, enforcement, monitoring, stock assessment, and summary analyses. In addition to evaluating the no Action Alternative, the SEIS will include a full range of alternatives and discussions of their potential impacts on the biological and socioeconomic environments. ... (62 FR 15152, March 31, 1997).

Other than the general description alternatives quoted above, no specific alternatives were identified in the Notice of Intent.

NOAA Fisheries issued a Final SEIS in December 1998 (hereinafter “1998 SEIS”). The 1998 SEIS stated that the attainment of MSA goals and NEPA regulations require a periodic evaluation of the impacts of the BSAI and GOA groundfish fisheries on: (1) the stocks of fish taken as catch and bycatch in the groundfish fisheries; (2) protected species including marine mammals and seabirds; (3) other components of the BSAI and GOA ecosystems; (4) habitat; and (5) those who benefit from consumptive and non-consumptive uses of the living marine resources of the BSAI and GOA.<sup>7</sup> The 1998 SEIS updated the scientific information known about the North Pacific ecosystem, and analyzed this information by considering a range of alternative total allowable catch (TAC) levels: (A) the status quo method of setting TAC levels annually, for each species complex, within the optimum yield (OY) range based on the

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<sup>7</sup> 1998 SEIS, at 2.

biological status of the species and “other ecological and socio-economic aspects of the fisheries”; (B) setting TAC levels at the lower end of the OY range; (C) setting TAC levels at the upper end of the OY range; and (D) no directed groundfish fishing. The SEIS did not consider how new information about the affected environment related to other aspects of the fisheries that the FMPs regulate, such as time and area closures, gear restrictions, bycatch limits of prohibited species, and allocations of TACs among vessels delivering to different types of processors groups, gear types, and qualifying communities.

## 2.5 Why did the court determine a programmatic SEIS was needed?

The adequacy of the 1998 SEIS was challenged in U.S. district court.<sup>8</sup> The plaintiffs argued that NEPA required NMFS to prepare an SEIS that included alternatives commensurate with the broad scope of the FMPs.<sup>9</sup> Because the 1998 SEIS analyzed the new information under a range of alternatives dealing with only one particular aspect of the FMPs – TAC levels – the plaintiffs argued that the scope of the 1998 SEIS was impermissibly narrow.<sup>10</sup> By narrowing the range of alternatives to those specifically dealing with TAC levels rather than the FMPs as a whole, the plaintiffs argued that NMFS failed to take the requisite “hard look” at the environmental consequences of the agency action, the FMPs.<sup>11</sup> NMFS argued that the agency properly defined the scope of the SEIS and considered an adequate range of alternatives.<sup>12</sup>

In July 1999, the court ruled that the 1998 SEIS was impermissibly narrow and thus legally inadequate under NEPA, and remanded the document back to NMFS for additional analysis, directing the agency to produce a “programmatic” SEIS.<sup>13</sup> Briefly stated, the court determined a broad programmatic SEIS that fairly evaluated the dramatic and significant changes that occurred in the groundfish fisheries in North Pacific ecosystem was required by NEPA “[i]n light of the significant changes to the FMPs and the new information about the broad range of issues” covered by the regulations managing the fisheries.<sup>14</sup> Because the 1998 SEIS narrowly focused its analysis on TAC levels, the court determined that it was not sufficiently broad.<sup>15</sup>

In reaching this conclusion, the court first determined that the action under review in the SEIS should have been the FMPs and the numerous regulations managing the groundfish fisheries. The court noted that the FMPs constituted major federal actions requiring an EIS,<sup>16</sup> that NMFS seemed to acknowledge that an SEIS to the original EISs was necessary under both the “substantial changes to the action” and the “significant new information” prongs of 40 CFR 1502.9(c),<sup>17</sup> and that the level of detail necessary in an SEIS is directly related to scope of federal action under NEPA review.<sup>18</sup> Because the FMPs as a whole were the proposed action about which there were significant new circumstances and to which substantial changes had been made, an SEIS that examined only one aspect of the FMPs, TAC levels, was insufficient to satisfy the requirements at 40 CFR 1502.9(c). The court also found that the SEIS lacked any explanation of why and how analysis of TAC levels “results in a practical analysis” of the impact of the fisheries, as governed by a myriad of regulations.<sup>19</sup> The court’s determination that the SEIS must be treated as a broad, programmatic analysis of the FMPs as a whole lead directly to its conclusion that the range of alternatives considered in the 1998 SEIS was inadequate.<sup>20</sup>

<sup>8</sup> *Greenpeace v. National Marine Fisheries Service*, 55 F.Supp. 2d 1248 (W.D. Wash. 1999).

<sup>9</sup> *Id.*, at 1270.

<sup>10</sup> *Id.*, at 1271-72.

<sup>11</sup> *Id.*, at 1272.

<sup>12</sup> *Id.*

<sup>13</sup> *Id.*, at 1273.

<sup>14</sup> *Id.*

<sup>15</sup> *Id.*, at 1275.

<sup>16</sup> *Id.*, at 1257.

<sup>17</sup> *Id.*, at 1271.

<sup>18</sup> *Id.*, at 1276.

<sup>19</sup> *Id.*, at 1275.

<sup>20</sup> *Id.*, 1274.

The court also determined that NEPA regulations at 40 CFR 1508.7 and 1508.27(b)(7) required NMFS to prepare an analysis that thoroughly examined the cumulative effects of the changes that had occurred to the FMPs.<sup>21</sup> The court concluded that the “vast changes to the FMPs have reached the threshold of ‘cumulatively significant impact on the human environment,’ thereby requiring preparation of an SEIS addressing these vast changes.”<sup>22</sup>

In summary, the court stated that NEPA requires NMFS to analyze the ways in which the groundfish fisheries affect the North Pacific ecosystem, and to provide decision-makers and the public with a document that will help further informed decision-making as to the consequences of the FMPs.<sup>23</sup> The 1998 SEIS, by focusing its analysis only on TAC levels, did not fulfill this mandate.<sup>24</sup>

## 2.6 Will the Council and NMFS have to prepare a new PSEIS at some point?

As stated in numerous court decisions, federal agencies have a continuing duty to gather and evaluate new information relevant to the environmental impacts of its actions and to review the continuing vitality of an EIS in light of changing conditions.<sup>25</sup> As stated in *Friends of the Clearwater v. Dombeck*:

“...[A]n agency that has prepared an EIS cannot simply rest on the original document. The agency must be alert to new information that may alter the results of its original environmental analysis, and continue to take a “hard look at the environmental effects of [its] planned action, even after a proposal has received initial approval. It must “ma[ke] a reasoned decision based on ... the significance or lack of significance – of the new information,” and prepare a supplemental EIS when there are “significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.” “If there remains major Federal action to occur, and the new information is sufficient to show that the remaining action will affect the quality of the human environment in a significant manner or to a significant extent not already considered, a supplemental EIS must be prepared.”<sup>26</sup>

The court in *Friends of the Clearwater* also stated: “As we have admonished, “Compliance with NEPA is a primary duty of every federal agency; fulfillment of this vital responsibility should not depend on the vigilance and limited resources of environmental plaintiffs.”<sup>27</sup> It is the agency, not an environmental plaintiff, that has a “continuing duty to gather and evaluate new information relevant to the environmental impact of its actions,” even after release of an EIS.

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<sup>21</sup> *Id.*, at 1273-74.

<sup>22</sup> *Id.*, at 1274.

<sup>23</sup> *Id.*, at 1276.

<sup>24</sup> *Id.*

<sup>25</sup> See *Warm Springs Dam Task Force v. Gribble*, 621 F.2d 1017, 1023-1024 (9<sup>th</sup> Cir. 1980); *Monarch Chemical Works v. Exon*, 452 F.Supp 493, 500 (D.C. Neb. 1978). See also *Southern Oregon Citizens v. Clark*, 720 F.2d 1475, 1480 (9<sup>th</sup> Cir. 1983). This continuing duty is especially relevant where the original EIS covers a series of actions continuing over a decade. ... In general, an EIS concerning an ongoing action more than five years old should be carefully examined to determine whether a supplement is needed); *Senville v. Peters*, 327 F.Supp.2d 335, 355-56 (D. Vt. 2004) – An agency’s duty to take a hard look at the environmental consequences of its proposed action does not end with publication of an EIS. NEPA imposes an ongoing obligation to supplement EISs if there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. The decision whether to prepare an SEIS is similar to the decision whether to prepare an EIS in the first place. Major federal action, plus new information that shows “that the remaining action will affect the quality of the human environment in a significant manner or to a significant extent not already considered,” dictates the preparation of an SEIS. *Marsh* 490, 360-61. The parties do not dispute that the proposed action is major, nor that there is new information. At issue is whether the new information results in impacts that are significantly different in degree or in kind from the impacts previously considered.

<sup>26</sup> Quoting *Marsh* 490 U.S. at 374.

<sup>27</sup> *City of Davis v. Coleman*, 521 F.2d 661, 667 (9<sup>th</sup> Cir. 1975), see also *Coalition for Canyon Preservation v. Bowers*, 632 F.2d 774, 779 (9<sup>th</sup> Cir. 1980)

The Supreme Court has held that supplementation of an EIS is necessary only if there remains major Federal action to occur.<sup>28</sup> As the court in Defenders of Wildlife v. Bureau of Ocean Energy Management, Regulation, and Enforcement stated that:<sup>29</sup>

Although the case law is not uniform, a reasonable, helpful formulation of the “major Federal action” test provides that if “the actions remaining to the [agencies] ... are purely ministerial, or if the agencies have no discretion that might usefully be informed by further environmental review, then there is no major federal action and no SEIS must be prepared.” Hammond v. Norton, 370 F.Supp.2d 226, 255 (D.D.C.2005) (citing Citizens Against Rails-to-Trails v. Surface Transp. Bd., 267 F.3d 1144, 1151 (D.C.Cir.2001)); see also Southern Utah Wilderness Alliance v. Office of Surface Min. Reclamation and Enforcement, 2008 WL 4912058, \*12 (D.Utah Nov. 14, 2008) (no “major federal action” requiring supplemental EIS where agency “retained no discretion to decide whether the projects should go forward or to determine the terms and conditions of the projects' approval”).

Because fisheries management is dynamic – the FMPs are regularly amended to adjust fisheries management based on new circumstances, and new information on the environment and the impacts of fishing on the environment is continually being developed – and because the Council and the agency have broad discretion to manage fisheries consistent with the requirements of the MSA, the Council and the agency have a continuing duty to gather and evaluate new information relevant to the environmental impacts of its actions and to review the continuing vitality of its PSEIS in light of changing conditions.<sup>30</sup> When the changes and the information is significantly different in degree or in kind from the impacts previously considered, the Council and the agency must prepare a supplement to the PSEIS.

## 2.7 How does the Council and NMFS decide when it is time to initiate a new PSEIS?

The passage of time alone does not trigger the need for a supplement. However, CEQ advises in its Forty Most Asked Questions that an EIS over five years old should be carefully scrutinized to determine whether there are changes in the action or the affected environment:

**Question No. 32:** Supplements to Old EISs. Under what circumstances do old EISs have to be supplemented before taking action on a proposal?

**A.** As a rule of thumb, if the proposal has not yet been implemented, or if the EIS concerns an ongoing program, EISs that are more than 5 years old should be carefully reexamined to determine if the criteria in Section 1502.9 compel preparation of an EIS supplement.

If an agency has made a substantial change in a proposed action that is relevant to environmental concerns, or if there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts, an SEIS must be prepared for an existing EIS so that the agency has the best possible information to make any necessary substantive changes in its decisions regarding the proposal (40 CFR 1502.9(c)).

<sup>28</sup> Norton v. Southern Utah Wilderness Alliance 542 U.S. 55, 72-73 (2004)

<sup>29</sup> 791 F.Supp.2d 1158 (S.D.Ala. May 23, 2011)

<sup>30</sup> NEPA requires an agency to continue evaluating a project's environmental effects, even after preparation of an initial EIS. From Greenpeace Decision at 1259; see also Chemical Weapons v. U.S. Department of Army 935 F. Supp. 1206, 1217-19 (D. Utah 1996) (preliminary injunction denied on allegations of new information with respect to EIS on chemical weapons disposal facility; in this case, the daily operation will itself constitute major Federal action that would require a supplemental EIS if new information is sufficient to show that the remaining action will affect the quality of the human environment in a significant manner or to a significant extent not already considered).

To determine if an SEIS is necessary at this time, the Council and NMFS could first conduct a “non-NEPA” evaluation of the PSEIS resulting in this SIR. A SIR is a tool to evaluate the need to prepare a new EIS to supplement a previous EIS. Courts have upheld the use SIRs and similar non-NEPA evaluation procedures for the purpose of determining whether new information or changed circumstances require the preparation of a supplemental EIS.<sup>31</sup> This SIR discusses each of the considerations for an SEIS: changes to the action, new information, and new circumstances, and whether these changes are significant and relevant to environmental concerns and the impacts of the proposed action. Depending on the results of this analysis, the Council and NMFS may determine that the triggers for supplementing the PSEIS have not been met and therefore a new PSEIS is not necessary at this time. On the other hand, the SIR may provide the detailed information from which to determine that a new PSEIS should be prepared. Note that if the Council and NMFS determine new information or circumstances are significant, the Council or NMFS must prepare a supplemental EIS; a SIR cannot serve as a substitute.<sup>32</sup>

The Council also considered whether to initiate an environmental assessment or a supplemental EIS. The Council considered the following factors in its decision to do a SIR:

- A SIR is not a NEPA document, therefore the Council would retain some flexibility in defining the public participation process as well as general timing issues.
- A SIR could help inform the Council if it chooses to consider whether to revise the objectives, policy statements, or overall management approach for the groundfish fisheries found in the current FMP and NEPA analysis.
- A SIR could also inform the public and serve as a useful focal point for further discussions with the Council.
- Since a SIR cannot serve as a substitute for a proper NEPA document, an EA or supplemental EIS, once final, would ensure NEPA compliance.
- An EA or an SEIS would require a proposed action, purpose and need, and a reasonable range of alternatives and the related NEPA requirements for these documents.

The Council chose to move forward with a SIR, to:

- Evaluate the changes to the action, federal groundfish fisheries management, since the 2004 PSEIS using readily available information synthesized into a complete picture of today’s fishery management so that it could be compared to the fishery management regime described under the preferred alternative in the PSEIS.
- Identify the new information available and new circumstances since 2004 by summarizing the new information in the SAFE reports, recent analytical documents (EAs, EISs, and biological opinions), and any other sources.
- Evaluate whether the changes in the action, new information, and the new circumstances are significant and relevant to environmental concerns and the impacts of the proposed action by assessing whether the impacts predicted in the PSEIS for the preferred alternative are still valid given these changes since 2004.

This SIR enables the Council and NMFS to evaluate new information and make a reasoned determination whether it is sufficiently significant to require formal supplementation under NEPA. Courts have upheld an agency’s decision not to supplement if it is reasonable. The reasonableness of an agency’s decision not

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<sup>31</sup> Idaho Sporting Congress, Inc. v. Alexander, 222 f.3d 562, 566 (9<sup>th</sup> Cir. 2000), Marsh v. Oregon Natural Resources Council, 490 U.S. 360, 383-85 (1989), Laguna Greenbelt, Inc. v. United States Dep’t of Transp., 42 F.3d 517, 529-30 (9<sup>th</sup> Cir 1994), Price Rd. Neighborhood Ass’n v. United States Dep’t of Transp., 113 F.3d 1505, 1510 (9<sup>th</sup> Cir. 1997)

<sup>32</sup> Idaho Sporting Congress, Inc. v. Alexander, 222 f.3d 562, 566 (9<sup>th</sup> Cir. 2000)

to supplement depends on ‘such factors as the environmental significance of the new information, the probably accuracy of the information, the degree of care with which the agency considered the information and evaluated its impact, and the degree to which the agency supported its decision not to supplement with a statement of explanation or additional data.’<sup>33</sup> The court plays the limited role of determining, under the foregoing standards, whether the new information is so significant that it would be irresponsible, arbitrary, and capricious for the agency not to act on it. However, the court would determine whether the new information presents a ‘seriously different picture of the likely environmental consequences of the proposed action’ than the picture already considered. Resolution of this dispute involves primarily issues of fact requiring deference to the informed discretion of the responsible agency.’<sup>34</sup>

## 2.8 What efficiencies are gained by doing an EIS?

EISs are major undertakings, and the process to determine whether or not to supplement an existing EIS also requires substantial effort and analysis. However, as explained above, NEPA analysis is required for major federal actions and once an EIS is completed, there is a continuing duty to make sure the analysis is relevant in light of new information, circumstances, or changes in the proposed action. Once an EIS is completed for a proposed action and that action is implemented, the EIS is useful for subsequent related actions and for understanding the impacts of specific actions in the larger context. Having an EIS can greatly streamline future NEPA analyses using tools described in the CEQ regulations. A comprehensive programmatic EIS can also allow other efficiencies for future NEPA analyses, such as tiering, incorporation by reference, or in applicable instances, allowing for categorical exclusions (see short summaries of these actions below).

The 2004 PSEIS implemented a change to the groundfish management policy. Each subsequent action to implement the policy has been evaluated in a separate NEPA document. The PSEIS provides the baseline for conducting NEPA analysis for groundfish management actions. NMFS and Council staff incorporate by reference the information in the PSEIS, and update as necessary in the NEPA analysis for a specific action. This allows the subsequent NEPA document to focus on recent information and information relevant to the action, without a large amount of background information, or a re-analysis of the status quo. Also, the PSEIS provided a comprehensive analysis of the cumulative effects and past actions that are relied on for groundfish action EAs.

### Tiering

Tiering means the coverage of general information in a PEIS with subsequent narrower EISs or EAs incorporating by reference the general discussions from the PEIS and concentrating solely on the issues specific to the subsequent project-specific action (40 CFR 1508.28, 40 CFR 1500.4(i), 1502.4(d) and 1502.20). Federal agencies are encouraged to tier NEPA analysis to avoid repetition of issues and to focus on the issues for decision at each level of review.

The Council on Environmental Quality (CEQ) regulations encourage agencies preparing NEPA documents to “tier their environmental impact statements to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision at each level of environmental review.” Specifically, 40 CFR 1502.20 states the following:

Whenever a broad environmental impact statement has been prepared (such as a program or policy statement) and a subsequent statement or environmental assessment is then prepared

<sup>33</sup> Oregon Natural Resources Council v. Marsh, 845 F.Supp. 758, 766-69 (D. Ore. 1994)

<sup>34</sup> Oregon Natural Resources Council v. Marsh, 845 F.Supp. 758, 766-69 (D. Ore. 1994)

on an action included within the entire program or policy (such as a site specific action) the subsequent statement or environmental assessment need only summarize the issues discussed in the broader statement and incorporate discussions from the broader statement by reference and shall concentrate on the issues specific to the subsequent action (40 CFR 1502.20).

In 40 CFR 1508.28, the CEQ regulations further define tiering as “the coverage of general matter in broader environmental impact statements ... with subsequent narrower statements or environmental analyses incorporating by reference the general discussions and concentrating solely on the issues specific to the statement subsequently prepared.” This section of the CEQ regulations further notes that tiering is appropriate “when the sequence of statements or analyses is ... from a program, plan, or policy environmental impact statement to a program, plan, or policy statement or analysis of lesser scope or to a site-specific statement or analysis.”

### **Incorporation by reference**

An EIS can incorporate by reference material from other sources (40 CFR 1502.21). Incorporated material must be cited and summarized in the EIS and must be publically available. Information that is not publically available may not be incorporated by reference into an EA or EIS.

### **Categorical Exclusion**

NOAA Administrative Order 216-6 (NAO 216-6) sets forth requirements for implementing and documenting Categorical Exclusions (CEs). Section 5.05 provides information on the general requirements for CE's. Section 6.03 provides specific guidance on the use of CE's for various types of actions undertaken by NOAA. For example, Section 6.03a.3 provides guidance regarding CE's for management plan amendments (i.e., FMP Amendments).

As defined in Section 6.03a.3(b)(1) of NAO 216-6, a proposed action would be categorically excluded from the need to prepare an Environmental Assessment or an EIS if the proposed action is a minor change to a previously analyzed and approved action and the proposed change has no effect individually or cumulatively on the human environment.

## **2.9 What risks might be present if a NEPA-compliant programmatic SEIS is not in place?**

It is a statutory requirement to comply with NEPA. The primary means of enforcing NEPA is through lawsuits brought by concerned private citizens, interest groups, and state and local agencies.<sup>35</sup> Plaintiffs typically ask for declaratory judgments establishing the government's NEPA obligations or a writ of mandamus ordering specific agency action to comply with NEPA.<sup>36</sup> Plaintiffs may also seek preliminary injunction:

If a preliminary injunction is granted, courts will enjoin some or all project activities pending NEPA compliance, and may order appropriate NEPA documents to be prepared. ... Most courts decide to grant a preliminary injunction by balancing ... the plaintiff's probability of success on the merits of the claim, the harm to the plaintiff if the injunction is denied versus the harm to the defendant if it is granted, and whether the public interest would be served by granting the

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<sup>35</sup> Ronald E. Bass, et al., *The NEPA Book, A step-by-step guide on how to comply with the National Environmental Policy Act*, 172 (2<sup>nd</sup> ed. 2001)

<sup>36</sup> *Id.* at 178.

injunction. Courts may also be asked to issue a permanent injunction .... In some cases, a court may find a NEPA violation but deny an injunction based on equitable principles.<sup>37</sup>

It should be noted that if a court does order a new NEPA document be prepared, the court will set the schedule, likely with input from both parties, but that such a schedule might not be favorable for the Council or NMFS.

### 3 Approach

The primary purpose of this SIR is to evaluate comprehensively whether either of the two requirements for supplementing an EIS have been met with respect to the 2004 PSEIS:

1. if NMFS and the Council have made a substantial change in the proposed action (i.e., the management of the Federal groundfish fisheries) that is relevant to environmental concerns, or
2. if there are significant new circumstances or information relevant to environmental concerns and bearing on the management of the groundfish fisheries or their impacts.

With respect to the first requirement, there have been changes to the management program since the 2004 PSEIS, as documented in the May 2012 discussion paper. All management changes since 2004 have been subject to NEPA analysis. The SSC discussed the management changes at the March 2012 meeting, in Anchorage, Alaska, and determined that they are all consistent with the preferred alternative evaluated in the PSEIS. The management changes synthesized in this SIR, are not identified as substantial changes relevant to environmental concerns.

As a result, this SIR focuses more on the second requirement, to allow NMFS and the Council to make a reasoned determination of whether, since the 2004 PSEIS was completed, there exist new circumstances or information that are sufficiently significant to require supplementation under NEPA. The goal is to evaluate whether information since 2004 indicates that the groundfish fisheries affect the quality of the human environment in a significant manner or to a significant extent that was not considered in the 2004 PSEIS.

This SIR evaluates whether there are significant new circumstances or information relevant to the groundfish fisheries by reevaluating the conclusions from the PSEIS in light of new information, to see whether there are likely to be changes to the impacts. This SIR provides information to answer two overarching questions:

- Are the impacts predicted in the PSEIS for the preferred alternative still valid, given any changes since 2004?
- Does the new information present a seriously different picture of the likely impacts of the groundfish fisheries on a particular resource, compared to what was considered in the 2004 PSEIS?

This has been addressed by analysts revisiting each of the PSEIS conclusions, and considering the following questions in light of new information:

- Has the status of the resource changed?
- Is there new information regarding the impacts of the groundfish fisheries on the resource?

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<sup>37</sup> *Id.*

- Are there new methods of analysis or protocols for evaluating impacts?
- Would a new analysis using the latest methods and information reach a seriously different conclusion?

Additionally, this SIR builds on the SSC's review of environmental impacts from the March 2012 meeting. The SSC considered whether, on the basis of existing analyses, the Council understands the environmental impacts of the groundfish management program today, by evaluating (a) whether environmental conditions affecting the fisheries have changed, (b) whether the status of fish stocks and other marine life has changed, and (c) the availability of new information. The SSC identified many continuing trends and variability in environmental conditions and status of stocks that were accounted for in the 2004 PSEIS. There were, however, a few distinct areas that merit further investigation. These include the following:

- changes in the spatial and temporal distribution of the groundfish fisheries in response to fishery management changes, together with technical innovations, may have altered the environmental impact of fishing
- changes in species abundance affecting interactions with groundfish fisheries, particularly those species that are ESA-listed
  - increase in the abundance of whale populations may be altering lower trophic level energy pathways in the region
  - the continued decline of the western portion of the western distinct population segment of Steller sea lions
  - the declining trend of Northern fur seal populations on the Pribilof Islands
  - increase in short-tailed albatross populations and potential for increased incidental take by fisheries
  - listing of certain crab stocks as overfished and consequent Council action restricting groundfish fisheries
  - increase in arrowtooth flounder and Pacific halibut populations in the GOA and BS, and changes in the size at age of halibut
- changes in the ice extent and season in the BS and Arctic impacting the distribution and behavior of cetaceans and pinnipeds, as well as lower trophic levels and patterns of productivity. Resulting direct and indirect impacts of fishing activity are not well understood.

The advantage of focusing the SIR more comprehensively on the conclusions of the PSEIS, rather than limiting it specifically to the issues identified by the SSC, is that it provides updated information on the entire management program. By providing a more comprehensive evaluation of the current fisheries baseline, the final SIR can be incorporated by reference with the 2004 PSEIS when analyzing proposed groundfish management actions in future EAs. Even though a SIR is not a NEPA document, it can be referenced in NEPA analyses, especially if the overall conclusion of the SIR is that the PSEIS remains valid. In this way, the SIR will better meet the Council and NMFS' intent to develop a document that also improves efficiency for other management actions.

The approach used in this SIR is similar to that used for the 2010 EFH 5-year review. In that evaluation, stock assessment authors, and other experts, were asked to review EFH information contained in the Council's FMPs (and the 2005 EFH EIS) in the context of any new information. The authors were each asked to consider a series of questions about whether new information is available and relevant for identifying EFH for their species, whether changes in fishing activities over the time period were likely to have affected the fishing impacts analysis, and whether, based on these considerations, they concurred with the description of EFH and habitat associations that is included in the FMPs. In the case of the EFH 5-year review, the authors' responses were vetted through the Plan Teams, and then compiled into a

summary report that was presented to the Council, upon which basis the Council subsequently initiated amendments to the FMPs.

For this SIR, a similar approach has been employed. Scientific experts have been identified for each of the resource components analyzed in the PSEIS, primarily AFSC staff. In many cases, these are the lead authors that prepared those sections for the 2004 PSEIS, or who prepare annual stock assessments. These experts were asked to review the PSEIS analysis and conclusions, consider them in light of new information, and determine whether the 2004 conclusions are still valid. In order to provide everyone with a similar understanding of what is required in the review, staff facilitated a kickoff workshop to discuss the project, and prepared a template identifying the questions to be addressed (Appendix 2). The experts completed their review, and their contributions have been synthesized by Council and Alaska Region staff into this SIR. Some further editing to the expert reviews may be required, to ensure that each expert has treated the questions in a consistent manner. This will be undertaken during the public review period on the draft SIR.

This draft SIR is being circulated through the normal Council process, in order to receive SSC and stakeholder review. The SIR can then be finalized, documenting the Council and NMFS' decision.

## **4 Description of the 2004 PSEIS**

### **4.1 History of the 2004 Groundfish PSEIS**

In late 1990s, NMFS and the Council realized that they needed to take a broader view of the cumulative effects of their management decisions. Typically, the Council addresses a management problem by developing specific solutions. Staff analyzes alternatives to determine their direct effects in a variety of contexts, and the Council shares that analysis with the public prior to making a decision and forwarding that recommendation to the agency and the Secretary of Commerce for final review and approval.

Beginning in 2000, the Council and NMFS conducted a comprehensive, programmatic environmental review of the BSAI and GOA groundfish fishery management plans. The analysis evaluated the management of Alaska's groundfish fisheries from a policy-level perspective, with alternatives ranging from a more aggressive harvest management policy to a highly precautionary one. Each management policy was illustrated and framed with a range of management measures within which the Council would intend to implement the alternative. Published as a final programmatic supplemental environmental impact statement (PSEIS) in June 2004, this document serves the Council and NMFS as the overarching EIS in support of federal authorization of the groundfish fisheries off Alaska. It also described the physical, biological and human environment; every fishery and gear type; and scientific data gaps and research needs.

In April 2004, the Council used this PSEIS as the basis for amending its FMPs to incorporate a new policy statement that communicates its intent to take a more precautionary approach to fishery management decision-making when faced with scientific uncertainty. The Council now routinely reviews its policy goals and objectives when making decisions and when developing its annual workplan.

One aspect of the 2004 PSEIS that made its preparation particularly challenging was that approximately 25 years of management decisions had to be evaluated as a cumulative whole. Both FMPs had over 80 plan amendments that had to be reviewed and analyzed, and the management program had changed substantially during the time period, from a fishery with a large foreign participation, to an exclusively domestic one. The next time it is appropriate to revisit the Council's management policy, and supplement

the Alaska groundfish PSEIS, it should be more straightforward, as an environmental baseline has been established, and the new analysis will focus on the actions taken by the Council and NMFS since then.

## **4.2 What the 2004 analysis addressed**

The Federal action that was analyzed in the 2004 Groundfish PSEIS was the authorization of the groundfish fisheries under the existing management program. There were four policy-level alternatives included in the PSEIS, from which the Council crafted a fifth, preferred alternative. For each alternative, a management approach statement was developed, with accompanying objectives. Example FMPs were included to illustrate how the Council might implement each policy alternative with specific management measures. For all alternatives except the status quo, the policy alternative was illustrated with two example FMPs, which were intended to indicate the range of management measures that might fall within the implementation of that alternative. Although the example FMPs were important to illustrate how a management policy might operate in practice, the adoption of the policy itself was the immediate outcome of the PSEIS. It was intended that the Council would undertake subsequent amendments to fully implement the new management policy, as illustrated in the example FMPs, over the next five to ten years.

**Table 1 Alternatives analyzed in the 2004 Groundfish PSEIS**

<b>Alternative</b>	<b>Description</b>	<b>Example FMP bookend(s)</b>
Alternative 1	Continue Under the Current Risk Averse Management Policy	<u>FMP 1</u> -- 2002 BSAI and GOA Groundfish FMPs
Alternative 2	Adopt a More Aggressive Harvest Management Policy	<u>Example FMP 2.1</u> – constraints removed (remove buffer between ABC and OFL, no OY cap, repeal all closures except SSL measures, no PSC or gear restrictions, repeal all catch share programs except AFA and CDQ, repeal observer program and VMS) <u>Example FMP 2.2</u> – remove OY cap, repeal any bycatch reduction incentives and restrictions except for PSC limits or IR/IU, including seabird avoidance requirements
Alternative 3	Adopt a More Precautionary Management Policy	<u>Example FMP 3.1</u> – formalize $ABC \geq TAC$ in FMP, move sharks and skates into target category and develop criteria for all species in 'other species' category, accelerate efforts to develop ecosystem indicators for use in TAC-setting, develop MPA methodology and evaluate efficacy of existing closures, formal procedures to increase Alaska Native participation in management, 0-10% reduction in existing PSC limits, and establish them for salmon/crab in the GOA, improve observer program <u>Example FMP 3.2</u> – incorporate uncertainty correction into ABC estimation, specify OY separately for each stock rather than for groundfish complex, incorporate stock-specific reference points (e.g. $F_{60\%}$ rather than $F_{40\%}$ for rockfish), move stocks from 'other species' category, close 0-20% of EEZ as an MPA to protect full range of habitats, no bottom trawl for pollock in GOA, comprehensive rationalization of all fisheries, existing PSC limits reduced by 10-30%, GOA salmon and crab PSC limits established, 100% observer coverage on vessels > 60'
Alternative 4	Adopt a Highly Precautionary Management Policy	<u>Example FMP 4.1</u> – increase buffer between OFL and ABC ( $F_{75\%}$ for Steller sea lion prey species and for rockfish, reduce $max F_{ABC}$ for stocks based on the lower bound of a confidence interval surrounding the survey biomass estimate), set OY for each stock rather than for the groundfish complex, designate 20-50% of EEZ as no-take marine reserve covering full range of habitats (including AI special management area for coral, and spawning reserves), reduce PSC limits and bycatch by 30-50%, 100% observer coverage on vessels > 60' and 30% coverage on all other vessels, mandatory VMS <u>Example FMP 4.2</u> – no fishing until target fisheries can be shown to have no adverse effect on the resource and its environment
Preferred Alternative	Adopt a conservative, precautionary approach to ecosystem-based fisheries management	<u>Example FMP PA.1</u> – formalize $ABC \geq TAC$ in FMP, use harvest control rules to maintain spawning stock biomass, accelerate efforts to develop ecosystem indicators for use in TAC-setting, develop MPA methodology, consider 0-10% reduction of BSAI PSC limits, establish PSC limits or other measures in GOA for salmon, crab and herring, continue rights-based management as needed, formal procedures to increase Alaska Native participation in management <u>Example FMP PA.2</u> – incorporate uncertainty correction into ABC estimation, periodically review OY caps to determine their relevancy, develop and implement criteria for use of ecosystem indicators in TAC-setting, develop appropriate harvest strategies for rockfish, develop criteria to manage target and non-target species consistently, re-examine existing closures, consider adopting MPAs (0-20% of EEZ to protect full range of habitats, including as AI management area for coral), no bottom trawl for pollock in GOA, reduce existing PSC limits 0-20%, establish PSC limits in GOA for salmon, crab and herring, comprehensive rationalization of all fisheries, increase consultation with and representation of Alaska Natives in fishery management, improve observer coverage on all vessels, mandatory economic data collection

### 4.3 Data used in the PSEIS analysis

The data used in the analysis of biological impacts for groundfish stocks was largely based on 2002 stock assessments, using data from the 2001 and 2002 surveys. For some other seabird and marine mammal species, the most recent assessment data may have been from 2000. For the economic analysis, the most recent year included in the detailed fishery analysis was 2001. This was the basis on which the draft PSEIS was prepared, and issued for public comment in 2003. Some adjustments were subsequently made during the preparation of the Final PSEIS, to take into account more recent information. For example, the results from the new model for assessing impacts of fishing on essential fish habitat were incorporated in the analysis. In general, however, the most recent information in the document dates from 2000 to 2002.

### 4.4 Impacts of the Preferred Alternative

The following subsections summarize conclusions for each resource component analyzed in the 2004 PSEIS. The impact analyses started with the baseline status of each resource category, and then evaluated how specific characteristics of each component would respond directly and indirectly to management actions under the preferred alternative FMP bookends, PA.1 and PA.2. The expected cumulative effects on that stock were also evaluated and discussed, building on the direct and indirect effects evaluations as a starting point, and then bringing in persistent past effects as well as reasonably foreseeable future natural events and human activities external to fisheries management.

Possible evaluations were significant and beneficial (S+), Insignificant (I), significant and adverse (S-), and Unknown (U). In addition, effects were classified as conditionally significant (CS+ or CS-), if significant effects could be expected under a plausible set of conditions. The intent of the conditional label was to imply uncertainty about whether an alternative FMP would actually result in conditions that led to a significant impact. When the conditional label was applied, a plausible mechanism for the impact and the conditions under which a significant impact would be realized was stated. In cases where data were lacking to rank an effect according to the significance criteria, the effect was determined to be unknown.

#### 4.4.1 Target species direct/indirect and cumulative effects significance ratings under Preferred Alternative PA.1 and PA.2.

The 2004 PSEIS examined the potential direct, indirect, and cumulative effects that the implementation of the preferred alternative (PA) was expected to have on target species, prohibited species, forage fish species, other species, and non-specified species. The significance of these effects was evaluated as to whether the impacts, within the preferred alternative fishery management regime, might be reasonably expected to jeopardize the sustainability of each target species or species group. The effects are described below:

#### Direct Effects

Fishing Mortality: This is the rate at which the stock is depleted by direct mortality imposed by removing the fish from the sea.

Change in Biomass Level: This is the change over time in the biomass of the stock, as measured in metric tons (mt). Two measures are used: total biomass, which is the estimated biomass of the entire stock, and spawning biomass, which is the estimated biomass of all of the spawning females in the stock.

Spatial/Temporal Concentration of Catch: This is the degree to which the fishery will concentrate in a particular geographic area during a particular period of time each season. This pattern in space and

time can affect fishing mortality and can also influence habitat suitability for spawning, rearing, and feeding.

### **Direct and/or Indirect Effects**

Habitat Suitability: This is the degree to which habitat has the right characteristics to support the stock at one or more life-history stages (spawning, rearing of juveniles, availability of food at all stages, availability of refuge areas to allow escape from predators at all stages). Habitat suitability can be affected directly, for example by mechanical damage from bottom trawling, or influenced indirectly, for example by the gradual depletion of corals that provide hard substrate.

Prey Availability: This is the extent to which prey species are present in the environment and available as food to the stock. Like habitat suitability, this measure can be affected directly, for example by the direct removal of prey species by the fishery, or indirectly, for example by a change in the structure of the food web.

The baseline status of the BSAI and GOA stocks was their status in 2002, and the analysis then used a computer-based analytic model to project how specific characteristics of these stocks would respond directly and indirectly to management actions under the preferred alternative FMP bookends. Relevant data were not always available for all stocks.

Target species were unique, in that thresholds for overfishing and stock size had been developed that relate to sustainability of the stock. As such, these thresholds were used to evaluate the significance of the effects of the example FMPs relative to their impacts on the sustainability of the target species. Fishing mortality rates that exceeded the overfishing mortality rate were considered to jeopardize the capacity of the stock to produce maximum sustainable yield (MSY) on a continuing basis and adversely impact the sustainability of the stock. A related measure of this potential was indicated by change in biomass levels. The significance of effects of the current spatial/temporal concentration of the catch, and the level of prey availability and habitat suitability for target species were evaluated with respect to each stock's current size relative to its maximum stock size threshold (MSST). An action that jeopardized the stock's ability to sustain itself at or above its MSST was considered to adversely affect the sustainability of the stock.

Species or species complexes that fall within Tiers 1 through 5 have estimates of fishing mortality rates, and were evaluated with respect to exceeding the overfishing mortality rate (fishing mortality effect). Species or species complexes that fall within Tiers 1, 2, or 3 have reliable estimates of MSST, and were evaluated for the effects of spatial/temporal concentration of the catch, prey availability, and habitat suitability. Species or species complexes that fall within Tiers 4, 5, or 6 do not have reliable estimates of MSST, and therefore could not be evaluated for the significance of these effects. Since several species or species complexes did not have estimates of abundances-at-age, in the 2004 PSEIS version of the model their abundance levels simply reflected the most recent estimate. This inability to evaluate the significance of the effects also occurs for the forage, prohibited, and non-specified species. For these groups, analysis of the effects of the preferred alternative was limited to catch projections and likely consequences given patterns in related fauna.

For the non-specified species FMP category, grenadier were the major catch, and were chosen to illustrate potential effects to non-specified species. Non-specified species was a huge and diverse category encompassing every species not listed in the current FMP as a target, prohibited, forage, or other species. Considering a single species group from this category, such as grenadier, cannot possibly represent the diverse effects to all species in the category. However, because information is lacking for nearly all non-specified species, and due to the small or unknown amounts of bycatch (due to a lack of reporting requirements in this category), only potential effects to grenadier were discussed.

Formal stock assessments had not been conducted for grenadier. Thus, changes in total biomass, reproductive success, genetic structure of population, habitat, or mortality rates under the preferred alternative could be determined due to the lack of information needed to establish the baseline condition. Changes in bycatch of grenadier were predicted based on modeled changes in target species catches and population trajectories (sablefish target fisheries accounted for the highest grenadier bycatch). While changes in bycatch mortality relative to the comparative baseline were reported, the PSEIS emphasized that determinations could not be made as to how these changes actually impacted grenadier populations, or whether these impacts might be adverse, beneficial, or insignificant.

**Table 2 Target groundfish species significance ratings in the 2004 PSEIS**

Effect		Pollock, Pacific Cod, Sablefish	BSAI Atka Mackerel	GOA Atka Mackerel	BSAI Flatfish*	BSAI Other Flatfish	GOA Flatfish*	GOA Arrowtooth Flounder
Mortality	direct/ indirect	I	I	U	I	I	I	I
	cumulative	I	I	U	I	I	I	I
Change in Biomass	direct/ indirect	I	I	U	I	U	U	I
	cumulative	I	I	U	I	U	U	I
Spatial/ Temporal Concentration of Catch - <i>change in genetic structure</i>	direct/ indirect	I	I	U	I	U	U	I
	cumulative	I	I	U	I	U	U	I
Spatial/ Temporal Concentration of Catch - <i>change in reproductive success</i>	direct/ indirect	I	I	U	I	U	U	I
	cumulative	I	I	U	I	U	U	I
Change in Prey Availability	direct/ indirect	I	I	I	I	U	U	I
	cumulative	I	I	U	I	U	U	I
Change in Habitat	direct/ indirect	I	I	U	I	U	U	I
	cumulative	I	I	U	I	U	U	I

\*BSAI flatfish includes BSAI yellowfin sole, BSAI flathead sole, BSAI rock sole, BSAI arrowtooth flounder, BSAI Greenland turbot, and BSAI Alaska plaice

\*GOA flatfish includes GOA shallow water flatfish, GOA flathead sole, GOA deep water flatfish and GOA rex sole

Effect		BSAI and GOA POP	GOA Thornyhead Rockfish	BSAI Rockfish*	GOA Rockfish*	GOA Northern Rockfish
Mortality	direct/ indirect	I	I	I	I	I
	cumulative	I	I	I	I	I
Change in Biomass	direct/ indirect	I	I	U	U	I
	cumulative	I	I	U	U	I
Spatial/ Temporal Concentration of Catch - <i>change in genetic structure</i>	direct/ indirect	I	I	U	U	I
	cumulative	I	I	U	U	I
Spatial/ Temporal Concentration of Catch - <i>change in reproductive success</i>	direct/ indirect	I	I	U	U	I
	cumulative	I	I	U	U	I
Change in prey availability	direct/ indirect	I	I	U	U	I
	cumulative	I	I	U	U	I
Change in Habitat	direct/ indirect	I	I	U	U	I
	cumulative	I	I	U	U	I

\*BSAI rockfish includes BSAI northern rockfish, BSAI shortraker/rougheye rockfish and BSAI other rockfish

\*GOA rockfish includes GOA shortraker/rougheye rockfish, GOA slope rockfish, GOA pelagic shelf rockfish and GOA demersal shelf rockfish

**Table 3 Non-target fish species significance ratings in the 2004 PSEIS**

Effect		Other species (squid, octopus, sharks, sculpins, skates)	Forage fish	Non-specified species (Grenadier)
Mortality	direct/ indirect	U	I	U
	cumulative	U	I	U
Change in biomass level	direct/ indirect	U	U	U
	cumulative	U	U	U
Change in reproductive success	direct/ indirect	U	U	U
	cumulative	U	U	U
Change in prey availability	direct/ indirect	n/a	U	n/a
	cumulative	n/a	U	n/a
Change in habitat	direct/ indirect	U	U	n/a
	cumulative	U	U	n/a
Change in genetic structure	direct/ indirect	U	U	U
	cumulative	U	U	U

#### 4.4.2 Prohibited species direct/indirect and cumulative effects significance ratings under Preferred Alternative PA.1 and PA.2.

The 2004 PSEIS examined the potential direct, indirect, and cumulative effects that the implementation of the preferred alternative was expected to have on the prohibited species. As described above, the significance of the impacts for prohibited species were evaluated with respect to five effects: 1) fishing mortality, 2) change in biomass level, 3) spatial/temporal concentration of the catch, 4) prey availability, and 5) habitat suitability. The significance of these effects was evaluated as to whether the impacts, within the preferred alternative fishery management regime, might be reasonably expected to jeopardize the sustainability of the species. Because relevant data were not always available for all stocks, for these groups, analysis of the effects of the preferred alternative was limited to catch projections and likely consequences given patterns in related fauna. When data gaps prevented application of the model to a specific stock, the projected direct or indirect effect was evaluated as unknown (U).

**Table 4 Prohibited species significance ratings in the 2004 PSEIS**

Effect		Pacific halibut	BSAI salmon *	GOA Chinook salmon	GOA other salmon	Pacific herring	BSAI crab*	GOA crab*	GOA red king crab	BSAI and GOA golden king crab
Mortality	direct/ indirect	I	I	I	I	I	I	U	I	U
	cumulative	I	CS-	CS-	I	I	U	U	U	U
Change in biomass level	direct/ indirect	n/a	n/a	n/a	n/a	n/a	I	U	I	U
	cumulative	n/a	n/a	n/a	n/a	n/a	U	U	U	U
Change in reproductive success	direct/ indirect	I	U	U	U	I	U	U	U	U
	cumulative	I	CS-	U	U	I	U	U	U	U
Change in prey availability	direct/ indirect	I	U	U	U	I	U	U	U	U
	cumulative	I	U	U	U	U	U	U	U	U
Change in habitat	direct/ indirect	n/a	n/a	n/a	n/a	I	I	U	I	U
	cumulative	n/a	n/a	n/a	n/a	U	U	U	U	U
Change in genetic structure	direct/ indirect	n/a	U	U	U	n/a	n/a	n/a	n/a	n/a
	cumulative	n/a	U	U	U	n/a	n/a	n/a	n/a	n/a

\*BSAI salmon includes Chinook salmon and other salmon

\*BSAI crab includes BSAI bairdi Tanner, BSAI opilio Tanner, BSAI red king and BSAI blue king

\*GOA crab includes GOA bairdi Tanner and GOA blue king

#### 4.4.3 Marine mammals direct/indirect and cumulative effects significance ratings under Preferred Alternative PA.1 and PA.2.

The standard for determining significance for effects on marine mammals in the 2004 PSEIS was whether the impact would be expected to be detectable at the population level. Individual effects categories did not have to cause a measurable population decline or increase to be labeled significant, but data and/or plausible arguments must exist to determine that the action would have more than a negligible impact on the reproduction and/or survival of a species group in a way that could affect the population. The expected effects of each alternative were compared to the baseline conditions to determine the relative significance of the impacts of the alternatives on marine mammals.

**Table 5 Marine mammal species significance ratings in the 2004 PSEIS**

Effect		W Steller sea lion	E Steller sea lion	Northern fur seal	Harbor seal	Killer whale (transients)	Other pinnipeds *	Other toothed whales*	Baleen whales *	Sea otters
<b>Mortality (incidental take, entanglement)</b>	direct/ indirect									
	cumulative	S-				I / S <sup>-1</sup>			CS <sup>-2/</sup> I <sup>3</sup>	CS- / I <sup>5</sup>
<b>Prey availability</b>	direct/ indirect						I / U <sup>4</sup>			
	cumulative	CS-		CS-	CS-					
<b>Spatial/temporal concentration of fisheries</b>	direct/ indirect									
	cumulative	CS-		CS-	CS-					
<b>Disturbance</b>	direct/ indirect									
	cumulative									

\*Baleen whales include blue whale, fin whale, sei whale, minke whale, humpback whale, gray whale, northern right whale, bowhead.

\*Other pinnipeds include Pacific walrus, spotted seal, bearded seal, ringed seal, ribbon seal, elephant seal

\*Other toothed whales include sperm whales, beaked whales, white sided dolphin, beluga whale, harbor porpoise, Dall's porpoise.

<sup>1</sup> -The exception to this finding is the AT1 transient group in Prince William Sound.

<sup>2</sup> -Fin, humpback and northern right whales; <sup>3</sup> -Minke, gray, bowhead, sei, and blue whales

<sup>4</sup> -Northern elephant seals

<sup>5</sup> -Southcentral and southeast stocks of sea otters.

#### 4.4.4 Seabirds direct/indirect and cumulative effects significance ratings under Preferred Alternative PA.1 and PA.2.

In the 2004 PSEIS, significance criteria for seabirds were based on whether the proposed action would have been likely to result in population level effects, defined as changes in the population trend outside the range of natural fluctuations. The projection model was used for predictions of fishing effort under the different FMP bookends, especially with respect to different gear types. The analysis also included other factors such as spatial/temporal restrictions and potential gear modifications for seabird avoidance. However, because there are a large number of unpredictable variables and gaps in our knowledge about particular species and ecosystem effects, it was impossible to ascertain significance on a strictly quantitative basis. Species were generally grouped according to the similarity of their response to the groundfish fishery and/or similarity in their management status. Conclusions are based on professional judgment of pertinent data and literature review.

Except for the supplemental food provided by the fisheries in the form of offal, the effects of the fisheries are all considered adverse to individual birds. Low levels of incidental take of seabirds are better for conservation purposes than high levels of take, but no amount of incidental take can be considered beneficial to a seabird population. The significance ratings for incidental take are, therefore, either insignificant or adverse. The same type of situation applies to fishery-induced changes in benthic habitat important to benthic-feeding seabirds, so there is no beneficial rating for this effect. Effects of the fishery

on food availability could be adverse, insignificant, or beneficial. If there is a plausible mechanism and a reasonable set of conditions under which an effect may occur under a given FMP, the significance rating was labeled conditional. If there is a plausible mechanism for an effect, but not enough data to assess whether it occurs or whether the FMP would create the conditions under which it would occur, the significance rating was unknown.

**Table 6 Seabird species significance ratings in the 2004 PSEIS**

Effect		Short-tailed albatross	Other albatross*	Shearwaters*	Northern fulmar	Red-legged kittiwakes <sup>1</sup>	Murrelets <sup>1</sup>
<b>Mortality (incidental take)</b>	direct/ indirect	I	I	I	I	I	I
	cumulative	CS-	S-	CS-	I	CS-	S-
<b>Availability of food</b>	direct/ indirect	I	I	I	I	I	I
	cumulative	I	I	I	I	U	U
<b>Benthic habitat</b>	direct/ indirect	no effect	no effect	no effect	no effect	no effect	I
	cumulative	no effect	no effect	no effect	no effect	no effect	I

\*Other albatross include Laysan and black-footed albatross

\*Shearwaters include sooty and short-tailed shearwaters

<sup>1</sup> Red-legged kittiwake, marbled murrelet, and Kittlitz's murrelet are species of management concern.

Effect		Other piscivorous species*	Other planktivorous species*	Steller's eiders	Spectacled eider
<b>Mortality (incidental take)</b>	direct/ indirect	I	I	I	no effect
	cumulative	I	I	S-	no effect
<b>Availability of food</b>	direct/ indirect	I	I	I	no effect
	cumulative	I	I	I	no effect
<b>Benthic habitat</b>	direct/ indirect	I	no effect	I	no effect
	cumulative	I	no effect	U	no effect

\*Other piscivorous species - alcids (except auklets), gulls, jaegers, terns, and comorants

\*Other planktivorous species - auklets and storm-petrels

#### 4.4.5 Habitat direct/indirect and cumulative effects significance ratings under Preferred Alternative PA.1 and PA.2.

The 2004 PSEIS considered adverse effects of fishing on benthic marine habitat from the perspective of ecosystem structure and function, as well as managed fish species. The potential effects of the groundfish fisheries on habitat that were used to compare the alternatives included mortality of, and damage to, living habitat, changes to benthic community diversity, and changes to the geographic diversity of impacts and protection. Specific impacts of groundfish fisheries on habitat are very difficult to predict. Evaluation of effects requires detailed information on the distribution and abundance of habitat types, the life history of living habitat, habitat recovery rates, and the natural disturbance regime. This information is generally incomplete.

**Table 7 Habitat significance ratings in the 2004 PSEIS**

Effect		Bering Sea		Aleutian Islands		Gulf of Alaska	
		PA.1	PA.2	PA.1	PA.2	PA.1	PA.2
<b>Changes to living habitat - direct mortality of benthic organisms</b>	direct/ indirect	I	I	I	S+	I	CS-
	cumulative	CS-	CS-/CS+	CS-	CS-/CS+	CS-	CS-/CS+
<b>Changes to benthic community structure</b>	direct/ indirect	I	CS+	I	S+	I	I
	cumulative	CS-	CS-/CS+	CS-	CS-/CS+	CS-	CS-/CS+
<b>Changes in distribution of fishing effort - geographic diversity of impacts and protection</b>	direct/ indirect	I	S+	I	S+	I	I
	cumulative	CS-	CS-/CS+	CS-	CS-/CS+	CS-	CS-/CS+

**4.4.6 Socioeconomics direct/indirect and cumulative effects significance ratings under Preferred Alternative PA.1 and PA.2.**

In the socioeconomic impact analysis in the 2004 PSEIS, the term “significant” for an expected change in a quantitative indicator meant a 20 percent or more change (either plus or minus), relative to the comparative baseline. If the expected change was less than 20 percent, the change is not considered to be significant. The same threshold was used to roughly assess changes in qualitative indicators (e.g., fishing vessel safety). However, whereas changes in quantitative indicators were based on model projections, predicted changes in qualitative indicators were based on the judgment of the socioeconomic analysts.

**Table 8 Socioeconomic significance ratings in the 2004 PSEIS  
Harvesting and processing sectors**

Effect		Catcher vessels		Catcher processors		Inshore processors and motherships	
		PA.1	PA.2	PA.1	PA.2	PA.1	PA.2
<b>Groundfish landings by species group</b>	direct/ indirect	I/S+	I/S+/S-	I/S+	I/S+/S-	I/S+	I/S+/S-
	cumulative	I	I	I	I	I	I
<b>Groundfish ex-vessel value</b>	direct/ indirect	I	I/S-	n/a	n/a	n/a	n/a
	cumulative	I	I	n/a	n/a	n/a	n/a
<b>Groundfish gross product value</b>	direct/ indirect	n/a	n/a	I	I	I	I/S-
	cumulative	n/a	n/a	I	I	I	I
<b>Employment</b>	direct/ indirect	I	I	I	I	I	I
	cumulative	I	I	I	I	I	I
<b>Payments to labor</b>	direct/ indirect	I	I	I	I	I	I
	cumulative	I	I	I	I	I	I
<b>Product quality and product utilization rate</b>	direct/ indirect	n/a	n/a	CS+	CS-/S+	CS+	CS-/S+
	cumulative	n/a	n/a	CS+	S+/S-	CS+	S+/S-
<b>Excess capacity</b>	direct/ indirect	CS+	S+	CS+	S+	CS+	S+
	cumulative	CS+	S+	CS+	S+	CS+	S+
<b>Average costs</b>	direct/ indirect	CS+	CS+/S-	CS+	CS-/S+	CS+	CS-/S+
	cumulative	CS+	S+/S-	CS+	S+/S-	CS+	S+/S-
<b>Fishing vessel safety</b>	direct/ indirect	CS+	CS+/S-	CS+	CS-/S+	n/a	n/a
	cumulative	CS+	S+/S-	CS+	S+/S-	n/a	n/a

**BSAI and GOA regions**

Effect		Alaska Peninsula, Aleutian Islands		Kodiak Island		Southcentral Alaska		Southeast Alaska		Washington inland waters		Oregon coast	
		PA.1	PA.2	PA.1	PA.2	PA.1	PA.2	PA.1	PA.2	PA.1	PA.2	PA.1	PA.2
<b>In-region processing</b>	direct/ indirect	I	I	I	I	S+	I	I	S-	I	I	I	I
	cumulative	I/CS-	I	I	I	I	I	I	S-	I	I	I	I
<b>Regionally owned at-sea processors</b>	direct/ indirect	I	I	S+	I	S+	I	S+	I	I	I	I	I
	cumulative	I	I	I	I	I	I	I	I	I	I	I	I
<b>Extra-regional deliveries of regionally owned catcher vessels</b>	direct/ indirect	I	S-	I	I	I	I	I	S-	I	I	I	I
	cumulative	CS-	CS-	I	I	I	I	I	CS-	I	I	I	I
<b>In-regional deliveries of regionally owned catcher vessels</b>	direct/ indirect	I	S-	I	I	S+	I	I	S-	I	I	I	I
	cumulative	CS-	CS-	I	I	I	I	I	CS-	I	I	I	I
<b>Total direct, indirect, and induced labor income and full-time equivalents (FTEs)</b>	direct/ indirect	I	I	I	I	S+	I	I	S-	I	I	I	I
	cumulative	CS-	CS-	I	I	I	I	I	CS-	I	I	I	I

**Community Development Quota (CDQ) program, Subsistence, Environmental Justice, Market channels, Non-consumptive and non-use benefits**

	Effect		PA.1	PA.2
<b>CDQ program</b>	<b>Allocation of catch to CDQ groups, including potential revenue and potential funds available for approved economic development activities in CDQ communities</b>	direct/ indirect		
		cumulative		
<b>Subsistence</b>	<b>Subsistence use of groundfish</b>	direct/ indirect		
		cumulative		
	<b>Subsistence use of western Alaska salmon and bycatch</b>	direct/ indirect		
		cumulative		
	<b>Subsistence use of Steller sea lions</b>	direct/ indirect		
		cumulative		
<b>Indirect subsistence use: income and joint</b>	direct/ indirect			
	cumulative			
<b>Environmental Justice</b>	<b>Alaska Peninsula and Aleutian Islands</b>	direct/ indirect		CS-
		cumulative		CS-
	<b>Kodiak Island</b>	direct/ indirect		
		cumulative		
	<b>Southcentral Alaska</b>	direct/ indirect		
		cumulative		
	<b>Southeast Alaska</b>	direct/ indirect		
		cumulative		
	<b>Washington inland waters</b>	direct/ indirect		
		cumulative		
<b>Oregon coast</b>	direct/ indirect			
	cumulative			
<b>Market channels</b>	<b>Benefits to U.S. consumers</b>	direct/ indirect		
		cumulative		
<b>Non-consumptive and non-use benefits</b>	<b>Benefits derived from marine ecosystems and associated species</b>	direct/ indirect		S+
		cumulative		S+

**4.4.7 Ecosystem direct/indirect and cumulative effects significance ratings under Preferred Alternative PA.1 and PA.2.**

Significance thresholds for determining the ecosystem-level impacts of fishing in the 2004 PSEIS involved both population-level thresholds that had already been established for species in the system (MSST for target species, fishing-induced population impacts sufficient to lead to listing under the ESA, and fishing-induced impacts that prevent recovery of a species already listed under ESA, for nontarget species) and community- or ecosystem-level attributes that were outside of the range of natural variability for the system. These community or ecosystem-level attributes were more difficult to measure directly, and the range of natural variability of those attributes was not well known. We also lacked sufficient data on population status of some target or non-target species to determine whether they were above or below MSST or ESA-related thresholds. Thus, indicators of the strength of fishing impacts on the system were also used to evaluate the degree to which the preferred alternative might have a significant ecosystem impact.

For the preferred alternative FMP bookends, the possible impacts on 1) predator/prey relationships, including introduction of non-native species; 2) energy flow and redirection (through fishing removals and return of discards to the sea); and 3) diversity were addressed.

**Table 9 Ecosystem significance ratings in the 2004 PSEIS**

Effect		Ecosystem	
		PA.1	PA.2
<b>Change in pelagic forage availability</b>	direct/ indirect	I	I
	cumulative	CS-	CS-
<b>Spatial and temporal concentration of fishery impact on forage</b>	direct/ indirect	I	CS+ / I
	cumulative	CS-	CS-
<b>Removal of top predators</b>	direct/ indirect	I / U	I / U
	cumulative	CS-	CS-
<b>Introduction of non-native species</b>	direct/ indirect	I	I
	cumulative	CS-	CS-
<b>Energy removal</b>	direct/ indirect	I	I
	cumulative	I	I
<b>Energy redirection</b>	direct/ indirect	I	I
	cumulative	I	I
<b>Change in species diversity</b>	direct/ indirect	I / U	I / U
	cumulative	CS-	CS-
<b>Change in functional (trophic) diversity</b>	direct/ indirect	I	I
	cumulative	CS-	CS-
<b>Change in functional (structural habitat) diversity</b>	direct/ indirect	I	S+
	cumulative	CS-	CS+
<b>Change in genetic diversity</b>	direct/ indirect	I / U	I / U
	cumulative	I	I

## 5 Synthesis of Changes Since 2004

### 5.1 Changes in the Management of Fisheries

Since the adoption of the groundfish management policy in 2004, the Council has continued to make changes to its groundfish management program. The changes that have occurred to date can be witnessed in the FMP and regulatory amendments that have been implemented over this time period. Additionally, there have also been national changes affecting the groundfish management program over the last five years. The Magnuson-Stevens Act was reauthorized in 2006, and contained provisions that have affected the groundfish management program to some extent (for example, annual catch limits and provisions governing the development of limited access privilege programs).

Table 10 lists the groundfish FMP amendments that have been implemented from 2004 to the present time, as well as those for which the Council has taken final action, but regulations are still being developed. The Council has recommended over 20 amendments to the BSAI and GOA FMPs since the adoption of its groundfish management policy in April 2004. Additionally, four BSAI and four GOA amendments had been adopted by the Council prior to April 2004, but had not yet been implemented at the time of the writing of the PSEIS. Table 11 provides a synthesis of the major regulatory amendments that have been implemented during the same time period. Between the two lists, the major changes in groundfish management are captured.

In addition, since the 2004 PSEIS, NMFS and the Council have prepared four comprehensive EISs that analyzed changes in the management of the fisheries. The Final Environmental Impact Statement for Essential Fish Habitat in Alaska (EFH EIS, NMFS 2005) evaluates alternatives and environmental consequences for three actions: (1) describing and identifying EFH for fisheries managed by the Council; (2) adopting an approach for the Council to identify Habitat Areas of Particular Concern within EFH; and (3) minimizing to the extent practicable the adverse effects of Council-managed fishing on EFH. In 2010

NMFS and the Council conducted an EFH 5-Year Review that examined information within the 2005 EFH EIS and determined: (1) New and more recent information exists to refine EFH for a small subset of managed species. (2) Certain fishing effects may be impacting sensitive habitats of Bristol Bay red king crab; however additional analysis is needed. (3) The non-fishing impacts analysis, including advisory EFH Conservation Recommendations, should be updated with the most current level of information. The EFH EIS and the 5-year review are available from: <http://alaskafisheries.noaa.gov/habitat/seis/efheis.htm>.

The Alaska Groundfish Harvest Specifications Final Environmental Impact Statement (Harvest Specifications EIS, NMFS 2007) evaluated the environmental, social, and economic effects of alternative harvest strategies for the federally managed groundfish fisheries in the GOA and BSAI management areas. The EIS evaluates the effects of different alternatives on target species, non-specified species, forage species, prohibited species, marine mammals, seabirds, essential fish habitat, ecosystem relationships, and economic aspects of the groundfish fisheries. Each year, NMFS prepares a SIR for that EIS to evaluate the need to prepare a supplemental EIS for the groundfish harvest specifications. The EIS and each SIR is available from: <http://alaskafisheries.noaa.gov/analyses/specs/eis/default.htm>.

The Bering Sea Chinook Salmon Bycatch Management Final Environmental Impact Statement (Chinook EIS, NMFS 2009) evaluated the Bering Sea pollock fishery and the effects of alternatives to minimize Chinook salmon bycatch to the extent practicable in that fishery.

Finally, a draft Steller Sea Lion Protection Measures Environmental Impact Statement is being finalized in early 2014 (NMFS in prep), which evaluates the environmental, social, and economic effects of alternatives to the Steller sea lion protection measures for the BSAI groundfish fisheries, in particular the Atka mackerel, Pacific cod, and pollock fisheries in the Aleutian Islands.

**Table 10 BSAI and GOA Groundfish FMP amendments since 2004**

BSAI amd	GOA amd	Action	Date of Council action	Effective date of amd
48	48	Revisions to the annual harvest specification process for groundfish	2003	2004
62	62	Single geographic location	2002	2009
	63	Move skates to the target species category	2003	2004
65	65	Identify habitat areas of particular concern, and harvest control measures	2005	2006
	67	IFQ – allow category B quota share to be fished on a vessel of any length, in any area	2005	2007
	68	Rockfish pilot program	2005	2006
	69	Change total allowable catch specification for the 'other species' category	2005	2006
71		CDQ – allow limited non-fishing investments, CDQ oversight, and 3-year allocation cycle ( <i>superseded by provisions of the revised Magnuson-Stevens Act</i> )	2002	--
73	77	Remove dark rockfish from the FMP	2007	2009
	72	Rescind retention requirements in shallow water flatfish fishery	2003	2008
78	73	Revise essential fish habitat descriptions, harvest control measures	2005	2006
79		Groundfish retention standard (suspended as of 2011)	2003	2008
80		Sector allocation and cooperative for head and gut groundfish catcher processors	2007	2007
81	74	Revised management policy	2004	2004

BSAI amd	GOA amd	Action	Date of Council action	Effective date of amd
82		Allocation of Aleutian Islands pollock total allowable catch to the Aleut Corporation	2004	2005
83	75	Housekeeping updates to the FMP	2004	2005
84		Exempt certain vessels from salmon bycatch savings area closures	2005	2007
85		Pacific cod sector allocations	2006	2008
86	76	Observer program restructuring	2010	2012
87		CDQ eligibility ( <i>superseded by provisions of the revised Magnuson-Stevens Act</i> )	2006	--
88		Aleutian Islands Habitat Conservation Area boundary adjustment	2007	2008
89		Bering Sea habitat conservation measures	2007	2008
90	78	Allow post delivery transfers for Amendment 80 cooperatives (BSAI 90) and rockfish program (GOA 78)	2007	2009
91		Revise PSC limit for salmon bycatch, rescind savings areas	2009	2010
	79	Set allowable biological catch and overfishing level specifications for the 'other species' category	2008	2008
92	82	Rescind latent trawl gear licenses	2008	2009
93		Modify rules for Amendment 80 cooperative formation	2010	2011
94		Require gear modification to trawl sweeps for nonpelagic trawl vessels targeting flatfish	2009	2010
	83	Pacific cod sector allocations	2009	2012
	85	Remove BSAI stand down provision for catcher processors participating in rockfish pilot program	2008	2009
	86	Add a Pacific cod fixed gear endorsement to GOA licenses	2009	2011
95		Move skates from the other species to the target species category	2010	2010
96	87	Revise FMP species to fit either in target or ecosystem component categories, describe current practice for setting annual catch limits and using accountability measures	2010	2010
97		Allow vessel replacement for Amendment 80 vessels	2010	2012
	88	Central GOA Rockfish Program: allocate exclusive harvest privileges to trawl vessels for Pacific ocean perch, pelagic shelf rockfish, and northern rockfish	2010	2011
	89	Establish area closures around Kodiak for GOA Tanner crab protection, require trawl sweep modification for GOA flatfish fisheries	2010	2014
98	90	Update EFH descriptions and associated information, and impacts of non-fishing activities on EFH, and extend timing of HAPC process to correlate with the EFH 5-year review	2011	2012
99		Freezer longline maximum length overall adjustment	2012	2013
100	91	Add an ecosystem component category for grenadiers to the FMP	2014	
	93	Establish PSC limits for Chinook salmon in the Central/Western GOA pollock fisheries, and require full retention of salmon	2011	2012
	94	Revise the vessel use caps applicable to sablefish quota share held by GOA Community Quota Entities (CQE) and add three eligible communities to the CQE Program	2011	2013
	95	Establish PSC limits for Pacific halibut in the Gulf of Alaska	2012	2014
	96	Provide ability for CQE to buy small blocks of halibut QS	2013	

BSAI amd	GOA amd	Action	Date of Council action	Effective date of amd
	97	Chinook PSC management measures for non-pollock trawl fisheries	2013	
102		CQE program in Area 4B and Area 4B "fish up"	2012	2014
104		Establish habitat areas of particular concern (HAPC) skate sites	2013	
105		Provide flexibility for flatfish specifications	2013	
106		Allow replacement of AFA vessels	2013	

Note: '--' = action has not yet taken place

**Table 11 Major regulatory amendments for the BSAI and GOA groundfish fisheries since 2004**

Note: does not include regulatory amendments that implement FMP amendments, or are temporary, interim, corrections or clarifications

Subject	Action	Effective date of amendment
Harvest specifications	2004 BSAI and GOA harvest specifications	2004
	2005-2006 BSAI and GOA harvest specifications	2005
	2006-2007 BSAI and GOA harvest specifications	2006
	2007-2008 BSAI and GOA harvest specifications	2007
	2008-2009 BSAI and GOA harvest specifications	2008
	2009-2010 BSAI and GOA harvest specifications	2009
	2010-2011 BSAI and GOA harvest specifications	2010
	2011-2012 BSAI and GOA harvest specifications	2011
	2012-2013 BSAI and GOA harvest specifications	2012
	2013-2014 BSAI and GOA harvest specifications	2013
2014-2015 BSAI and GOA harvest specifications	2014	
Catch restrictions	remove a harvest restriction on the HLA Atka mackerel fishery in the Aleutian Islands	2004
	full retention of demersal shelf rockfish and donation rules	2004
	allow processors to use the offal from halibut and salmon intended for the prohibited species donation program for commercial products (fish meal)	2004
	adjust the maximum retainable allowance (MRA) enforcement period for BSAI pollock from enforcement at anytime during a fishing trip, to enforcement at the time of offload	2004
	revise the MRAs for groundfish in the GOA arrowtooth flounder fishery	2009
	repeal groundfish vessel incentive program	2008
	GOA pollock trip limits	2009
	revise the MRAs for groundfish in the BSAI arrowtooth and Kamchatka flounder fishery	2013
	remove groundfish retention standard requirements	2013
BSAI fixed gear parallel fishery management measures	2012	
Bering Sea AFA pollock fishery	remove the expiration date of regulations implementing the AFA	2004
CDQ	simplify the processes for making quota transfers, for authorizing vessels as eligible to participate in the CDQ fisheries, and for obtaining approval of alternative fishing plans	2005
	Revise CDQ regulations for recordkeeping, vessel licensing, catch retention requirements, and fisheries observer requirements to ensure that they are no more restrictive than regulations in effect for comparable non-CDQ fisheries managed under individual fishing quotas or cooperative allocations	2012

<b>Subject</b>	<b>Action</b>	<b>Effective date of amendment</b>
BSAI and GOA IFQ sablefish fishery	allow quota share holders in 4C to fish in either 4C or 4D	2005
	IFQ cost recovery fee reform	2006
	exclude tagged halibut and sablefish catches from IFQ account deduction	2006
	allow transfers of quota share for medical reasons; require VMS for vessels harvesting sablefish in the BSAI; allow category B catcher vessel quota share for Southeast Outside District sablefish to be fished on catcher vessels of any length	2007
	allow processing of non-IFQ species on a vessel with B, C, or D shares onboard	2008
	allow longline pot gear in Bering Sea during June, allow mobilized military personnel to make temporary IFQ transfers	2008
	IFQ online access to IFQ account information	2008
GOA rockfish pilot program	revise central GOA rockfish fisheries program monitoring and enforcement provisions	2007
	extension of central GOA rockfish program under MSA	2008
seabirds	revise seabird avoidance measures in the hook-and-line fisheries off Alaska to reduce incidental catch of the short-tailed albatross and other seabird species	2004
	revise seabird avoidance measures to strengthen gear standards for small vessels and eliminate certain unnecessary requirements	2008
	eliminate seabird avoidance requirements for vessels less than or equal to 55 ft LOA in 4E	2009
Marine mammals	revise SSL protection measures for the GOA pollock and Pacific cod fishing closure areas near four SSL haulouts and modify the seasonal management of pollock harvest in the GOA	2005
	Revises SSL protection measures for the Aleutian Islands Atka mackerel and cod fisheries	2010
	Designate critical habitat for the Cook Inlet beluga whale	2011
Research areas	reopen the Cape Sarichef Research Restriction Area in the BSAI to directed fishing for groundfish	2006
	close Chiniak Gully Research Area to all commercial trawl fishing from August 1 to September 20, 2006-2010	2006
Observer program	provide flexibility in the deployment of observers	2004
	electronic reporting for vessels – ATLAS (at-sea observer communication system requirements)	2004
	technical amendment extending the North Pacific observer program beyond 2002	2004
	revise requirements facilitating observer data transmission and improve support for observers (ATLAS 2)	2006
	observer sunset date removal	2007
	Improve operational efficiency of the Observer Program and collected data	2010

Subject	Action	Effective date of amendment
reporting requirements	make effective the collection of information under the AFA amendments	2004
	exempt groundfish catcher processors and motherships with operational VMS from check-in check-out requirements	2008
	implement new electronic groundfish catch reporting system, the Interagency Electronic Reporting System (IERS), and its data entry component, eLandings	2009
	exempt vessels using dinglebar gear from the requirement to use VMS	2009
	Miscellaneous recordkeeping and reporting revisions, incl to e-Landings	2008
	BS Chinook salmon bycatch economic data collection for the Bering Sea pollock fishery	2012
	Modify equipment and operational requirements for freezer longliners named on License Limitation Program licenses endorsed to catch and process Pacific cod at sea with hook-and-line gear in the BSAI	2012

## 5.2 Management changes as they pertain to the Council's policy goal

The following section evaluates the Council's management actions since the completion of the Groundfish PSEIS in 2004. The Council's groundfish policy (the approved, preferred alternative from the Groundfish PSEIS) is structured with 9 goal statements, each supported by specific objectives. For each goal statement and set of objectives, we identify the relevant FMP and regulatory amendments implemented over the last eight years, as well as other management steps that the Council has taken with respect to these goals. The discussion in this section is not necessarily comprehensive, as each amendment may be fit to many of the Council's goals and objectives. Rather, it is intended to provide an overview of the major management changes of the last eight years, and how they compare to the management objectives that the Council set for itself in 2004.

Additionally, we have also looked back to the example FMPs that illustrated the preferred alternative analyzed in the Groundfish PSEIS. Given the Council's actions of the last eight years, the current groundfish management program does now fall within the range of example FMPs that were analyzed in the Groundfish PSEIS.

Each of the sections below identifies one of the Council's policy goals. The specific objectives, sometimes abbreviated, linking to that policy goal are listed in a box at the beginning of the section. If the objectives are also linked to a specific item on the Council's workplan<sup>38</sup>, that is noted also.

### Prevent Overfishing

*Adopt conservative harvest levels*  
*Use existing OY caps.*  
*Specify OY as a range.*  
*Periodic reviews of F40 and adopt improvements*  
*Improve management through species categories (on workplan)*

#### FMP amendments related to this goal statement

- revisions to the harvest specifications process (B48/G48)
- moved skates to target category (G63)

<sup>38</sup> In order to track the implementation of the various management objectives over time, the Council developed a workplan to prioritize issues for consideration. The first draft of the workplan was developed in June 2004, and it has since been once revised, in February 2007. The Council is updated on the status of this workplan at each meeting.

- biologically-based specifications for GOA ‘other species’ category (G69, G79)
- amendments to bring FMPs in line with annual catch limit requirements, including moving other species into target category, and creating an ecosystem component category (B95, G87)
- amendment to include grenadiers in the ecosystem component of the FMPs (B100, G91)
- Restructured observer program reduces bias in catch accounting (B86, G76)
- Provide flexibility for flatfish specifications (B105)

Regulatory amendments related to this goal statement

- Annual specifications for setting harvest levels

Other management actions related to this goal statement

- Regular CIE reviews for stock assessments and harvest strategies

**Promote Sustainable Fisheries and Communities**

*Promote conservation while providing for OY*  
*Promote management measures that avoid social and economic disruption*  
*Promote fair and equitable allocation*  
*Promote safety*

These considerations are applied to all management actions

**Preserve Food Web**

*Develop indices of ecosystem health (on workplan)*  
*Improve ABC calculations to account for uncertainty and ecosystem*  
*Limit harvest on forage species*  
*Incorporate ecosystem considerations in fishery management*

Other management actions related to this goal statement

- Uncertainty and ecosystem considerations taken into account during stock assessment and harvest specifications
- Ecosystem indices reported and assessed in annual ecosystem SAFE report
- Development of the Aleutian Islands Fishery Ecosystem Plan
- Development of ecosystem synthesis reports for the Bering Sea and the Aleutian Islands ecosystem areas

**Manage Incidental Catch and Reduce Bycatch and Waste**

*Continue and improve current incidental catch and bycatch program (on workplan)*  
*Develop incentive programs for bycatch reduction (on workplan)*  
*Encourage research for non-target species population estimates (on workplan)*  
*Develop management measures that encourage techniques to reduce bycatch (on workplan)*  
*Continue to manage incidental catch and bycatch through seasons and areas*  
*Account for bycatch mortality in TAC accounting (on workplan)*  
*Control prohibited species bycatch through PSC limits (on workplan)*  
*Reduce waste to biologically and socially acceptable levels*

#### FMP amendments related to this goal statement

- Groundfish retention standard (B79, subsequently removed)
- Bering Sea Chinook salmon bycatch restrictions (B84, B91)
- Trawl sweep elevation requirement in the flatfish fisheries (B94, G89)
- GOA area closures to reduce bairdi crab bycatch (G89)
- Establishment of PSC limits for Chinook salmon in the GOA trawl pollock and non-pollock fisheries (G93, G97) – *Council approved, not yet implemented for G97*
- Reduction in PSC limits for GOA halibut (G95)
- Restructured observer program reduces bias in bycatch accounting (B86, G76)

#### Regulatory amendments related to this goal statement

- Annual specifications for setting prohibited species limits
- Revisions to MRAs
- Revision to regulations for prohibited species donation program and fishmeal

#### Other management actions related to this goal statement

- Upcoming discussion of Bering Sea Chinook and chum salmon bycatch
- Upcoming discussion paper on BSAI halibut bycatch
- Upcoming discussion paper on BSAI crab bycatch
- Council encourages research through annual research priorities
- NMFS and observer program work on improving statistical methods for bycatch accounting (as part of National Bycatch Report initiative)

#### **Avoid Impacts to Seabirds and Marine Mammals**

*Continue to protect ESA-listed and other seabirds*  
*Maintain or adjust SSL protection measures (on workplan)*  
*Encourage review of marine mammal and fishery interactions*  
*Continue to protect ESA-listed and other marine mammals (on workplan)*

#### Regulatory amendments related to this goal statement

- Revisions to seabird avoidance measures, including in Area 4E
- Revisions to Steller sea lion closures for pollock and cod fisheries in the GOA
- Revisions to Steller sea lion closures for atka mackerel and cod fisheries in the Aleutian Islands
- Designation of critical habitat for Cook Inlet beluga whale

#### Other management actions related to this goal statement

- Council receives protected species report at each meeting, monitoring issues with seabirds and marine mammals
- Reconsideration of Steller sea lion closures in new biological opinion and EIS

#### **Reduce and Avoid Impacts to Habitat**

*Review and evaluate efficacy of habitat protection measures for managed species (on workplan)*  
*Identify EFH and HAPC, and mitigate fishery impacts as necessary (on workplan)*  
*Develop MPA policy*  
*Encourage research on baseline habitat mapping (on workplan)*  
*Develop goals and criteria for MPAs; implement as appropriate (on workplan)*

FMP amendments related to this goal statement

- HAPC (B65/G65) and EFH (B78/G73) amendments, and associated fishery area closures in the GOA and AI
- Bering Sea Habitat Conservation (B89) with area closures for non-pelagic trawling
- Trawl sweep elevation requirement in the flatfish fisheries (B94, G89)
- Update to EFH information with findings from the 2010 EFH 5-year review (B98/G90)
- Designation of skate nurseries in Bering Sea as HAPC (B104) – *approved by Council, not yet implemented*

Other management actions related to this goal statement

- Discussion paper resulting from EFH 5-year review to look at groundfish impacts on crab EFH (especially red king crab in southwestern Bristol Bay)
- Discussion of 2015 EFH 5-year review, including updates to fishing effects model and EFH descriptions
- Discussion of a Northern Bering Sea Research Area Research Plan (subsequently tabled)
- Council discussion regarding nominating Alaska MPAs to national MPA center register (tabled)
- Council encourages research through annual research priorities

**Promote Equitable and Efficient Use of Fishery Resources**

<p><i>Provide economic and community stability through fair allocation</i> <i>Maintain LLP and initiate rights-based management programs (on workplan)</i> <i>Periodically evaluate effectiveness of rights-based management programs</i> <i>Consider efficiency when adopting management measures (on workplan)</i></p>
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FMP amendments related to this goal statement

- Sector allocations for Pacific cod (B85, G83); fixed gear endorsement in GOA (G86)
- Sector allocations and cooperative formation for 3 flatfish species, POP, and Atka mackerel in BSAI (Amendment 80); vessel replacement and cooperative revisions (B80, B90, B93, B97)
- Latent licenses rescinded (B92/82, G86)
- Cooperative program for rockfish in central GOA (G68); program revisions (G78, G85); new program authorized (G88)
- BSAI freezer longline maximum length overall adjustment (B99)
- AI pollock to the Aleut Corporation (B82); Single geographic location amended for pollock motherships (B62, G62); AFA vessel replacement (B106)
- IRIU rescinded in GOA for shallow water flatfish (G72)
- IFQ B quota share holders can fish on any size vessel (G67), “fish up” in Area 4B (B102)
- Revisions to GOA CQE program entities, revise vessel use caps, allow purchase of small blocks, establish CQE program in Area 4B (G94, G96, B102) – *G96 approved by Council, not yet implemented*

Regulatory amendments related to this goal statement

- Modify monitoring and reporting requirements for BSAI cod freezer longliners
- BSAI fixed gear parallel fishery management measures
- Minor revisions to AFA, CDQ, IFQ, rockfish programs
- GOA pollock trip limits

Other management actions related to this goal statement

- Permit fee authorization (all FMPs)

## Increase Alaska Native Consultation

*Incorporate local and traditional knowledge into fishery management*  
*Consider ways to enhance local and traditional knowledge collection*  
*Increase Alaska Native participation in fishery management (on workplan)*

### FMP amendments related to this goal statement

- AI pollock to the Aleut Corporation (B82)
- Revisions to GOA CQE program eligible entities, revise vessel use caps, allow purchase of small blocks, establish CQE program in Area 4B (G94, G96, B102) – G96 approved by Council, not yet implemented

### Other management actions related to this goal statement

- Community outreach and consultation policy adopted by Council in 2008
- Community committee helps prioritize outreach (currently focused on BSAI salmon analyses)
- Website redesigned to include a rural outreach component

## Improve Data Quality, Monitoring, and Enforcement

*Increase utility of observer data (on workplan)*  
*Develop equitable funding mechanisms for the NPGOP (on workplan)*  
*Increase economic data reporting requirements (on workplan)*  
*Improve technology for monitoring and enforcement (on workplan)*  
*Encourage development of an ecosystem monitoring program*  
*Cooperate with NPRB to identify needed research*  
*Promote enforceability*  
*Coordinate management and enforcement programs with Federal, State, international, and local partners*

### FMP amendments related to this goal statement

- Observer program restructuring (B86/G76)
- Remove dark rockfish from FMP, allow management by State of Alaska (B73/G77)

### Regulatory amendments related to this goal statement

- Electronic reporting, online accounting
- Changes to VMS requirements (required for sablefish in BS, no longer required for dinglebar lingcod in GOA)
- Repeal of vessel incentive program
- Changes to observer program to provide flexibility in deployment and improve operational efficiency
- Bering Sea Chinook salmon bycatch economic data collection

### Other management actions related to this goal statement

- Discussion paper on VMS use and requirements
- Electronic monitoring is being developed as a tool for catch monitoring
- Council's economic data collection committee
- Council encourages research through annual research priorities, cooperates with NPRB
- Council initiated and participates in Alaska Marine Ecosystem Forum, as well as maintaining other relationships with partner entities

### 5.3 Changes in groundfish and environmental conditions

The following is a brief summary of Council documents that evaluate groundfish and environmental conditions.

#### Groundfish SAFE reports

The Council's annual Groundfish Stock Assessment and Fishery Evaluation (SAFE) report provides a detailed analysis of the status of groundfish stocks each year. No groundfish species is currently, nor has been, overfished or subject to overfishing, since the analysis that was conducted in the Alaska Groundfish Fisheries Programmatic SEIS.

#### Ecosystem Assessments in the annual Groundfish SAFE report

The Alaska Fisheries Science Center prepares an appendix to the annual SAFE reports<sup>39</sup> which provides a comprehensive overview of environmental conditions in the BSAI and GOA on an annual basis. The appendix includes an ecosystem assessment for the Bering Sea, Aleutian Islands and Gulf of Alaska, as well as various data series that are ecosystem status and management indicators.

The AFSC staff has developed a format for reporting various indices over time, and comparing the most recent five years against the historical record for each indicator. Although the correct pages from the source document are referenced, they are not included as part of this discussion paper. The first section of the NPFMC Ecosystem Considerations appendix includes abbreviated report cards for the Eastern Bering Sea and the Aleutian Islands (a report card for the GOA is being prepared in 2012), as well as an executive summary of recent trends. The report shows climate indices for the North Pacific, including the Pacific Decadal and Arctic Oscillations, and eastern Bering Sea ice retreat and cold pool volume indices. All of these are within one standard deviation of the historical mean for the data set. The report also shows ecosystem indices for the groundfish fishery regions, and fishery indices for the Bering Sea, Gulf of Alaska, and Aleutian Islands. The five year mean is generally within one standard deviation of the historic mean.

#### 2010 EFH 5-year review

Additionally, the 2010 EFH 5-year review<sup>40</sup> (NPFMC and NMFS 2010) evaluated changes in fishing impacts on habitat from the period analyzed in the EFH EIS (and incorporated by reference in the PSEIS) and the subsequent five-year period. Total trawl fishing effort decreased in all regions for pelagic and non-pelagic trawling, between the period analyzed in the EFH EIS (1998-2002) and the subsequent period (2003-2007). The report included figures plotting both the average fishing intensity, by five year period, as well as the difference in intensity between periods. The principal shifts in fishing intensity are summarized in the following paragraphs.

Bering Sea trawl: There has been no radical shift in the distribution of nonpelagic trawl fishing intensity in the Bering Sea from the period 1998-2002 to the period 2003-2007. The large area of the central Bering Sea that was subject to particularly high bottom trawl intensity in 1998 - 2002 received moderately lighter intensity from 2003 - 2007. Four principal areas were subject to increased bottom trawl intensity; 1) along the northwest border of the Pribilof Islands Habitat Conservation Zone, 2) off of Kuskoquim Bay, 3) along the southern border of the King Crab Protection Zone and 4). Most of the increases were moderate, though 2 of 8 blocks in the 4th area along the western side of the Nushagak Peninsula (inner

<sup>39</sup> Zador, S. ed. 2011. Ecosystem Considerations for 2012. North Pacific Fishery Management Council. Anchorage, AK 99501.

<sup>40</sup> NPFMC and NMFS. 2010. Essential Fish Habitat (EFH) 5-year Review for 2010 Summary Report: Final. April 2010. <http://www.fakr.noaa.gov/habitat/efh/review.htm>

Bristol Bay) had strong increases. The area of high intensity effort north of Akutan Island, Unimak Pass and Unimak Island remained a high intensity area. Many of the shifts within that area registered as moderate or strong changes because of the high absolute levels of fishing intensity. The central Bering Sea showed a pattern of higher intensity in pelagic trawling around a central area of lower intensity near the border of management areas 509 and 513. Decreases in fishing intensity occurred on the west side of the Nushagak Peninsula, off of Kuskoquim Bay, northeast of St George Island, and Pervenets Canyon to the far northwest. Intensity dropped in the area north of Akutan Island, Unimak Pass and Unimak Island, while there were increases on the southwest and eastern sides of that area.

Aleutian Islands trawl: There was a trend of decreases in bottom trawl fishing throughout the region, from the 1998-2002 period to the 2003-2007 period, with moderate decreases noted in the Adreanof Islands and Petrel Bank, as well as throughout the western portions of Rat Islands. Stronger increases in intensity occurred around Buldir Island and west of Tanaga, with moderate increases found in the Near Islands. Pelagic trawling in the Aleutian Islands decreased from 416 blocks fished in the first period, mainly on the 541/518 (Bering Sea) border, to only 16 blocks fished in the most recent period. Fishing intensity for pelagic trawl fisheries in the Aleutian Islands is currently very minor.

Gulf of Alaska trawl: Moderate decreases were seen in intensity of nonpelagic trawl fishing throughout the region, from the earlier (1998-2002) time period to the later (2003-2007), with overall blocks fished decreasing by approximately 40%. Largest drops in intensity occurred near Chiniak and south of Chirikof Island with moderate increases in intensity to the northwest of Chirikof Island and south of Ugak Island. Very minor changes in intensity were seen in pelagic trawling in the GOA, with moderate increases in Shelikof Strait, but decreases in intensity in most Kodiak nearshore waters, as well as in isolated areas of 610 and 620.

### **Aleutian Islands Fishery Ecosystem Plan**

In December 2007, the Council completed a Fishery Ecosystem Plan (FEP) for the Aleutian Islands ecosystem area. The FEP evaluates physical, biological, and socioeconomic relationships among ecosystem components, to identify areas of uncertainty and associated risk. Key ecosystem interactions, including climate and physical factors, predator-prey relationships, fishing effects, regulatory constraints, and socioeconomic (both fishing and non-fishing) activities occurring in the area are identified and associated with monitoring indicators. These indicators are tracked on an annual basis through the Aleutian Islands Ecosystem Assessment, in the Groundfish SAFE report.

## **6 Review of conclusions in the 2004 PSEIS**

This section summarizes the results from the expert team that reviewed the 2004 PSEIS conclusions. Each expert was asked to review the description of the impacts of the groundfish fisheries on his or her resource component (e.g., assessed species or species complex), based on new information that has become available since the PSEIS analysis was completed. The expert followed a template to consider whether management of or the status of the resource has changed, whether new information is available regarding the impacts of the fisheries on the resource, whether there are new methods of analysis or protocols for evaluating impacts. A copy of the template is included in Appendix 2. Based on these considerations, the expert was asked to conclude whether a new analysis, using the latest methods and information, would reach a seriously different conclusion.

The sections below synopsise the experts' review of the 2004 PSEIS conclusions. Each section begins with a summary table for the group of resource components, identifying the expert's conclusion and a

short rationale. Additional points of rationale are captured in bullets following the summary table. The complete reviews for each resource component are included in Appendix 4, which is available online.

## 6.1 Target groundfish species

Table 12 through Table 15 provide short, overall summaries of the target groundfish species reviews<sup>41</sup>, with respect to whether a new analysis using the latest methods and information would reach a seriously different conclusion than is articulated in the 2004 PSEIS. The tables also provide a short statement of rationale for each species. The complete review for each species may be found in Appendix 4 to this document (which is posted online).

**Table 12 Summary of expert review of round fish species**

Species	Would a new analysis reach a significantly different conclusion?		Comments / Rationale
	BSAI	GOA	
pollock	No	Possibly	BSAI: A difference with a new analysis would be the increased difficulty in adapting the technical interaction model to account for increased complexity in management and to predict outcomes of the TAC-setting process. GOA: Groundfish fisheries and their management have been fairly stable since 2002, which inclines towards an assumption that the conclusions would be similar. There are two changes in the GOA ecosystem that may merit further evaluation, however: increase in abundance of arrowtooth flounder (predator of pollock), and a resurgence of large whales, in particular the humpback whale.
Pacific cod	No	No	BSAI: In the future, analysis of the age-structured model for the Aleutian Islands stock, which is under development, will be informative. GOA: The current analysis uses modern methods, and is relatively robust to the assumptions of the analysis.
sablefish	No	No	The current analysis uses modern methods and is relatively robust to the assumptions of the analysis.
Atka mackerel	No	No	BSAI and GOA: new and updated information for the BSAI, and limited new information for the GOA, have been incorporated into the stock assessment, but have not resulted in a different conclusion.

### Pollock, Pacific cod, sablefish, and Atka mackerel

- Management changes:
- There have been no changes to the harvest control rules for the stocks.
  - Some other management changes have affected the timing and/or distribution of the fisheries, including Chinook salmon PSC limits for the pollock fisheries, cod sector allocations, and Steller sea lion harvest restrictions.
- Status changes:
- Stocks are within the range of variability estimated in the 2004 PSEIS.
- New information on impacts:
- There have been changes in observer coverage requirements, resulting from the salmon bycatch measures in the Bering Sea, and observer restructuring.
  - Some added acoustic survey years have provided additional information.
- New methods to assess impacts:
- Methods are being developed to explore the implications of incorporating stock-specific uncertainty buffers to establish ABCs.

<sup>41</sup> Note, there have been some changes in the BSAI and GOA groundfish FMPs of species names, or species complexes, since the 2004 PSEIS. A summary of these changes is included in Appendix 3.

**Table 13 Summary of expert review of flatfish species**

Species	Would a new analysis reach a significantly different conclusion?		Comments / Rationale
	BSAI	GOA	
yellowfin sole	No	<i>n/a</i>	BSAI: Some new information regarding temperature-dependent growth has become available, and is incorporated into the assessment, but it has not resulted in a different conclusion about the effect of the fishery on the resource.
greenland turbot	No	<i>n/a</i>	BSAI: The current analysis uses modern methods and is relatively robust to the assumptions of the analysis.
arrowtooth flounder	No	No	BSAI: New information may change the estimate of arrowtooth flounder female spawning biomass, but would not change the PSEIS conclusions. GOA: Arrowtooth biomass is consistently increasing, as identified in the PSEIS.
Kamchatka flounder	No	<i>n/a</i>	BSAI: fishery-independent information is on the same order as before, and fisheries mortality remains at a moderate level.
northern and southern rock sole <sup>42</sup>	No	No	BSAI: some new information regarding temperature-dependent growth is available and will be incorporated in the assessment, but will not result in a different conclusion. GOA: the current analysis uses modern methods, and is relatively robust to the assumptions of the analysis. The status of stocks is within the range of variability of the 2004 PSEIS analysis.
flathead sole	No	No	BSAI and GOA: Qualitatively, the status of flathead sole has not changed since the 2004 PSEIS.
Alaska plaice	No	<i>n/a</i>	BSAI: The current analysis uses modern methods, and Alaska plaice resource is high in abundance and lightly harvested.
shallow water flatfish	<i>n/a</i>	No	GOA: The majority of shallow water complex biomass is rock sole, for which an assessment model was developed in 2012. Other flatfish in the complex have been increasing or showing no trend in biomass since 2004.
deepwater flatfish	<i>n/a</i>	No	GOA: The deepwater flatfish complex is lightly exploited and current methods would reach similar conclusions.
rex sole	<i>n/a</i>	No	GOA: Rex sole is lightly exploited and current methods would reach similar conclusions.
other flatfish	No	<i>n/a</i>	BSAI: The current analysis uses modern methods, and Alaska plaice resource is lightly harvested, primarily as bycatch

### Flatfish

Management changes:

- Implementation of Amendment 80 in the BSAI has significantly changed the timing and utilization of flatfish fisheries.

Status changes:

- Stocks are within the range of variability estimated in the 2004 PSEIS, with the exception of BSAI flathead sole, which has a larger biomass than previously estimated.

New information on impacts:

- Trawl sweep modifications in the BS and GOA have reduced the fishery impact on the seafloor, and unobserved mortality of shellfish.
- Observer restructuring has resulted in new observer information, particularly on small boats in the GOA.

New methods to assess impacts:

- Some stocks are now being assessed in a higher tier, resulting in differences in the way the productivity of the stock and risk are incorporated into the ABC calculation.

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<sup>42</sup> The BSAI assessment is limited to northern rock sole.

**Table 14 Summary of expert review of rockfish species**

Species	Would a new analysis reach a significantly different conclusion?		Comments / Rationale
	BSAI	GOA	
Pacific ocean perch	No	No	BSAI: A sharp rise in biomass has occurred in recent years across all spatial subareas. In the future, work on the impact of disproportionate harvest on yield and biomass for stocks that exhibit spatial structure will be informative. GOA: The assessment uses the same assessment model as the 2004 PSEIS, and stock status is within the range of variability analyzed in that document.
northern rockfish	Probably not	No	BSAI: Future work will be informative for northern rockfish, which exhibits stock structure at spatial scales smaller than our current management units, and which occasionally shows disproportionate harvesting patterns. GOA: The current analysis uses modern methods, and the assessment model indicates that conclusions are still valid.
shortraker rockfish	Probably not	No	BSAI: Shortraker rockfish exhibit spatial structure, and consistent disproportionate spatial harvesting would be expected to result in reductions of biomass and yield. Limited genetic samples currently exist for shortraker, however, to undertake spatial stock analysis. GOA: Stock status can still not be determined. The fishery is not open as a target fishery, and it is unlikely that a conservation concern has developed since the 2004 PSEIS.
blackspotted/ rougheye rockfish	Probably not	Yes	BSAI: Future work will be informative for these species, which exhibit stock structure at spatial scales smaller than our current management units, disproportionate harvesting patterns and high subarea exploitation rates, and declines in subarea population abundance. GOA: There is now an age-structured stand-alone assessment for these stocks, so the impact of the fisheries on the resource can be better monitored. The impacts of the fishery on change in biomass can be changed from "unknown" to "insignificant".
dusky rockfish	<i>n/a</i>	Yes	GOA: There is now an age-structured stand-alone assessment for dusky rockfish, so the impact of the fisheries on the resource can be better monitored. The impacts of the fishery on change in biomass can be changed from "unknown" to "insignificant".
demersal shelf rockfish	<i>n/a</i>	No	GOA: the current analyses indicate that the conclusions of the 2004 PSEIS are still valid, however if DSR are moved to a different tier status after review of a new model in 2014, then the category "change in biomass level" could change from "unknown" to a different rating.
thornyhead rockfish	<i>n/a</i>	Yes	GOA: Beginning in 2004, the thornyhead rockfish complex was downgraded to a Tier 5 species, primarily because of uncertainty in the validity of age readings for shortspine thornyhead. As a result, the conclusions of "insignificant" in the 2004 PSEIS should be changed to "unknown". However, it is unlikely that a conservation concern has developed.
other rockfish	No	No	BSAI: Given the absence of new information, it is unlikely a new analysis would result in a different conclusion. GOA: Data for most "other rockfish" species is sparse. Since the fishery is not opened as a target fishery, it is unlikely that a conservation concern has developed since 2004.

Rockfish

- Management changes:
- Implementation of Amendment 80 in the BSAI, and the rockfish programs in the Central GOA, have extended the timing of some rockfish fisheries.
- Status changes:
- Stocks are within the range of variability estimated in the 2004 PSEIS, except BSAI Pacific ocean perch, for which the estimated biomass has doubled since 2004.
- New information on impacts:
- There is new information about spatial structure for some rockfish species.
  - The use of pelagic trawl gear in the GOA rockfish fisheries has been increasing, reducing impacts of the fishery on habitat.
  - Bycatch estimates decreased for the majority of species in the Central GOA following the implementation of the rockfish program.
- New methods to assess impacts:
- Some stocks are now being assessed in a higher tier, resulting in differences in the way the status relative to stock size reference points are determined.
  - A template has been developed for evaluating the types of information to be considered when defining the spatial bounds of “stocks”, which is in the process of being applied to many rockfish species.

**Table 15 Summary of expert review of squid, octopus, sharks, sculpin, and skate species**

Species	Would a new analysis reach a significantly different conclusion?		Comments / Rationale
	BSAI	GOA	
squid	No	No	Some new information is available from the observer program, and a separate squid complex in the GOA will improve management, but these are not likely to result in a different conclusion.
octopus	No	No	Since the status of octopus is unknown, the effect of the fishery remains unknown.
sharks	No	No	The status of sharks remains unknown, and it is unlikely that a conservation concern has developed since 2004.
sculpins	No	No	BSAI and GOA: Alternative methodologies have been explored in the assessment, but they do not result in significantly different conclusions.
skates	No	No	BSAI and GOA: a new analysis could provide more detailed description of impacts, but would not reach a different conclusion.

Squid, octopus, sharks, sculpins, skates

- Management changes:
- These species are now all managed as separate target species assemblages, rather than under the “other species” group.
- Status changes:
- Status remains unknown for most stocks within these complexes. Where more is known, there is estimates of abundance have not changed significantly since 2004.
- New information on impacts:
- Species-level identification within the complexes, and recording of other biological information, have improved.
  - For octopus, recent discard mortality information suggests that the impacts of the fishery on the resource have been overestimated.
  - Observer restructuring has resulted in improved coverage of fisheries that encounter some of these species.
- New methods to assess impacts:
- Assessments have been developed for some species within the complexes.
  - Development of ecosystem models has allowed greater exploration of how various ecosystem impacts might affect stocks and their predators.

## 6.2 Ecosystem component (prohibited and forage fish) and non-specified fish species

Table 16 provides a short, overall summary of the reviews for prohibited species, forage fish, and grenadiers. Additional points of rationale are captured in bullets following the summary table. The complete reviews for each resource component are included in Appendix 4, which is available online.

**Table 16 Summary of expert review of prohibited species, forage fish, unspecified species**

Species	Would a new analysis reach a significantly different conclusion?	Comments / rationale
Pacific halibut	No	No new information concerning bycatch impacts is currently available. IPHC is investigating the relationship of bycatch mortality to long-term yield from the halibut resource. Bycatch of all sizes comprises a larger fraction of total mortality than in previous analyses.
Pacific salmon	Possibly	New stock origin information provides finer resolution to groundfish fishery impacts on Chinook salmon, highlighting that the stock composition of intercepted salmon in the BS and GOA trawl fisheries are very different, and providing a basis to analyze the impact of the BS pollock fishery on BS chum salmon (contained in the draft chum salmon EA and other reports to the Council), showing very low impact of the fishery on aggregate returns.
Pacific herring	(not yet available)	
BSAI king crab	No	
BSAI Snow crab	No	
BSAI Tanner crab	No	
GOA king and Tanner crab	No	The abundance of GOA crab stocks is similar to that reported in the 2004 PSEIS, and the prevailing conditions that likely drive these trends remain unchanged.
forage fish complex	No	Forage fishes continue to be caught only incidentally, and there is no new data to suggest that their status has changed.
grenadiers	No	Catch in the groundfish fisheries is low compared to estimated biomass of grenadier.

### Pacific halibut

- Management changes:
- Prohibited species catch limits for halibut in the GOA groundfish fisheries are being reduced over the 2014 to 2016 period.
  - A limited access program for the charter fishery, and a catch sharing plan between the commercial and guided recreational harvesters, have been implemented in southeast and southcentral Alaska in 2014.
- Status changes:
- Current status is within the range of historic assessments, near the long-term average abundance for the stock, but has declined from historic high levels in the late 1990s.
- New information on impacts:
- Impacts of groundfish fisheries on the halibut resource are believed to have decreased since 2004, due to reductions in estimated halibut mortality in groundfish trawl fisheries (particularly in the BSAI Amendment 80 trawl fleet).
- New methods to assess impacts:
- The IPHC has conducted additional analyses of the impacts of trawl bycatch mortality on lost yield and spawning biomass for the halibut stock. This information was included in the NEPA analysis accompanying GOA FMP Amendment 95 (reducing halibut PSC limits in the GOA). Beginning in 2013, observers are now deployed in small boat groundfish and halibut fisheries, to assess halibut mortality and discards.

### Pacific salmon or steelhead trout

- Management changes:
- New Chinook salmon PSC limits in the BS and the GOA.
- Status changes:
- Various Alaska Chinook salmon stocks have declined since 2004.
  - The annual run size of the chum salmon indicator species has varied significantly over the time period since 2004, but is generally trending back to 2004 levels in more recent years.
- New information on impacts:
- New genetic stock composition analyses are available for Bering Sea Chinook and chum, and GOA Chinook, salmon bycatch, and more robust sampling protocols have been instituted.
- New methods to assess impacts:
- Impacts of both the Bering Sea Chinook and chum salmon bycatch relative to escapement and maturity have been completed and reported in the Chinook salmon EIS and draft EA for chum salmon bycatch measures, as well as subsequent Council updates (e.g., NPFMC and NMFS 2013).

### BSAI King Crab

- Management changes:
- Management is essentially unchanged, however the implementation of BSAI Amendment 80 has changed fishing patterns, and partitioned the red king crab PSC limit among fishery cooperatives.
  - A trawl sweep modification requirement was implemented in the BSAI flatfish fishery in 2011. Research has demonstrated that this reduces unobserved mortality of crab.
  - New overfishing definitions and total catch accounting were implemented for BSAI crab stocks in 2008, and annual catch limits have been set since 2011.
- Status changes:
- Abundance of king crab stocks has varied over the years, but the status of these stocks relative to the status determination criteria has not changed.
- New information on impacts:
- The implementation of Amendment 80 has reduced the rate of bycatch per target catch ton.
  - The Council is in the process of evaluating the historical bycatch of crab stocks by groundfish fisheries.
- New methods to assess impacts:
- Stock assessment models have improved greatly, and crab bycatch is accounted for in the estimate of total catch used in stock assessment models.

### BSAI Snow Crab

- Management changes:
- No direct changes, however the implementation of Amendment 80 has reduced the rate of tanner crab bycatch per target catch ton.
- Status changes:
- Since 2004, the snow crab stock has been declared rebuilt, based on a new assessment model.
- New information on impacts:
- A trawl sweep modification requirement in the flatfish fishery was implemented in 2011. Research has demonstrated that this reduces unobserved mortality of crab.
- New methods to assess impacts:
- No.

### BSAI Tanner Crab

- Management changes:
- No direct changes, however the implementation of Amendment 80 has reduced the rate of tanner crab bycatch per target catch ton.
- Status changes:
- Effective status remains unchanged, however technically the stock is no longer overfished. It remains at a relatively low abundance compared with historical levels.
- New information on impacts:
- A trawl sweep modification requirement in the flatfish fishery was implemented in 2011. Research has demonstrated that this reduces unobserved mortality of crab.
- New methods to assess impacts:
- No.

### GOA Crab

- Management changes:
- The Council initiated an area closure in Marmot Bay to protect Tanner crab.
- Status changes:
- GOA red king crab remains at historically low levels, and the Tanner crab stock continues to show high variability in recruitment. Little is known about golden or blue king crab. The prevailing conditions identified in the 2004 PSEIS that likely drive these trends remain unchanged.
- New information on impacts:
- The Council analyzed impacts of the GOA groundfish fisheries on Tanner crab in two NEPA analyses, and instituted a trawl-gear area closure and a trawl sweep modification requirement in the GOA flatfish fishery. Research has demonstrated that the sweep modification reduces unobserved mortality of crab.
  - Changes to observer coverage requirements may shed additional light on groundfish fishery interactions with crab in the future.
- New methods to assess impacts:
- No. There have been no changes to the state assessment methodology, and no regulatory changes to the harvest strategy or management structure.

### Forage fish

- Management changes:
- No, although forage fish are now listed as part of the ‘ecosystem component’ in the FMP.
- Status changes:
- There continues to be very little information on the status of forage fishes, including no reliable estimates of forage fish abundance.
- New information on impacts:
- More information is provided on a biennial basis as an appendix to the SAFE reports, including information on state-waters removals, and species’ vulnerability in the Pacific Northwest.
  - Available evidence suggests that forage fish abundance fluctuates independent of fishery activities.
- New methods to assess impacts:
- No.

### Grenadiers

- Management changes:
- No, although unofficial assessment reports have been prepared for grenadiers since 2006.
- Status changes:
- The status of non-specified species was unknown in the 2004 PSEIS; grenadier assessment reports now track indices of abundance which indicate that population trends are stable.
- New information on impacts:
- There is a disproportionate catch of females in surveys and the fishery, however all data indicate that catch of grenadier has not affected the stock status.
  - Impacts of groundfish fisheries have decreased in recent years, since grenadiers are primarily caught in the sablefish longline fishery, and ABCs and TACs for sablefish have decreased.
  - New catch information is available from smaller vessels fishing for halibut, under the restructured observer program.
- New methods to assess impacts:
- In the assessment reports, catch, biomass, fishery and survey length frequencies, and indices of abundance are now tracked.

### 6.3 Marine Mammals and Seabirds

Table 17 provides a short, overall summary of the reviews for marine mammals and seabirds. Additional points of rationale are captured in bullets following the summary table. The complete reviews for each resource component are included in Appendix 4, which is available online.

**Table 17 Summary of expert review of marine mammals and seabirds**

Species	Would a new analysis reach a significantly different conclusion?	Comments / rationale
Marine mammals		
Steller sea lions	Possibly	Adequate new analysis of the impacts of the groundfish fisheries on SSLs has, however, already been undertaken in the 2010 and 2014 Biological Opinions, and the 2014 SSL Protection Measures EIS.
Northern fur seals	Possibly	Ongoing research is evaluating whether there is evidence of a strong link between commercial fisheries and the decline of northern fur seals, but currently, the cause of the ongoing decline remains unknown.
Harbor seals	No	Continued paucity of information about the foraging ecology of this species, especially in the Aleutian Islands.
Ice-associated seals	Possibly	An evaluation of newly available food habits data might identify further impacts from commercial fisheries, but firm conclusions would be difficult to develop with the limited information.
Whales	Possibly	The listing of Cook Inlet beluga whales may warrant further evaluation. Also, fishery interactions with Being Sea harbor porpoise, western North Pacific stock of humpback whales, western gray whales, and killer whales may have increased.
Walrus	(not yet available)	
Sea otters	No	NMFS conducted a new analysis for the Biological Assessment and arrived at a similar conclusion.
Seabirds	No	Neither new information nor new approach to estimation will change the conclusions of the PSEIS that impacts are insignificant.

#### Marine mammals – Steller sea lions

- |                                |  |
|--------------------------------|--|
| Management changes:            | <ul style="list-style-type: none"> <li>• Closures and restrictions on atka mackerel and Pacific cod fisheries in the Aleutian Islands, resulting from the 2010 Biological Opinion.</li> </ul>  |
| Status changes:                | <ul style="list-style-type: none"> <li>• Abundance of SSLs has increased, and regionally, trends in population have changed.</li> <li>• New information available on food habits, abundance, foraging behavior, contaminants, and vital rates.</li> <li>• The eastern distinct population segment of SSL has been delisted.</li> </ul> |
| New information on impacts:    | <ul style="list-style-type: none"> <li>• 2014 SSL Protection Measures EIS updates changes in the impacts of groundfish fisheries on SSLs, especially in the AI.</li> </ul>   |
| New methods to assess impacts: | <ul style="list-style-type: none"> <li>• No, but more recent analyses using conventional methods have been undertaken.</li> </ul>  |

### Marine mammals – Northern fur seals

- Management changes: • No
- Status changes: • Significant declines on both Pribilof Islands in the last 15 years, at just under 5% annually; partially offset by an increase in abundance on Bogoslof Island, where the population of pups now exceeds St George Island.
- New information on impacts: • It is unknown if the fisheries are affecting northern fur seals, but there is additional published literature available indicating similar habitat and prey use by both consumers.
- New methods to assess impacts: • No, but more recent analyses using conventional methods have been undertaken.

### Marine mammals – Harbor seals

- Management changes: • [No]
- Status changes: • Three previously-recognized stocks of harbor seals were subdivided into 12 stocks.  
• Harbor seals in Lake Iliamna have been petitioned for listing under ESA.  
• Harbor seals in the Aleutian Islands have declined substantially since the early 1980s, especially the western Aleutians; similar geographic pattern as SSLs.
- New information on impacts: • Splitting into 12 stocks has led to individual stocks with lower abundance, and the potential for groundfish fisheries to have significant impacts on individual stocks, but there is no new information.
- New methods to assess impacts: • No

### Marine mammals – Ice-associated seals

- Management changes: • [No]
- Status changes: • In response to a petition for listing all 4 species under ESA, NMFS listed ringed and bearded seals as ‘threatened’. NMFS is currently considering critical habitat designations.
- New information on impacts: • The ESA status reviews identified food habits studies indicating that various species of groundfish are important to ribbon and bearded seals, in some areas, seasons, and/or years.
- New methods to assess impacts: • No

Marine mammals – killer whale (transients), other toothed whales, baleen whales

- Management changes:
- No
- Status changes:
- Killer whales: new information on transient killer whale counts. Resident stock continues to increase in population size, with exception of a few pods.
  - Toothed whales: Cook Inlet belugas have continued to decline, are now listed under ESA, and have critical habitat designated through much of Cook Inlet. Bristol Bay belugas continue to increase in size. No new information on other toothed whales.
  - Baleen whales: N Pacific right whales are now relisted under ESA, and critical habitat has been designated. Western Arctic bowhead population has been increasing. A large-scale study of humpback whales is being evaluated. The eastern N Pacific gray whale status remains the same, however the western N Pacific population, once thought extinct, has been rediscovered. No new information on other baleen whales.
- New information on impacts:
- More specific information is now available on which target fishery is impacting which killer whale stocks.
  - One observed mortality of a harbor porpoise, and one injury of a sperm whale, occurred in recent years due to groundfish fishery interactions. Also, the estimate of fisheries-related mortality to humpback whales is not insignificant. No other serious injuries or mortalities reported for other toothed or baleen whales, although information is lacking for belugas, and western gray whales.
- New methods to assess impacts:
- No

Marine mammals – sea otters

- Management changes:
- Yes – the southwest distinct population segment of the northern sea otter were listed as threatened under ESA in 2005. Critical habitat was designated in nearshore marine waters.
- Status changes:
- Despite the listing of sea otters under ESA, population abundance and trends have generally not notably changed since the early 2000s.
- New information on impacts:
- A 2006 ESA consultation concluded that groundfish fisheries are not likely to adversely affect sea otters. The consultation was reinitiated, with the same conclusion pronounced in 2013.
- New methods to assess impacts:
- No

Seabirds

- Management changes:
- Measures to manage seabird interactions with the fisheries are unchanged
  - 2013 implementation of restructured observer program will provide for better evaluation of total fishery impacts in the future
- Status changes:
- Status of various seabird species groups remains unchanged
- New information on impacts:
- Impacts reduced in the demersal longline fisheries
  - Bycatch from trawl vessels higher than reported (estimates under evaluation), but still far less than the reduced impact in the longline fisheries
  - Impact from under 60 ft vessels unknown, will be evaluated with observer data beginning with 2013 implementation
- New methods to assess impacts:
- Annual estimates of seabird bycatch from observer species composition now generated through the Catch Accounting System for longline vessels, and estimates being developed for similar procedure for trawl vessels

**6.4 Habitat, Socioeconomics, Ecosystem**

Table 18 provides a short, overall summary of the reviews for habitat, socioeconomics, and the ecosystem. Additional points of rationale are captured in bullets following the summary table. The complete reviews for each resource component are included in Appendix 4, which is available online.

**Table 18 Summary of expert review of habitat, socioeconomics, and ecosystem components**

<b>Species</b>	<b>Would a new analysis reach a significantly different conclusion?</b>	<b>Comments / rationale</b>
Habitat	No	Analyses and research subsequent to the PSEIS have largely confirmed its general conclusions. A new analysis would provide more specific estimates with less uncertainty, but is not likely to reach seriously different conclusions.
Socioeconomics	No	The fundamental impacts of rationalizing fisheries (e.g., on overcapacity, efficiency, and the nature of the jobs) or closing areas to fishing on is not incorrect in the PSEIS. The PSEIS relies on predicting the results of rationalization programs, and a new analysis could likely appeal to actual results, likely with a smaller magnitude of benefits. But the basic understanding of effects is correct.
Ecosystem	No	The new research and information will enable improved monitoring of the ecosystem research, but to date does not suggest that the conclusions of the PSEIS would differ substantially.

### Habitat

- Management changes:
- Substantial changes to management have included implementation of regulations to protect habitat that provides structural relief, and gear modifications to limit adverse impacts of trawling on the seafloor.
- Status changes:
- The current status of habitat is the same as in the PSEIS because long-lived, slow-growing species have likely not recovered from the impacts of historical fishing, and impacts continue in areas that are open to bottom trawling.
- New information on impacts:
- There has been additional research on the habitat requirements of different species, on trawl gear modifications to reduce habitat effects, and some limited research on the recovery of habitat in the eastern GOA that was damaged with trawl gear. There is improved resolution of data on the distribution of fishing effort due to broader implementation of VMS. There is also additional information on the distribution of habitat types and features, through better technology and habitat mapping.
- New methods to assess impacts:
- The EFH EIS (2005) used a different methodology than the PSEIS to assess the effects of fishing on habitat to from the perspective of managed species that are dependent on habitat features.

### Ecosystem

- Management changes:
- Not aimed at ecosystem management.
- Status changes:
- While there have been short-term changes in some indicators, there is no evidence that these variations are outside short- or medium-term (3-5 year) range of natural variability, as measured over the last 30 years.
- New information on impacts:
- There has been substantial new world-wide research on energy flow within ecosystems, however this information does not suggest that impacts of the groundfish fisheries on Alaska ecosystems have significantly changed.
- New methods to assess impacts:
- Significant improvements have been made to monitoring critical aspects of the ecosystem, through the development of annual Ecosystem Assessments and Report Cards, and management strategy evaluations on different ecosystem aspects. Ecosystems research at the AFSC is being developed as an Integrated Ecosystem Assessment (IEA) program, which provides a formal method for evaluating climate impacts on Alaska's large marine ecosystems.

### Socioeconomics

- Management changes:
- The PSEIS refers to several fisheries that have since been rationalized, and there have also been management changes resulting from Chinook salmon bycatch protection and Steller sea lion avoidance measures.
- Status changes:
- The PSEIS projects many then-recent trends in species biomass, and the impacts of climate change, which have since changed.
- New information on impacts:
- Information is available on impacts in fisheries that have rationalized since the PSEIS, or been subject to other management changes (e.g., salmon or SSL closures). There are some impacts that the PSEIS does not address, but which have become issues of concern for the public and the Council, for example the impacts of rationalization on crew members.
- New methods to assess impacts:
- A new economic impact model has been developed as part of the analysis of Steller sea lion closures, and several papers have been written on the impacts of crab rationalization.

## **7 Preliminary conclusions**

The objective of this draft Supplemental Information Report is to synthesize relevant information for the Council and NMFS to determine whether there is a need to supplement the 2004 PSEIS for the Alaska Groundfish Fisheries. This SIR is being released as a draft at this time, in order to allow for public and Council review. This review process will ensure that all the relevant facts and information are compiled in the SIR, as a basis for decisionmakers to reach a conclusion as to whether a supplement is required. Releasing the SIR as a draft allows the Council to request additional information, if necessary, to adequately reach these conclusions. Note, the Council and NMFS may choose to supplement the PSEIS at any time for a variety of reasons; this draft SIR simply focuses on whether the triggers have been met that would require the Council and NMFS to supplement the PSEIS.

As described in Chapter 3, there are two conditions that would require supplementing an EIS:

1. if NMFS and the Council have made a substantial change in the proposed action (i.e., the management of the Federal groundfish fisheries) that is relevant to environmental concerns, or
2. if there are significant new circumstances or information relevant to environmental concerns and bearing on the management of the groundfish fisheries or their impacts.

With respect to the first condition, Chapter 5 identifies the changes to the management program since 2004. The Council considered these changes in their discussions of this issue in 2012. All management changes since 2004 have been subject to NEPA analysis. The SSC discussed the management changes at the March 2012 meeting, and determined that they are all consistent with the preferred alternative evaluated in the PSEIS. As a result, these changes do not represent a substantial change to the management of the Federal groundfish fisheries that is relevant to environmental concerns.

With respect to the second condition, the SIR includes a comprehensive overview of new circumstances and information relevant to environmental concerns, and bearing on the management of the groundfish fisheries or their impacts. Chapter 6 summarizes the review process undertaken for each of the resource components analyzed in the 2004 PSEIS, which were considered to be impacted by the management of the groundfish fisheries. These include target and non-target fish species, marine mammals and seabirds, habitat, socioeconomic components, and the ecosystem. For each of these components, experts considered whether the status of the component has changed, and whether new information or methods are available to better understand the impacts of the fisheries on that component. Based on this review, experts were

asked to identify whether a new analysis, using the latest methods and information, would reach a significantly different conclusion regarding the impact of the groundfish fisheries. A brief summary of their findings is included in Table 19.

**Table 19 Summary of changes to the PSEIS impacts resulting from the draft SIR review**

Resource component	Would a new analysis using the latest methods and information reach a significantly different conclusion	Which components have a response other than “no”
BSAI and GOA target groundfish species	No/possibly/probably not/yes	<ul style="list-style-type: none"> <li>GOA pollock</li> <li>BSAI northern rockfish, shortraker rockfish, blackspotted/rougheye rockfish</li> <li>GOA blackspotted/rougheye rockfish, dusky rockfish, thornyhead rockfish</li> </ul>
Prohibited species	No/possibly	<ul style="list-style-type: none"> <li>Pacific salmon</li> </ul>
Other fish species	No	
Marine Mammals	No/possibly	<ul style="list-style-type: none"> <li>Steller sea lions, northern fur seals, ice-associated seals, whales</li> </ul>
Seabirds	No	
Habitat	No	
Socioeconomics	No	
Ecosystem	No	

For most resource components, the new information reported in this draft SIR does not suggest that a new analysis would result in a significantly different conclusion for impacted resource components. There are a few exceptions, however. Many of these fall into two categories. First, there are several instances where an expert has identified uncertainty as to the outcome of a new analysis based on a discussion of future work, or ongoing but not yet concluded research, which may have bearing on the resource component (BSAI northern rockfish, shortraker rockfish, blackspotted/rougheye rockfish, northern fur seals, ice-associated seals). These instances highlight an inconsistency in how different experts responded to this question – in most other cases, the experts responded to the question based on information that is available now. In preparation for the Final SIR, staff will revisit these conclusions with the expert reviewers, to ensure there is consistency among the experts in terms of how they are responding to this question. Also, where possible, it will be useful to ascertain when the results of ongoing or future work are likely to be available.

The second category of responses indicated that there is now more information available that might further refine the conclusions in the PSEIS for their resource component (GOA blackspotted/rougheye rockfish, GOA dusky rockfish, Pacific salmon, Steller sea lions). For the two GOA rockfish species, an age-structured model is now available which changes some “unknown” conclusions to “insignificant”. For Pacific salmon, stock of origin information is now available to differentiate bycatch impacts from Bering Sea versus GOA trawl fishing, however new information does not suggest that there is any increase in adverse environmental impact than previously understood. Additional research has also informed the understanding of groundfish fishery impacts on Steller sea lions, which has been comprehensively vetted in the Steller sea lion protection measures EIS.

There are three other responses that indicated the possibility that a new analysis might reach a different conclusion. The first of these is GOA thornyhead rockfish; in this case, uncertainty has developed about the validity of data allowing an age-structured model, so the expert suggests that the “insignificant” conclusion should be changed to “unknown”. The expert does not consider the impacts of the groundfish fishery to be a conservation concern, however. Secondly, with respect to whales, there has been a documented instance of interaction of a groundfish fishery with a harbor porpoise and a sperm whale in

recent years, which was not considered at the time of the 2004 PSEIS. There has also been an increase in fisheries-related mortality to humpback whales. These changes indicated some uncertainty for the expert in evaluating the conclusions of the 2004 PSEIS with respect to whales. And finally, the rationale for GOA pollock includes signs of ecosystem change in the GOA as a source of uncertainty about a new conclusion, especially the resurgence of large whales (particularly the humpback whale), and an increase in abundance of arrowtooth flounder.

While the expert reviewers have considered new information specifically from the perspective of each of their resource components, **the decision as to whether to supplement the PSEIS must be based on a consideration of the proposed action as a whole**, that is, the perspective of the overall groundfish management program. As a result, it is incumbent on the Council and NMFS to consider the individual expert reviews, and consolidate them to the level of the overall groundfish management program. From a programmatic perspective, has there been a substantial change in the management of the groundfish fisheries, relevant to environmental concerns? Is the new information on the impact of the groundfish fisheries, relevant to environmental concerns, significant? These are the questions that the Council and NMFS must consider. The Council discussed the changes in the management program in 2012, and concluded that the management program is still consistent with the PSEIS' preferred alternative. The draft SIR provides new information on each of the resource components; the Council must consider whether, for the program as a whole, this new information is significant.

To finalize this draft SIR, staff will ensure that all relevant information is included in the report, and will confirm that the expert reviewers have consistently evaluated the PSEIS conclusions in the light of new information. The final SIR will also articulate the Council and NMFS' conclusions with respect to the questions to be resolved. If no significant changes are found, NMFS will prepare a SIR determination, affirming that the 2004 PSEIS continues to provide NEPA compliance for the groundfish FMPs. If areas of significant change are identified, the Council and NMFS will need to consider how to supplement the PSEIS, using the SIR as a guideline for the scope of that future analysis.

## 8 Preparers, References

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## APPENDICES

### Appendix 1 BSAI and GOA groundfish management policy

The Council's management policy is in the BSAI and GOA groundfish FMPs. The policy is excerpted below.

#### 2.2 Management Approach for the BSAI [GOA] Groundfish Fisheries

The Council's policy is to apply judicious and responsible fisheries management practices, based on sound scientific research and analysis, proactively rather than reactively, to ensure the sustainability of fishery resources and associated ecosystems for the benefit of future, as well as current generations. The productivity of the North Pacific ecosystem is acknowledged to be among the highest in the world. For the past 25 years, the Council management approach has incorporated forward looking conservation measures that address differing levels of uncertainty. This management approach has in recent years been labeled the precautionary approach. Recognizing that potential changes in productivity may be caused by fluctuations in natural oceanographic conditions, fisheries, and other, non-fishing activities, the Council intends to continue to take appropriate measures to insure the continued sustainability of the managed species. It will carry out this objective by considering reasonable, adaptive management measures, as described in the Magnuson-Stevens Act and in conformance with the National Standards, the Endangered Species Act (ESA), the National Environmental Policy Act, and other applicable law. This management approach takes into account the National Academy of Science's recommendations on Sustainable Fisheries Policy.

As part of its policy, the Council intends to consider and adopt, as appropriate, measures that accelerate the Council's precautionary, adaptive management approach through community-based or rights-based management, ecosystem-based management principles that protect managed species from overfishing, and where appropriate and practicable, increase habitat protection and bycatch constraints. All management measures will be based on the best scientific information available. Given this intent, the fishery management goal is to provide sound conservation of the living marine resources; provide socially and economically viable fisheries for the well-being of fishing communities; minimize human-caused threats to protected species; maintain a healthy marine resource habitat; and incorporate ecosystem-based considerations into management decisions.

This management approach recognizes the need to balance many competing uses of marine resources and different social and economic goals for sustainable fishery management, including protection of the long-term health of the resource and the optimization of yield. This policy will use and improve upon the Council's existing open and transparent process of public involvement in decision-making.

##### 2.2.1 Management Objectives

Adaptive management requires regular and periodic review. Objectives identified in this policy statement will be reviewed annually by the Council. The Council will also review, modify, eliminate, or consider new issues, as appropriate, to best carry out the goals and objectives of this management policy.

To meet the goals of this overall management approach, the Council and NMFS will use the Alaska Groundfish Fisheries Programmatic Supplemental Environmental Impact Statement (PSEIS) (NMFS 2004) as a planning document. To help focus consideration of potential management measures, the

Council and NMFS will use the following objectives as guideposts, to be re-evaluated, as amendments to the FMP are considered over the life of the PSEIS.

***Prevent Overfishing:***

1. Adopt conservative harvest levels for multi-species and single species fisheries and specify optimum yield.
2. Continue to use the 2 million mt optimum yield cap for the BSAI groundfish fisheries. [Continue to use the existing optimum yield cap for the GOA groundfish fisheries.]
3. Provide for adaptive management by continuing to specify optimum yield as a range.
4. Provide for periodic reviews of the adequacy of  $F_{40}$  and adopt improvements, as appropriate.
5. Continue to improve the management of species through species categories.

***Promote Sustainable Fisheries and Communities:***

6. Promote conservation while providing for optimum yield in terms of the greatest overall benefit to the nation with particular reference to food production, and sustainable opportunities for recreational, subsistence, and commercial fishing participants and fishing communities.
7. Promote management measures that, while meeting conservation objectives, are also designed to avoid significant disruption of existing social and economic structures.
8. Promote fair and equitable allocation of identified available resources in a manner such that no particular sector, group or entity acquires an excessive share of the privileges.
9. Promote increased safety at sea.

***Preserve Food Web:***

10. Develop indices of ecosystem health as targets for management.
11. Improve the procedure to adjust acceptable biological catch levels as necessary to account for uncertainty and ecosystem factors.
12. Continue to protect the integrity of the food web through limits on harvest of forage species.
13. Incorporate ecosystem-based considerations into fishery management decisions, as appropriate.

***Manage Incidental Catch and Reduce Bycatch and Waste:***

14. Continue and improve current incidental catch and bycatch management program.
15. Develop incentive programs for bycatch reduction including the development of mechanisms to facilitate the formation of bycatch pools, vessel bycatch allowances, or other bycatch incentive systems.
16. Encourage research programs to evaluate current population estimates for non-target species with a view to setting appropriate bycatch limits, as information becomes available.
17. Continue program to reduce discards by developing management measures that encourage the use of gear and fishing techniques that reduce bycatch which includes economic discards.
18. Continue to manage incidental catch and bycatch through seasonal distribution of total allowable catch and geographical gear restrictions.

19. Continue to account for bycatch mortality in total allowable catch accounting and improve the accuracy of mortality assessments for target, prohibited species catch, and non-commercial species.
20. Control the bycatch of prohibited species through prohibited species catch limits or other appropriate measures.
21. Reduce waste to biologically and socially acceptable levels.

***Avoid Impacts to Seabirds and Marine Mammals:***

22. Continue to cooperate with U.S. Fish and Wildlife Service (USFWS) to protect ESA-listed species, and if appropriate and practicable, other seabird species.
23. Maintain or adjust current protection measures as appropriate to avoid jeopardy of extinction or adverse modification to critical habitat for ESA-listed Steller sea lions.
24. Encourage programs to review status of endangered or threatened marine mammal stocks and fishing interactions and develop fishery management measures as appropriate.
25. Continue to cooperate with NMFS and USFWS to protect ESA-listed marine mammal species, and if appropriate and practicable, other marine mammal species.

***Reduce and Avoid Impacts to Habitat:***

26. Review and evaluate efficacy of existing habitat protection measures for managed species.
27. Identify and designate essential fish habitat and habitat areas of particular concern pursuant to Magnuson-Stevens Act rules, and mitigate fishery impacts as necessary and practicable to continue the sustainability of managed species.
28. Develop a Marine Protected Area policy in coordination with national and state policies.
29. Encourage development of a research program to identify regional baseline habitat information and mapping, subject to funding and staff availability.
30. Develop goals, objectives and criteria to evaluate the efficacy and suitable design of marine protected areas and no-take marine reserves as tools to maintain abundance, diversity, and productivity. Implement marine protected areas if and where appropriate.

***Promote Equitable and Efficient Use of Fishery Resources:***

31. Provide economic and community stability to harvesting and processing sectors through fair allocation of fishery resources.
32. Maintain the license limitation program, modified as necessary, and further decrease excess fishing capacity and overcapitalization by eliminating latent licences and extending programs such as community or rights-based management to some or all groundfish fisheries.
33. Provide for adaptive management by periodically evaluating the effectiveness of rationalization programs and the allocation of access rights based on performance.
34. Develop management measures that, when practicable, consider the efficient use of fishery resources taking into account the interest of harvesters, processors, and communities.

***Increase Alaska Native Consultation:***

35. Continue to incorporate local and traditional knowledge in fishery management.
36. Consider ways to enhance collection of local and traditional knowledge from communities, and incorporate such knowledge in fishery management where appropriate.
37. Increase Alaska Native participation and consultation in fishery management.

***Improve Data Quality, Monitoring and Enforcement:***

38. Increase the utility of groundfish fishery observer data for the conservation and management of living marine resources.
39. Develop funding mechanisms that achieve equitable costs to the industry for implementation of the North Pacific Groundfish Observer Program.
40. Improve community and regional economic impact costs and benefits through increased data reporting requirements.
41. Increase the quality of monitoring and enforcement data through improved technology.
42. Encourage a coordinated, long-term ecosystem monitoring program to collect baseline information and compile existing information from a variety of ongoing research initiatives, subject to funding and staff availability.
43. Cooperate with research institutions such as the North Pacific Research Board in identifying research needs to address pressing fishery issues.
44. Promote enhanced enforceability.
45. Continue to cooperate and coordinate management and enforcement programs with the Alaska Board of Fish, Alaska Department of Fish and Game, and Alaska Fish and Wildlife Protection, the U.S. Coast Guard, NMFS Enforcement, International Pacific Halibut Commission, Federal agencies, and other organizations to meet conservation requirements; promote economically healthy and sustainable fisheries and fishing communities; and maximize efficiencies in management and enforcement programs through continued consultation, coordination, and cooperation.

## Appendix 2 Template for PSEIS SIR – review of conclusions in 2004 PSEIS

What resource component is this review for? \_\_\_\_\_

What sections of the PSEIS were reviewed? \_\_\_\_\_

Please answer the following questions with respect to the resource component in question.

- Please provide rationale and discussion of your response, while at the same time keeping it fairly succinct.
- Where appropriate, reference other documents where analysis can be found in detail.
- Responses can be written out, or in bullets.
- In most cases, we are expecting something in the range of 2-5 pages for a particular resource component.

### 1 Has management of the resource changed?

Have there been substantial changes in the management program that have affected the resource, since the 2004 PSEIS (e.g., species is now managed independently, rather than as part of a complex; implementation of catch share privileges or closure areas affecting fisheries targeting resource)?

### 2 Has the status of the resource changed?

Is the status of the resource different than described in the 2004 PSEIS, and if so, how? What has affected the change in status? Is the current status within the range of variability analyzed in the 2004 PSEIS?

### 3 Is there new information regarding the impacts of the groundfish fisheries on the resource?

Are the fisheries affecting the resource differently than described in the 2004 PSEIS? Is this difference within the range of variability analyzed in the 2004 PSEIS? Has the difference been analyzed in a subsequent NEPA analysis (e.g., the difference in impact is the result of a management change for which an EA or EIS was written)? Is there new scientific information or research indicating or suggesting a change in our understanding of the impact of the fisheries on the resource?

### 4 Are there new methods of analysis or protocols for evaluating impacts?

Has a new methodology been developed for better understanding or evaluating impacts of the fisheries on the resource? Has that methodology been used in NEPA analyses of management actions affecting the resource, since the 2004 PSEIS?

### 5 Would a new analysis using the latest methods and information reach a seriously different conclusion?

If new information is available, consider whether taking that information into account would cause you to reach a different conclusion about the effect of the groundfish fisheries on the resource. Provide a rationale if you conclude that it would not, or some discussion if you think this issue needs further investigation. We are not asking for the new analysis to be undertaken, only for you to provide a discussion of whether it is merited.

### Appendix 3 Changes in target species and species complexes between 2004 and present

The tables below list the species and species complexes which are currently identified in the BSAI and GOA Groundfish FMPs, and compare them to the species or species complexes that were assessed in the 2004 PSEIS. In a few cases, there are discrepancies. For example, shorttraker and roughey rockfish were managed as a complex in 2004, but are now managed separately (in fact, roughey rockfish is managed as a complex with blackspotted rockfish).

**Table 20 Species or species complexes which are currently identified in the BSAI SAFE report, compared to species or species complexes that were assessed in the 2004 PSEIS**

Species or complexes which were assessed in the PSEIS in 2004		Species or complexes which are now identified in BSAI SAFE report	
<b>Target species</b>	pollock	<b>Target species</b>	pollock (EBS, AI, Bogoslof)
	pacific cod		pacific cod
	sablefish		sablefish
	yellowfin sole		yellowfin sole
	greenland turbot		greenland turbot
	arrowtooth flounder		arrowtooth flounder
	rock sole		Northern rock sole
	flathead sole		flathead sole
	alaska plaice		alaska plaice
	rex sole		other flatfish
	dover sole		Pacific ocean perch
	Pacific ocean perch		northern rockfish
	northern rockfish		shorttraker rockfish
	shorttraker/ roughey rockfish		blackspotted/ roughey rockfish
	yelloweye rockfish		other rockfish
	dusky rockfish		atka mackerel
	thornyhead rockfish		squid
atka mackerel	octopus		
squid	sharks		
<b>Other species</b>	octopus	sculpins	
	sharks	skates	
	sculpins		
	skates		
<b>Forage fish</b>	forage fish complex	<b>Ecosystem Component</b>	forage fish complex
<b>Non-specified species</b>	(specific species not listed)		grenadiers <sup>43</sup>

<sup>43</sup> The Council has approved an FMP amendment to include grenadiers in the ecosystem component of the BSAI and GOA Groundfish FMPs, but it has not yet been implemented.

**Table 21 Species or species complexes which are currently identified in the GOA SAFE report, compared to species or species complexes that were assessed in the 2004 PSEIS**

Species or complexes which were assessed in the PSEIS in 2004		Species or complexes which are identified in GOA SAFE report	
<b>Target Species</b>	pollock	<b>Target species</b>	pollock
	pacific cod		pacific cod
	sablefish		sablefish
	yellowfin sole		shallow water flatfish
	rock sole		
	Alaska plaice		deep water flatfish
	doover sole		
	greenland turbot		rex sole
	rex sole		arrowtooth flounder
	arrowtooth flounder		flathead sole
	flathead sole		Pacific ocean perch
	Pacific ocean perch		northern rockfish
	northern rockfish		shortraker/ other slope rockfish
	shortraker/ rougheye rockfish		blackspotted and rougheye rockfish
	dusky rockfish		pelagic shelf rockfish
	yelloweye rockfish		demersal shelf rockfish
	thornyhead rockfish		thornyhead rockfish
atka mackerel	atka mackerel		
skates	skates		
<b>Other species</b>	squid	squid	
	octopus	octopus	
	sharks	sharks	
	sculpins	sculpins	
<b>Forage fish</b>	forage fish complex	<b>Ecosystem Component</b>	forage fish complex
<b>Non-specified species</b>	(species not listed in FMP)		grenadiers <sup>44</sup>

<sup>44</sup> The Council has approved an FMP amendment to include grenadiers in the ecosystem component of the BSAI and GOA Groundfish FMPs, but it has not yet been implemented.

## **Appendix 4 Worksheets from resource component expert reviews**

Note, this appendix is only available online, as a separate file. Please go to the following webpage to retrieve:

<http://www.npfmc.org>