

ES.1 INTRODUCTION

This document provides background information about, and analysis of, harvest specifications and management measures for fisheries covered by the *Pacific Coast Groundfish Fishery Management Plan* (FMP) and developed by the Pacific Fishery Management Council (hereafter, the Council) in collaboration with the National Marine Fisheries Service (NMFS). These measures must conform to the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the principal legal basis for fishery management within the Exclusive Economic Zone (EEZ), which extends from the outer boundary of the territorial sea to a distance of 200 nautical miles from shore. In addition to addressing MSA mandates, this document is an Environmental Impact Statement (EIS), pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended. According to NEPA (Sec. 102(2)(C)), any “major federal action significantly affecting the quality of the human environment” must be evaluated in an EIS. Based on a preliminary determination by Council and NMFS staff, implementing harvest specifications and management measures for the 2005-2006 biennial period may have significant impacts. Therefore, rather than preparing an environmental assessment (EA), which provides “sufficient evidence and analysis for determining whether to prepare an environmental impact statement,” NMFS and the Council have decided to proceed directly to preparation of an EIS. This document is organized so that it contains the analyses required under NEPA, the Regulatory Flexibility Act (RFA), and Executive Order (EO) 12866, which mandates an analysis similar to the RFA. For the sake of brevity, this document is referred to as an EIS, although it contains required elements of an Initial Regulatory Flexibility Analysis (IRFA) pursuant to the RFA and a Regulatory Impact Review (RIR) pursuant to EO 12866.

Environmental impact analyses have four essential components: a description of the purpose and need for the proposed action, a set of alternatives that represent different ways of accomplishing the proposed action, a description of the human environment affected by the proposed action, and an evaluation of the predicted direct, indirect, and cumulative impacts of the alternatives.^{1/} (The human environment is interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment, 40 CFR 1508.14.) These elements allow the decision maker to look at different approaches to accomplishing a stated goal and understand the likely consequences of each choice or alternative. EISs are commonly organized around four chapters covering each of these topics. This EIS is organized differently; Chapters 1 and 2 cover the purpose and need and describe the alternatives, but the next six chapters focus on parts of the human environment potentially affected by the proposed action. Each of these chapters describes both the baseline environment potentially affected by the proposed action and the predicted impacts of each of the alternatives. Based on this structure, the document is organized in 15 chapters:

- Chapter 1 discusses the reasons for federal regulation of West Coast groundfish fisheries in 2005-2006. This description of purpose and need defines the scope of the subsequent analysis.
- Chapter 2 outlines different alternatives that have been considered to address the purpose and need. The Council will choose among these alternatives as their preferred alternative, which is recommended to NMFS for adoption as a plan amendment.
- Chapter 3 describes **West Coast marine ecosystems and essential fish habitat (EFH)** potentially affected by the proposed action and discloses the predicted impacts of the alternatives on that segment of the physical and biological environment.

1/ Federal regulations at 40 CFR 1502 detail the required contents of an EIS. Although there are several additional components, this list is of the core elements.

- Chapter 4 describes the **groundfish fishery management unit species** affected by the proposed action and discloses the predicted impacts of the alternatives on that segment of the biological environment.
- Chapter 5 describes **other, nongroundfish species** affected by the proposed action and discloses the predicted impacts of the alternatives on that segment of the biological environment.
- Chapter 6 describes **protected species** potentially affected by the proposed action and discloses the predicted impacts of the alternatives on that segment of the biological environment.
- Chapter 7 describes the **public sector and fisheries management regime** and how the different alternatives would affect these institutions.
- Chapter 8 describes the **socioeconomic environment**, which includes commercial and recreational fisheries and coastal communities in the action area, and how they would be affected by the different alternatives.
- Chapter 9 addresses additional requirements of NEPA and implementing regulations, including the identification of any measures that will be implemented to mitigate significant impacts of the proposed action.
- Chapter 10 details how this amendment meets 10 National Standards set forth in the MSA (§301(a)) and Groundfish FMP goals and objectives.
- Chapter 11 provides information on those laws and EOs, in addition to the MSA and NEPA, that an amendment must be consistent with, and how this action has satisfied those mandates.
- Chapters 12 through 15 include required supporting information: the list of preparers, who received copies of the document, a glossary and acronym list, and the bibliography.
- Appendix A is a comprehensive description of the affected environment and supports the descriptions included in Chapters 3 through 8. Additional appendices provide further background.
- Appendix B is a scoping document for the proposed Arrowtooth Flounder - Rockfish Conservation Area (AT-RCA) Trawl Fishing Program.
- Appendix C describes widow rockfish bycatch area management.
- Appendix D describes the fisheries income impact modeling methodology used by Council staff.
- Appendix E contains copies of comment letters on the DEIS and responses to those comments by the Council/NMFS.

ES.2 Purpose and Need for the Proposed Action

The proposed action falls within the management framework described in the Groundfish FMP, which enumerates 18 objectives that management measures must satisfy (organized under three broad goals), describes more specific criteria for determining the level of harvest that will provide the greatest overall benefit to the Nation (defined as optimum yield), and authorizes the range and type of measures that may be

used to achieve optimum yield. The management regime described in the Groundfish FMP is itself consistent with 10 National Standards described in the MSA. Harvest specifications (OYs) and management measures must be consistent with the goals, objectives, and management framework described in the Groundfish FMP.

ES.2.1 The Proposed Action

The Council's/NMFS' *proposed action*, evaluated in this document, is to specify acceptable biological catch (ABC) and OY values for species and species complexes in the fishery management unit and establish management measures to constrain total fishing mortality to these specifications. These specifications and management measures will be established for calendar years 2005 and 2006, although they are considered within the context of past management and long-term sustainability of managed fish stocks. Separate harvest specifications are established for 2005 and 2006; management measures are intended to keep total fishing mortality during each year within the OY established for that year. Specifications include new harvest levels for species with new stock assessments and projected harvest levels for species with stock assessments completed in prior years. Long-term management programs, such as capacity reduction programs, are not developed as part of the annual management process, but in separate Council deliberations, which are outside the scope of this EIS. Management measures may be modified during the biennial period, so total fishing mortality is constrained to the OYs identified in the preferred alternative. The environmental impact of any such changes in management measures is expected to fall within the range of impacts evaluated in this EIS. Federally-managed Pacific groundfish fisheries occurring off the coasts of Washington, Oregon, and California (WOC) establish the geographic context for the proposed action.

ES.2.2 Need (Problems for Resolution)

The proposed action is needed to constrain commercial and recreational harvests in 2005 and 2006 to levels that will ensure groundfish stocks are maintained at, or restored to, sizes and structures that will produce the highest net benefit to the nation, while balancing environmental and social values.

ES.2.3 Purpose of the Proposed Action

The purpose of this action is to ensure Pacific Coast groundfish subject to federal management are harvested at OY during 2005 and 2006 and in a manner consistent with the aforementioned Groundfish FMP and National Standards Guidelines (NSGs, 50 CFR 600 Subpart D), using routine management tools available to the specifications and management measures process (FMP at 6.2.1, 50 CFR 660.323(b)). Chapter 10 of this EIS describes how the proposed action (preferred alternative) is consistent with the FMP and MSA.

ES.3 The Biennial Groundfish Harvest Level and Management Measures Specification Process

The groundfish FMP lists three overall goals to guide the management process:

1. Conservation - prevent overfishing by managing for appropriate harvest levels and prevent any net loss of habitat of living marine resources.
2. Economics - maximize the value of the groundfish resource as a whole.
3. Utilization - achieve the maximum biological yield of the overall groundfish fishery, promote year-round availability of quality seafood to the consumer, and promote recreational fishing opportunities.

A variety of management measures have been employed to achieve these goals, including gear restrictions, a license limitation program, time/area closures, the specification of OYs or other harvest limitations for some species, seasons, and trip/cumulative landing limits, which are limitations on the amount of certain species that may be caught, retained, and landed by any vessel. The Groundfish FMP allows harvest guidelines and quotas to be re-specified on a periodic basis. Harvest guidelines are specified numerical harvest objectives which are treated as targets but not absolute limitations. Therefore, a fishery does not have to be closed if its harvest guideline is reached, although the Council and NMFS may choose to do so. All recent numerical harvest specifications, including OY values, have been harvest guidelines. A quota is defined as a specified numerical harvest objective, the attainment (or expected attainment) of which causes closure of the fishery for that species or species group. The main use of harvest guidelines and quotas, recently, has been to designate allocations and sub-components of a specified OY.

In accordance with the Groundfish FMP, since 1990 the Council has annually set Pacific Coast groundfish harvest specifications (acceptable and sustainable harvest amounts) and management measures designed to achieve those harvest specifications, with harvest specifications and management measures in effect for the calendar year, January 1 to December 31. The current action reflects a notable change in this management cycle, with a shift to a biennial management cycle, as implemented by Amendment 17 to the Groundfish FMP, which was approved on August 20, 2003. Thus, 2004 is the last year under the annual process, and 2005–2006 begins biennial management. Under the biennial management cycle, harvest specifications and management measures are established for the two-year period in advance of the biennium. Separate ABCs and OYs are established for each calendar year in the two-year cycle. Council decision making for this action occurs over three meetings, culminating in June of the year preceding the biennium. For the 2005-2006 biennium, the Council identified a preliminary range of ABCs and OYs at their November 2003 meeting; at their April 2004 meeting they selected a preferred set of ABCs and OYs and a preliminary range of management measures; and at their June 2004 meeting they finalized the full package of harvest specifications and management measures, choosing preferred management measure alternatives. In addition to allowing more careful consideration of management proposals, this process addresses an issue raised by the court ruling in *Natural Resources Defense Council v. Evans*, 2001 168 F. Supp. 2d 1149 (N.D. Cal. 2001). The court found that NMFS was not allowing sufficient time for public notice and comment on the regulations before they were implemented at the beginning of the new year. The biennial process allows more time to complete full notice-and-comment rulemaking before the January 1 start date.

ES.4 Determining the Scope of the Analysis

On October 15, 2003 (68 FR 59358), NMFS and the Council published a Notice of Intent (NOI) in the *Federal Register* announcing their intent to prepare an EIS in accordance with NEPA for the 2005-2006 ABC and OY specifications and management measures for the Pacific Coast groundfish fishery. The NOI described the proposed action and the way in which alternatives to be analyzed in the EIS would be formulated; it also enumerated a preliminary list of potentially significant impacts that could result from implementing the proposed action. A public scoping period, ending on November 14, 2003, was announced in the NOI. A public scoping meeting was held on November 2 in Del Mar, California, to gather oral comments on the scope of the EIS. In addition, written comments were accepted through the end of the scoping period.

In addition to the formally-announced public scoping period, the Council process, which is based on stakeholder involvement, allows for public participation and public comment on fishery management proposals during Council, subcommittee, and advisory body meetings. The advisory bodies involved in groundfish management include the Groundfish Management Team (GMT), with representation from state, federal, and tribal fishery scientists; and the Groundfish Advisory Subpanel (GAP), whose members are drawn from the commercial, tribal, and recreational fisheries, fish processors, and environmental advocacy

organizations. The Ad Hoc Allocation Committee, a subpanel of the whole Council, provides advice on allocating harvest opportunity among the various fishery sectors. These opportunities all constitute the broadly-defined Council scoping process, not all of which focuses on the scope and content of NEPA analysis.

The Council and its advisory bodies considered 2005-2006 specifications and management measures at several meetings. As noted above, the Council took action at four meetings in November 2003, March 2004, April 2004, and June 2004. The Ad Hoc Allocation Committee of the Council met on March 24 and 25 and May 27, 2004, to review the range of harvest specifications and provide guidance on allocation of harvest opportunity among different fishery sectors for 2005-2006. When the Council considers groundfish management at their meetings, the GMT and GAP provide advice and guidance on the development of harvest specifications and management measures. The GMT also meets outside of Council meetings to develop management recommendations. For the 2005-2006 harvest specifications process, they met in October 2003, and February, May, and June 2004. All these meetings are open to the public and are duly noticed.

In addition, although not part of the formal scoping process, both the Oregon and California state fish and game departments hold public hearings to solicit input on the formulation of management measures. Comments made at these hearings were summarized and made available to the Council in advance of their June 2004 meeting.

Section 1.4.3 summarizes comments received during the scoping process.

ES.5 Alternatives Considered by the Council

In contrast to the EISs prepared for the 2003 and 2004 seasons, this EIS treats the choice of ABCs and OYs as a separate decisional step from the development of management alternatives. The OYs for 15 stocks or stock complexes differ among the three harvest specification action alternatives. OYs for the remaining stocks are the same across all the action alternatives. (The No Action Alternative represents the status quo, or re-application of 2004 harvest specifications, OYs for additional stocks are different under No Action in comparison to the action alternatives.) The differences among the harvest specification action alternatives reflect policy decisions based on various factors, such as scientific uncertainty in stock assessments (e.g., lingcod, cabezon, sablefish), the recent adoption of rebuilding plans (bocaccio, cowcod, widow rockfish, yelloweye rockfish), and whether to apply a precautionary reduction for unassessed stocks (Pacific cod, Other Flatfish, and Other Fish), among other factors. In the 2003 and 2004 harvest specification EISs, a single set of alternatives was analyzed; each alternative included both the ABCs/OYs and the management measures projected to constrain total fishing mortality to these different harvest specifications. The biennial process highlights the procedural separation between choosing a preferred set of harvest specifications and developing management measures. Therefore, the choice of harvest specifications and the development of management measures are separated into two sets of alternatives, which form the basis of the impact analysis. The second set of alternatives contain different combinations of management measures, and each one of these management measure alternatives (except for No Action) is intended to constrain fishing mortality at or below the Council-preferred OY levels determined by the choice among the first set of alternatives. (The action alternatives were crafted before performing the detailed analysis necessary to determine total fishing mortality for each stock. Therefore, one or more of the action alternatives may be projected to exceed the Council-preferred OY for one or more stocks. However, the Council-preferred Alternative, chosen at the June Council meeting, must be projected to keep total fishing mortality for all stocks within their respective OYs.) This approach also makes it easier to compare alternative management measures to one standard: the Council-preferred ABC/OY levels chosen from the first set of alternatives.

ES.5.1 Harvest Level Alternatives

Various factors contribute to differences in OYs for 2005 and 2006 in comparison to 2004. Information from new stock assessments on stock structure and productivity can lead to significant changes in proposed harvest levels. In the absence of a new assessment, a species' OY is set using the most recent assessment along with any adjustments based on expected stock performance. Only lingcod and cabezon have been newly assessed since 2004 harvest specifications were set (Cope, *et al.* 2004; Jagielo, *et al.* 2004). Previous assessments, including six conducted in 2003, are used for other species. OYs for overfished species must be consistent with adopted rebuilding plans. As noted above, the Council has adopted rebuilding plans for all currently overfished species, which determine the range of OYs that may be considered for these stocks. Since lingcod is an overfished species, the new stock assessment is accompanied by an updated rebuilding analysis, which computes the OY based on targets adopted by the Council. Separate harvest control rules (F rates) are identified in the Groundfish FMP for the northern and southern lingcod stocks, although the stock is managed on a coastwide basis. According to the FMP, if the Council recommends changing the value of either of two rebuilding parameters published in federal regulations—the target year and the harvest control rule—such a change must be done through full notice-and-comment rulemaking and supported by “commensurate analysis.” This EIS and the notice-and-comment rulemaking process associated with the biennial process support the Council's recommended change in the lingcod harvest control rule, based on the most recent stock assessment and rebuilding analysis. Cabezon has been assessed for the first time; previously it was managed as part of the Other Fish stock complex but will now be managed according to its own ABC/OY. Finally, adjustments have been made to the OYs for Pacific cod and the Other Flatfish and Other Fish complexes. Because these are unassessed stocks, their ABCs and OYs are set based on past landings; the harvest specifications have been adjusted downward, consistent with Council and GMT guidance. A Council-preferred ABC/OY is not identified for Pacific whiting in this EIS because of the nature of the fishery and related assessment schedule. This stock is assessed annually, and the next assessment will be completed by March 2005, in time for the April 1 start of this fishery. Since this seasonal fishery is managed by quota, crafting of complex management measures is unnecessary. However, bycatch of widow rockfish, an overfished species with a relatively low OY that co-occurs with Pacific whiting, is a management issue in this fishery. Reducing widow rockfish bycatch influences the choice of OY for the target species. The range of whiting OYs evaluated in this EIS captures the range of potential values expected from that assessment. Section 2.1 describes the basis for 2005-2006 harvest specifications in detail.

There are five harvest level alternatives:

No Action Alternative: Reimpose the ABCs/OYs established in 2004 for 2005 and 2006. OY values for 19 stocks differ from the Council OY Alternative (counting cowcod stocks north and south of 36° N latitude separately). The ABC/OY values for lingcod and cabezon are not based on the most recent stock assessments for these species. (The first cabezon stock assessment was completed for use in the 2005-2006 management cycle. Under the No Action Alternative, this species is managed under the Other Fish category because of the lack of a stock assessment.) For other assessed species, the No Action OYs are not computed by projecting forward from the most recent stock assessment. For most of these assessed stocks, this results in OYs for 2005-2006 slightly smaller than under the action alternatives. For sablefish, black rockfish (Oregon-California portion of the OY), and yellowtail rockfish, the No Action OYs are higher. OYs for Pacific cod and Other Fish are higher because the 50% precautionary reduction recommended in Council guidance for unassessed or stocks with minimal data is not applied. The OYs for bocaccio, cowcod, widow rockfish, and yelloweye rockfish are not based on rebuilding plans adopted by the Council in April 2004, although interim targets for widow and yelloweye rockfish are the same as those adopted by the Council. However, as with other assessed stocks, forward projections have not been applied in computing OYs for these species, making them slightly lower than under the Council OY Alternative. The No Action Alternative includes an OY for Pacific whiting, which the Council recommended in March 2004 in advance of the April opening of this

fishery. The Council OY alternative does not identify a whiting OY, recognizing that it will be chosen in March 2005 (for the 2005 fishery) and March 2006 (for the 2006 fishery). The differences between No Action and Council OYs can be summarized as follows:

- Not based on most recent stock assessment: lingcod and cabezon (two stocks)
- Forward projection or other adjustment based on new information not applied to compute OY: sablefish, Pacific ocean perch, canary rockfish (but no functional difference), yellowtail rockfish, shortspine thornyhead, darkblotched rockfish, black rockfish (Oregon-California harvest guideline only), and Dover sole (eight stocks).
- Not based on rebuilding plans adopted in April 2004: widow rockfish (No Action interim targets the same), bocaccio, cowcod (counted as two stocks), and yelloweye rockfish (No Action interim target the same) (five stocks).
- Precautionary reduction for unassessed stocks not applied: Pacific cod, Other Flatfish, and Other Fish (three stocks/stock complexes). Under the Council OY Alternative, in addition to the precautionary reduction, the Other Flatfish OY is based on an estimate of total fishing mortality rather than landed catch.
- Identifies the Pacific whiting OY.

Low OY Alternative: Applies the most precautionary OYs, based on uncertainty in stock assessments and/or possible precautionary reductions. This alternative differs from the Council OY for 12 stocks/stock complexes. In addition to greater precautionary reductions based on stock assessment uncertainties or technical guidance, the OYs differ for the three of the four overfished species for which the Council adopted rebuilding plans in April 2004—bocaccio, widow rockfish, and yelloweye rockfish. Although the adoption of these plans and associated targets was a separate action, for the purposes of analysis the range of alternatives considered in that action is represented in these harvest level alternatives. The rebuilding strategy chosen by the Council for cowcod is the same one represented in this alternative, resulting in the same OYs for the two cowcod stocks. This alternative also identifies a Pacific whiting OY for the purposes of analysis while the Council OY alternative does not (as discussed above).

Medium OY Alternative: Applies OYs intermediate to Low OY and High OY alternatives and mostly the same as in the Council OY Alternative. This alternative differs from the Council OY for four stocks (lingcod, Pacific whiting, canary rockfish, and yelloweye rockfish). For four other stocks (cowcod north/south, Other Flatfish, and Other Fish) no OY is identified under this alternative because only endpoints in a range—represented in the Low OY and High OY alternatives—are structured in the alternatives.

High OY Alternative: Applies the least precautionary OYs. Differs from the Council OY Alternative for 14 OYs.

Council OY Alternative: Similar to Medium OY Alternative with intermediate level of precaution. Key differences in the OYs contained in this alternative are for lingcod, canary rockfish, Pacific cod, Other Flatfish, and Other Fish. The lingcod OY represents a change in the harvest control rule in the rebuilding plan, based on the new stock assessment. It differs from the Medium OY Alternative only in that the lower 2006 OY is also adopted 2005. The canary rockfish OY varies depending on catch sharing between commercial and recreational sectors (due to the effect of difference in the size of fish caught in these fisheries). The OY under this alternative is based on projected catch sharing rather than an assumed split used for the sake of analysis. Pacific cod, Other Flatfish and Other Fish OYs apply the precautionary 50%

reduction, which has not been used previously. As noted, no Pacific whiting OY is identified in this alternative; it will be chosen in March 2005, based on the most recent stock assessment.

Tables 2-1a and 2-1b present the ABC and OY values under the harvest specification alternatives.

ES.5.2 Management Measure Alternatives

The description of the alternatives in Chapter 2 is organized around major fishery sectors: limited entry trawl, limited entry fixed gear, open access, tribal, and recreational. The same format is used here.

ES.5.2.1 Limited Entry Trawl

No Action Alternative. This alternative represents the status quo, or management measures put in place in 2004 as modified inseason through July. Limited entry trawl trip limits and trawl Rockfish Conservation Area (RCA) boundaries are listed in Tables 2-14 and 2-15. North of the management line at 40°10' N latitude (near Cape Mendocino, California) the shoreward boundary varies between 60 fathoms (fm) and 75 fm, depending on cumulative limit period. In the south this boundary varies between 75 fm and 100 fm. The seaward boundary is 150 fm in all periods and areas except the first two periods north of Cape Mendocino where it was 200 fm. Projected limited entry trawl catches for major target species and overfished species are listed in Table 2-16. In contrast to the action alternatives, this alternative is based on 2004 ABC/OY values, or the status quo harvest level alternative. Projected catches of target and overfished species under this alternative are intermediate to Alternatives 1 and 2. Under this alternative differential cumulative trip limits are applied to vessels using small or large footrope gear. Only vessels using small footrope gear, which prevents fishing in rocky areas favored by some overfished species, may fish shoreward of the RCA. Smaller cumulative limits apply to vessels using small footrope gear. North of Cape Mendocino, vessels are held to these lower limits for the entirety of each two-month cumulative limit period, even if the vessel also employs large footrope gear during the period, which would otherwise qualify for higher limits. This is meant to encourage vessels to fish seaward of the RCA, where bycatch of overfished species with very low OYs—canary rockfish in particular—is lower. South of Cape Mendocino, differential trip limits also apply, but use of small footrope during a two-month period does not obligate the vessel to the lower landing limits even if it switches to large footrope gear; any landings made with that gear count toward the higher trip limit.

The Pacific whiting fishery, a seasonal fishery beginning on April 1 and ending when the OY is caught or market conditions dictate (usually in September or October), is an important component of the overall groundfish fishery. Target species management is relatively straightforward since it is quota-based and regularly monitored. Bycatch of widow rockfish, a co-occurring, overfished species has become a major management issue and potential constraint on target species catches in recent years. The whiting fishery catches the largest proportion of the widow rockfish OY and, therefore, can potentially affect fishing opportunity in other sectors if the remaining portion of the OY is insufficient to allow for normal bycatch in other sectors. For this reason, the Council generally sets the whiting OY by considering the resulting widow bycatch implications so as to ensure that other sectors would not otherwise be constrained. Canary rockfish bycatch is also a concern. This sector, which is well organized into at-sea (mothership and catcher-processor) and shore-based components, has been using a variety of voluntary and self-policed strategies to minimize bycatch. One-hundred percent observer coverage for the at-sea sector and full retention combined with dockside sampling for the shore-based segment facilitates compliance monitoring. In response to the elevated catches of canary rockfish in the 2004 fishery, the Council requested that NMFS develop an emergency rule that allows an individual sector of the primary whiting fishery to be closed if the canary rockfish impacts are projected to reach 7.3 metric tons (mt). Therefore, NMFS intends to publish an emergency rule that establishes routine management measure authority, under the Groundfish FMP, to close

the Pacific whiting primary season fisheries by sector before the sector's whiting allocation is reached, to minimize impacts on overfished species. The intended effect of the emergency action is to provide for a fast response time if there is concern that the incidental catch of an overfished species is likely to result in the OY for that species being exceeded.

Action Alternative 1. Alternatives 1 through 3 were developed based on constraining canary rockfish bycatch to different levels of the OY; because the canary rockfish OY is only 47 mt in 2005 and 2006 (Tables 2-1a and 2-1b), and this species is caught across a range of fisheries, managing bycatch has a big influence on fishing opportunity. This alternative is the most precautionary in terms of the proportion of the OYs for canary rockfish and other overfished species that projections show would be caught. Limited entry trawl fisheries would catch 17% of the canary rockfish OY, and all groundfish fisheries taken together would catch 91% of the OY. Trip limits, RCA boundaries, and projected catches for this alternative are shown in Table 2-17. The shoreward boundary of the trawl RCA varies by between 60 fm and 75 fm, depending on period and area; the seaward boundary is 150 fm in all areas and periods. The area enclosed by the trawl RCA under this alternative is, on average, the largest of all the alternatives. As a result of cumulative trip limits, closed areas, and other measures, the lowest target species catches are projected under this alternative. As with all the action alternatives, an ongoing exempted fishing permit (EFP) covering selective flatfish trawl would be transitioned into the regular management regime. Modified bottom trawl gear that reduces bycatch of overfished rockfish species while maintaining or increasing catch efficiency for target flatfish species has been tested in all three West Coast states under EFPs. (The modified trawl nets use a cutback headrope, which allows species that swim upward when disturbed—such as some rockfish species—to evade the net entrance. Bottom-hugging species like flatfish are still caught.) Sufficient testing has occurred in Oregon waters to transition this modified gear configuration into the regulatory regime for fisheries north of 40°10' N latitude. Selective flatfish trawl is required shoreward of the RCA in this region. Testing under an EFP continues south of 40°10' N latitude. The selective flatfish trawl qualifies as small footrope gear, and the area and differential cumulative limit requirements described above continue to apply. Bycatch caps are established for this fishery accompanied by 100% observer coverage. The Pacific whiting OY is set at half the levels projected from the most recent stock assessment (Helser, *et al.* 2004); projected widow rockfish bycatch would be 52% of the OY in 2005 (Table 2-10), easily accommodating bycatch in other fishery sectors.

Action Alternative 2. This alternative is structured around an intermediate canary rockfish bycatch of 9.9 mt by the trawl fishery. Catches for all sectors are projected to be 48 mt, exceeding the canary rockfish OY (Table 2-11).^{2/} The shoreward boundary of the trawl RCA varies between 75 fm and 100 fm, depending on season; the seaward boundary is 150 fm. The total area enclosed by the trawl RCA is about two-thirds of that enclosed under Alternative 1. Table 2-18 shows cumulative trip limits and projected catches of target and overfished species by the limited entry trawl sector. Selective flatfish trawl gear is required shoreward of the RCA, but unlike Action Alternative 1, the fishery would proceed without bycatch caps or 100% observer coverage. Bycatch in this fishery would be monitored under the normal observer coverage rate under the federal groundfish observer program, which was about 16% in 2002-2003. The Pacific whiting fishery is modeled using the OYs projected from the most recent stock assessment. Projected bycatch of widow rockfish in the whiting fishery is 302 mt in 2005, which by itself exceeds that year's OY of 285 mt. Adding in bycatch from other sectors would result in an overage of 24%. Additional, mandatory

2/ The value of the canary rockfish OY partly depends on the proportion of landings made in commercial and recreational sectors, because of the different size selectivity in these two sectors. Since commercial fisheries would take a larger proportion of the OY under this alternative, the OY would likely be different than that selected by the Council, which applies to the Preferred Alternative. However, these variations are small, and it is still likely that the OY would be exceeded under this alternative.

precautionary measures could be implemented in the whiting fishery to reduce bycatch, possibly preventing the OY being exceeded with this target species harvest level. These measures are not part of the proposed action, however, and the bycatch implications cannot be modeled at this time. Such measures may be analyzed in a subsequent environmental impact assessment related to Council action for the 2005 Pacific whiting fishery.

Action Alternative 3. This alternative is very similar to Alternative 2, but structured with a higher canary rockfish bycatch of 10.6 mt by non-whiting limited entry trawl fisheries in 2005. Canary rockfish catch in all sectors is projected at 53 mt for 2005, which would exceed the OY by 13%. The trawl RCA configuration is the same under this alternative as under Alternative 2. Trip limits for species caught on the continental slope, such as sablefish and thornyheads, are almost identical; continental shelf flatfish limits are in some cases considerably higher (Table 2-19). The same gear requirements—selective flatfish trawl shoreward of the RCA north of 40°10' N latitude—and differential trip limits would also apply. The Pacific whiting fishery is modeled using an OY double that in the most recent stock assessment. Projected bycatch of widow rockfish for 2005 would be 616 mt for this sector, or more than double the OY (Table 2-12). Bycatch of widow rockfish in the non-whiting trawl sector is very modest, however, at 1.4 mt in 2005.

Council-preferred Alternative. This alternative was developed using updated, lower bycatch rates for the selective flatfish trawl fishery. This allows cumulative trip limits and RCA boundaries to be less restrictive under this alternative, while projected overfished species catches in 2005 are slightly higher than the other alternatives. Target species catches, in contrast, are substantially higher; in the case of Dover sole, projected 2005 catches are only slightly below the OY. The RCA, on average, would enclose the smallest area under this alternative. Canary rockfish catches in the non-whiting trawl sector are projected to be 8 mt. Across all sectors, about 95% of the OY, or 44.3 mt, is projected to be caught. The selective flatfish trawl gear requirement described above is implemented under this alternative (without the caps and full observer coverage proposed under Alternative 1), along with differential cumulative limits. Under this alternative, the Council will select a Pacific whiting OY for the 2005 fishery in March 2005 (and March 2006 for the 2006 fishery) based on new annual stock assessments. Information on bycatch in the 2004 whiting fishery will also be used in this decision. For the proposed action evaluated in this EIS, “placeholder” values for canary and widow rockfish bycatch in the whiting fishery are established. These are 7.3 mt and 244.3 mt respectively. These figures could act essentially as bycatch caps, with various mandatory measures, and even a fishery closure, being applied to prevent these bycatch levels from being exceeded. Other connected actions, not part of this proposed action, but potentially implemented during the biennial management cycle, include the extension of the selective flatfish gear requirement to trawl fisheries south of 40°10' N latitude and converting another EFP trawl fishery, targeting arrowtooth flounder, to regulations. (See Appendix B to this EIS for a description of this EFP fishery.)

ES.5.2.2 Limited Entry Fixed and Open Access Fisheries

Most of the management measures for the limited entry fixed gear sector and open access fisheries are the same as No Action, or status quo as of July 2004, under Alternatives 1 through 3.^{3/} Cumulative trip limits

3/ The seasonal primary sablefish fishery prosecuted by limited entry fixed gear vessels is managed according to a permit endorsement, “stacking” of multiple permits on a single vessel, and cumulative landing limit “tiers” based on the permits stacked on a vessel. (see Section 1.2.4 in Appendix A for a more detailed description of this management regime.) Vessels qualify for one of three tiers based on permits held and may land the amount of sablefish associated with that tier limit for each permit held. (A vessel may stack up to three permits.) At the start of the 2004 fishing year the landing limits associated with each tier were mis-specified due to a calculation error. Council action at the June 2004

and tier limits are the same as status quo. These alternatives differ in the location of the nontrawl/open access RCA coastwide seaward boundary: 150 fm under Alternative 1, 125 fm under Alternative 2, and 100 fm under Alternative 3. The seaward boundary under No Action is 100 fm north of 40°10' N latitude and 150 fm in the south. Bycatch information for these sectors is more limited than for the trawl fishery, and no total catch projection model has yet been developed, except for the primary sablefish fishery. Therefore, total catch mortality for overfished species is assumed to be the same across all the alternatives for the limited entry fixed gear and open access sectors (see Table 2-5 and Tables 2-10 through 2-13).

The Council-preferred Alternative continues the same RCA boundaries as under status quo, except for a minor change applying to exempted trawl vessels in the open access sector south of 40°10' N latitude. Cumulative trip limits for limited entry fixed gear and open access are the same as status quo (No Action); sablefish tier limits are adjusted slightly based on OY projections from the most recent stock assessment.

ES.5.2.3 Tribal Fisheries

Washington coast tribes have treaty rights to fish for groundfish in their usual and accustomed grounds. They develop a package of management measures, which are put forward by the tribal representative on the Council and evaluated along with proposed measures for other sectors. The tribal proposal is the same as No Action except for an increase in the lingcod harvest guideline to between 50 mt and 100 mt, an increase in the cumulative trip limit for yellowtail rockfish, and an increase in the trip limit for petrale sole, both caught in trawl fisheries prosecuted by the Makah tribe. Tribal management measures under No Action include an allocation of sablefish, a harvest guideline for black rockfish, trip limits for various species caught in bottom trawl and midwater fisheries, and an allocation of Pacific whiting based on a standing “sliding scale” formula. (Section 2.2.4.4 describes tribal management measures.) In addition, the Makah tribe proposes a new pollock test fishery that, if successful, would support targeting this species during the 2005 Pacific whiting fishery in which this tribe participates. The only difference between the action alternatives is Alternatives 1 establishes the lingcod harvest guideline as a range between 50 mt and 100 mt while Alternative 2 would set the lingcod harvest guideline at 50 mt, and Alternative 3 would set it at 100 mt.

The Council-preferred Alternative adopts the tribal proposal as put forward, with the lingcod harvest guideline established as 50 mt to 100 mt. This represents an increase from the 25 mt 2004 harvest guideline. However, the tribes would not continue to target lingcod if the bycatch of other overfished species is higher than anticipated.

ES.5.2.4 Recreational Fisheries

Recreational fisheries are managed by the states using bag limits, seasons and closed areas. Washington and Oregon did not propose any changes from 2004 management measures (No Action). No Action management measures in these two states are:

Washington: Recreational fishery open year round for groundfish except lingcod, which is open from the Saturday closest to March 15 (March 13 in 2004) through the Sunday closest to October 15 (October 17 in 2004). The recreational groundfish bag limit is 15 fish per day including rockfish and lingcod. Of the 15 recreational groundfish allowed to be landed per day, only 10 may be rockfish, with no retention of canary or yelloweye rockfish, and there is a sublimit of two lingcod with a 24-inch minimum size during the open lingcod season. There is a “C-shaped” Yelloweye Rockfish Conservation Area (YRCA), which was established where recreational groundfish and recreational halibut fishing is prohibited. Based on inseason

meeting corrected this error; the alternatives are based on these corrected values.

monitoring, recreational fisheries inside the 30 fm contour would be closed inseason if canary or yelloweye rockfish harvest guidelines were projected to be attained. Other inseason depth restriction apply only in specific high bycatch areas.

Oregon: Recreational groundfish fishery is open year round with no depth restrictions except during June through September when the fishery is open only inside 40 fm. Catches are also managed using a 10 marine fish daily-bag-limit including rockfish, greenling (*Hexagrammos* spp.), cabezon, and other groundfish species, but excluding salmon, lingcod, perch species, sturgeon, sanddabs, striped bass, tuna, and baitfish. There is no retention of canary and yelloweye rockfish. Anglers may keep two lingcod with a 24-inch minimum size and one Pacific halibut with a 32-inch minimum size when the halibut season is open. Additionally, there is a minimum size limit of 16 inches for cabezon and a 10 inches minimum size limit for greenling species. To minimize canary or yelloweye rockfish impacts, the same inseason closure described for Washington, would also be applied in Oregon waters. Although not part of the proposed action analyzed in this EIS, Oregon Department of Fish and Wildlife is evaluating additional management measures involving specific closed areas and rockfish catch-and-release techniques (to reduce bycatch mortality) that could be implemented inseason.

California: A range of measures, varying among the action alternatives, is evaluated in this EIS for California recreational fisheries. Key provisions are summarized in the following table.

Management Measure	No Action	Alternative 1	Alternative 2	Alternative 3	Council-preferred
Rockfish-greenling-cabezon complex daily bag limit and sublimits	10 fish 3 cabezon (15" min.) 2 greenling (12" min.)	5 fish 1 bocaccio (10" min.) 1 cabezon (15" min.) 1 greenling (12" min.)	10 fish 1 bocaccio (10" min.) 2 cabezon (15" min.) 1 greenling (12" min.)	10 fish 1 bocaccio (10" min.) 3 cabezon (15" min.) 2 greenling (12" min.)	10 fish 2 bocaccio (10" min.) 3 cabezon (15" min.) 2 greenling (12" min.)
Lingcod, April-October season*	1 fish, 30" min.	1 fish, 28" min.	2 fish, 26" min.	2 fish, 24" min.	2 fish, 24" min. (April-November season)
Scorpionfish	5 fish, 10" min., January-February and July-December season	Same as No Action	Same as No Action	Same as No Action	Same as No Action
Seasonal closure exemptions (see Sec. 2.2.4.7 for details)	Shore-based anglers Shore-based divers	Shore-based anglers Shore-based divers	Shore-based anglers Shore-based and boat-based divers	Shore-based anglers Shore-based and boat-based divers	Shore-based anglers Shore-based and boat-based divers

*In addition to any other groundfish closures.

California has also implemented regional management measures in rockfish/lingcod management areas (RLMAs). Specific measures in addition to those summarized above, under No Action, are as follows:

Southern RLMA (U.S./Mexico Border to Point Conception at 34°27' N latitude)

- Groundfish open March through December inside 60 fm (closed January through February).
- California scorpionfish can only be retained during March, April, November, and December.

Central RLMA (Point Conception to Cape Mendocino at 40°10' N latitude)

- Groundfish open January, February, and September through December inside 30 fm; and May through August inside 20 fm (closed March through April).

Northern RLMA (Cape Mendocino to the California/Oregon Border)

- If canary or yelloweye rockfish harvest guidelines are projected to be attained inseason, CDFG would restrict the recreational groundfish fishery to the area inside a management line at approximately 30 fm. An inseason depth restriction would apply only in specific high bycatch areas.

Specific measures in addition to those summarized above, under Action Alternatives 1 through 3, are as follows:

Southern RLMA

- Groundfish other than California scorpionfish, but including select nongroundfish species (California sheephead and ocean whitefish) open May through September inside 40 fm (closed January through April and October through December).
- California scorpionfish can only be retained during March, April, and July through September inside 40 fm (closed January, February, May, June, and October through December).

Central RLMA

- Groundfish including California scorpionfish, and including select nongroundfish species (California sheephead and ocean whitefish) open in June inside 40 fm; and July through October inside 20 fm (closed January through May and November through December).
- For 2005-2006, a new management line at Pigeon Point (37°11' N latitude) is proposed for use inseason, in addition to current management lines already available. This line is proposed to provide federal consistency with the California Nearshore FMP, which defines two RLMA regions in central California (from Point Conception to Cape Mendocino) with a division at Pigeon Point. The management line at Pigeon Point provides a division within the Central RLMA and results in a North-Central and South-Central RLMA. While this alternative combines the two areas in this EIS analysis, there might be different regulations adopted inseason for the North-Central and South-Central RLMAs.

Northern RLMA

- Groundfish and ocean whitefish open in July through October inside 40 fm (closed January through June and November through December).

Under the Council-preferred Alternative, the Central RLMA is subdivided. While the CDFG and Council propose beginning the 2005 California recreational season with the same regulations from Cape Mendocino to Lopez Point (36° 00' N latitude), there may be inseason adjustments during 2005 and 2006 to divide the area at Pigeon Point. Depth and season closures are as follows:

Southern RLMA

- Groundfish open other than California scorpionfish, but including select nongroundfish species (California sheephead and ocean whitefish) March through June 30-60 fm and July through September inside 40 fm (closed January through February and October through December).

- California scorpionfish open October and November inside 40 fm, December inside 20 fm (closed January through September).

South Central RLMA (Point Conception to Point Lopez)

- Groundfish including select nongroundfish species (California sheephead and ocean whitefish) open May through September 20-40 fm (closed January through April and October through December).

North Central RLMA (Point Lopez to Cape Mendocino)

- Groundfish including select nongroundfish species (California sheephead and ocean whitefish) open July through November inside 20 fm (closed January through June and December).
- Designate a new management line at Pigeon Point (37°11' N latitude) for use inseason to make federal regulations consistent with the California Nearshore FMP.

Northern RLMA

- Groundfish and ocean whitefish open July through October inside 40 fm (closed January through June and November through December).

The Council-preferred Alternative also includes these California recreational management measures:

- Status quo regulations unless otherwise specified.
- Regulations apply to groundfish (with sanddab fishery exception) and associated state-managed species (rock greenling, California sheephead, and ocean whitefish).
- The sport fishery for sanddabs, using gear specified in federal and state regulations (size #2 hooks or smaller), is exempt from the season closures and depth restrictions placed on other federally-managed groundfish.
- Retention of “other flatfish” is allowed when fishing with size #2 hooks or smaller for Pacific sanddabs.

ES.6 Impacts of the Alternatives

Table ES-1 describes the harvest level alternatives. Table ES-2 summarizes the impacts of the management measure alternatives.

ES.6.1 Impacts of the Harvest Level Alternatives

Harvest level alternatives are evaluated qualitatively based on a description of the stock assessment uncertainties and other adjustments considered by the Council. The description of the alternatives, above, notes that they represent a range in the level of precaution applied in the face of uncertainties about the true status of a given stock or stock complex. Choice of a particular set of OYs determines, in broad terms, the likely impacts to other environmental components. Once OYs are chosen, management measures must be crafted to constrain total fishing mortality for each stock or stock complex within the given set of OYs. Choosing the Low OY Alternative, for example, would entail crafting management measures resulting in substantially lower landings. (Given the OY of zero for widow rockfish under this alternative, many groundfish fisheries would likely have to be closed, resulting in significant adverse socioeconomic impacts.)

ES.6.2 Impacts on Essential Fish Habitat and the Ecosystem

Currently there is insufficient information to fully predict the impacts of the management measure alternatives on EFH and marine ecosystems. Information on the distribution of fishing effort across different habitat types, and information on how habitat types are differentially affected, would be needed to make those predictions. Ecosystem effects correlate more closely with species-specific removals, but to the degree there are spatial differences in stock structure or ecological function, similar information would be needed. Data on the spatial distribution of fishing effort is currently limited, and models have not yet been developed to predict how a given set of management measures would affect such a distribution. Given these limitations, a simple proxy, projected catches by the limited entry trawl sector is used. These projections are made at a gross spatial level: north and south of the management area boundary at 40° 10' N latitude and shoreward and seaward of the trawl RCA. The total area enclosed by the trawl RCA, which varies among the alternatives, is a second measure that can be used to evaluate the relative impacts on EFH. Fishing effort is limited or prohibited in the RCA, especially by bottom tending mobile gear, which available evidence shows has the greatest impact on EFH.

Using the two metrics described above, the relative impacts of the alternatives on EFH and marine ecosystems are summarized:

The No Action Alternative. This alternative has the second-largest trawl RCA among the alternatives, although very close to Alternative 1. Looking at projected catches for all areas (the right-hand column in Table 3-2), the level of effort is likely to be equivalent to Alternatives 2 and 3. Projected catches seaward of the RCA are slightly higher than Alternatives 1 and 2, which may indicate a lower level of effort in these areas in comparison to those two alternatives. The No Action Alternative is predicted to have a greater impact on EFH and marine ecosystems than Alternative 1 and an impact equivalent to Alternatives 2 and 3.

Alternative 1. This alternative has the largest trawl RCA among the alternatives. It is also projected to result in the lowest catches among the alternatives overall and in each area except for seaward of the RCA in the north. Generally, seaward of the RCA Alternatives 1, 2, and 3 have very similar projected catches, which may indicate a similar level of impact on habitats in those areas. Alternative 1 is predicted to have the least impact on EFH and marine ecosystems of the alternatives.

Alternative 2. This alternative and Alternative 3 have the same size trawl RCA, which is two-thirds the size of the RCA under Alternative 1. They also have similar levels of projected catch. Projected catch under Alternatives 2 and 3 in areas seaward of the RCA is similar to or slightly lower than projected catch under Alternative 1 and No Action, especially in the north. Shoreward of the RCA, projected catch is higher than under No Action and Alternative 1. Alternatives 2 and 3 are predicted to affect EFH and marine ecosystems to the same degree, which is greater than Alternative 1 or No Action.

Alternative 3. This alternative is predicted to have an effect indistinguishable from Alternative 2, as discussed above.

The Council-preferred Alternative. This alternative has the smallest RCA of all the alternatives. Projected catches are substantially higher shoreward of the RCA in the northern region: almost double the No Action alternatives and more than three times Alternative 1. Projected catches in the shoreward area in the southern region are less than under No Action but greater than the other action alternatives. As with all the alternatives, only small footrope gear is allowed shoreward of the RCA (selective flatfish gear is a modification of the small footrope gear category), which may mitigate impacts to EFH because this type of gear cannot be used in areas with rocky substrate. Although intended to reduce catches of overfished rockfish species occurring in this habitat type, this requirement also prevents trawling in rock areas, which

may support more sensitive habitat containing habitat-forming benthic organisms such as corals and sponges. Overall, it is predicted this alternative will have the greatest impact on EFH and the ecosystem because projected target species catch, acting as a proxy for fishing effort, is highest under this alternative.

Cumulative impacts. External factors that are likely to combine with effects of the proposed action to produce cumulative impacts are described in Section 3.4. There is insufficient information to determine if the relative magnitude of cumulative effects under the different alternatives will differ from the relative magnitude of direct and indirect effects. It is likely, however, that external factors would affect EFH and marine ecosystems in the same degree under all of the alternatives. Therefore, those alternatives producing greater direct and indirect impacts would be expected to result in greater cumulative impacts.

ES.6.3 Impacts on Groundfish and Other Fish Species

The direct impact of the proposed action is to regulate how much fishing mortality on each stock or stock complex is likely to occur. This must be predicted across the various regulatory sectors—limited entry trawl, limited entry fixed gear, open access fisheries, tribal fisheries, and recreational fisheries—which are regulated through management measures on a biennial cycle. Information available to predict fishing mortality varies by these sectors. Monitoring and models to predict landings are most developed for the limited entry trawl sector, which accounts for the largest proportion of groundfish landings. Catch estimates for the limited entry fixed gear and open access sectors are more ad hoc, based on the correlation between management measures applied in the past and landings. For recreational fisheries, state management agencies have developed models and methodologies to predict catches for a given set of management measures.

Predicted catch or bycatch mortality of overfished species is of particular importance, since these species act as constraining stocks by indirectly determining catch levels that can be sustained for target species. For the 2005 and 2006 management cycle, predicted bycatch of canary rockfish, widow rockfish, and yelloweye rockfish has been a main consideration in structuring management measures. Of these species, canary rockfish is probably most constraining, both because of the low rebuilding OY established for this species and the fact that it is caught in a range of fisheries from Washington to central California waters. Management measure alternatives are largely structured around constraining canary rockfish catches by the limited entry trawl sector to different precautionary levels below the OY. Widow rockfish bycatch is an issue primarily in the Pacific whiting fishery sector. As discussed above, placeholder values for total widow and canary rockfish fishing mortality by this sector have been identified and will serve as de facto bycatch caps for management purposes.

Direct impacts of the groundfish fishery on nongroundfish species are negligible and generally accounted for in the management of other fisheries. Incidental groundfish catch in nongroundfish fisheries may be considered a cumulative impact on groundfish, contributing to total fishing mortality. These catches are modest or moderate and for overfished species are part of the bycatch accounting measures used to evaluate the alternatives (see Table 2-5 and Tables 2-10 through 2-13). Catch of target groundfish species in nongroundfish fisheries is a negligible component of total fishing mortality.

The impacts of the alternatives are summarized as follows:

No Action Alternative. Management measures under this alternative are intended to constrain fishing mortality to the levels established for 2004 and would not necessarily correlate with the OYs established for 2005 and 2006. However, projected bycatch mortality of overfished species in 2004 does not exceed the OYs established for 2005 and 2006. Target species catch projections in the trawl fishery, for which estimates are available, are lower than for the Council-preferred Alternative and also below the OYs established for

2005 and 2006. Overfishing, defined as exceeding the OYs established for 2005 and 2006, would not be expected to occur under this alternative. Therefore, significant adverse impacts to target and overfished groundfish species are not predicted for this alternative. Impacts, defined as total fishing mortality, are intermediate to Alternative 1 and 2.

Alternative 1. This is the most precautionary alternative. Projected bycatch mortality for overfished species is below OYs established for these species. Catches of target species are lowest of all alternatives and not predicted to exceed OYs, based on projections for the limited entry trawl fishery and other available information. Therefore, this alternative is not predicted to result in significant adverse impacts to target and overfished groundfish species.

Alternative 2. Projected bycatch mortality of widow rockfish would exceed the OY under this alternative. This is largely due to assumed bycatch in the Pacific whiting fishery, which under this alternative is calculated from the last stock assessment for the purposes of analysis. As noted above, the actual Pacific whiting OY for 2005 and 2006 will be chosen in March of each year based on the latest annual stock assessment. The projected canary rockfish bycatch mortality is 48 mt, which exceeds the 46.8 mt OY adopted under the Council OY Alternative. However, the canary rockfish OY is a product of the proportion of catch taken by the commercial versus recreational sectors. Under the default 39%:61% recreational:commercial split, the OY would be 48 mt. The Council OY is based on an even split between the sectors. An OY determined from the actual split between these sectors under this alternative has not been computed. It is possible that mitigation measures, such as additional bycatch reduction measures in the Pacific whiting fishery and de facto sector-wide bycatch caps for canary and widow rockfish (as under the Council-preferred Alternative), could prevent OYs from being exceeded under this alternative. For these reasons, this alternative results in conditionally significant adverse impacts.

Alternative 3. This alternative is similar to Alternative 2 in that the OYs for canary and widow rockfish would be exceeded because of the larger Pacific whiting OY and more liberal management measures applied under this alternative. Because of the magnitude of the projected overages it is less likely that mitigation measures would effectively reduce total bycatch mortality for these species below the OY. Therefore, significant adverse impacts are highly likely under this alternative.

Council-preferred Alternative. Under this alternative OYs for overfished species and target species are not expected to be exceeded. Projected catches of target species rely on the use of selective flatfish trawl gear and are highest under this alternative, resulting in the greatest impact to these stocks. The placeholder values, or de facto bycatch caps, for canary and yelloweye rockfish are crucial to keeping total fishing mortality for these stocks under their OYs. This alternative is not projected to have significant adverse impacts, although it has the highest level of non-significant impacts in terms of target species catches. Preventing adverse significant impacts is conditioned on future action in choosing the OY for Pacific whiting and any mitigation needed to prevent OYs for overfished species from being exceeded due to catches in this fishery.

ES.6.4 Impacts on Protected Species

Protected species fall under three overlapping categories, reflecting four mandates: the Endangered Species Act of 1973 (ESA), the Marine Mammal Protection Act of 1972 (MMPA), the Migratory Bird Treaty Act (MBTA), and EO 13186. Chapter 5 in Appendix A describes species which occur off the West Coast and are protected under these mandates.

Presumably, effects on protected species correlate with changes in the level of fishing effort. Increased fishing effort could lead to an increase in interactions between fishing vessels and protected species, while

a decrease in fishing effort would have the opposite effect. Thus, changes in fishing effort could be one way to evaluate the relative effects of the alternatives. However, as discussed in Chapter 3, in connection with habitat and ecosystem impacts, there are limited data available on the distribution, intensity, and duration of fishing effort associated with the groundfish fisheries. Furthermore, different gear types would affect protected species differently, so the relative level of fishing effort by gear type would have to be accounted for. Even if such data were available, this distribution and intensity level of fishing effort would have to be correlated with the distribution of protected species. Finally, the effects of resulting interactions (aside from observed mortality) need to be better understood. Given these limitations, the different alternatives, which represent different harvest levels, are used as proxies for fishing effort in order to assess the relative potential effects of the alternatives on protected species.

The impact of the alternatives on protected species are as follows:

No Action Alternative. Under the No Action Alternative, harvest levels for 2005-2006 represent the mid-range of harvest levels proposed for 2005-2006. Using harvest levels as an estimate of fishing effort, the intensity and duration of fishing activities would represent the mid-range of fishing effort proposed for 2005-2006. The greater the intensity and duration of fishing activities during 2005-2006, the greater the likelihood of interactions between groundfish fisheries and protected species. The No Action Alternative also represents the mid-range of management measures proposed for 2005-2006. Gear specific RCAs, areas closed to fishing for groundfish, would be in place under the No Action Alternative. In areas and during seasons with RCAs, the potential for interactions between groundfish fisheries and protected species would be minimized. Under the No Action Alternative, differential trawl trip limits encourage a shift in trawling to areas seaward of the RCA. This effort shift should benefit protected species found in nearshore areas, while increasing the likelihood of interactions between groundfish fisheries and protected species that occur in offshore areas. Under the No Action Alternative, fishing effort by the fixed gear and recreational fleets should be comparable to levels predicted under the Action Alternatives 2 and 3. The incidental take of salmon species in the Pacific whiting fishery is already regulated under a Biological Opinion (BO); therefore, any increase in incidental salmon take would be dealt with through that process. There is no evidence that Pacific Coast groundfish fisheries interact with sea turtles. Additionally, there is no expectation that take limits established in other relevant BOs, or potential biological removal thresholds under the MMPA would be exceeded as a result of the No Action Alternative.

Alternative 1. Action Alternative 1 constrains fishing effort and the distribution of fishing effort more than any other alternative. Fishing effort would be minimized to reduce the harvest of canary rockfish, an overfished species. RCAs would be most expansive under this alternative, which may encourage a shift in fishing effort to areas shoreward and seaward of the RCA. It is unknown whether large RCAs would decrease potential interactions between groundfish fisheries and protected species or simply increase interactions outside the boundaries of the RCAs. One substantial change from the No Action Alternative would be the trawl fleet's use of selective flatfish gear in the area between the U.S./border with Canada and 40°10' N latitude and shoreward of 100 fm. It is unknown how this gear will affect the bycatch of marine mammals or seabirds, but the proposed 100% observer coverage on these vessels could help generate information on the interactions between the trawl fishery and protected species.

Alternative 2. Because the harvest levels and management measures under Action Alternative 2 represent the mid-range of those projected for 2005-2006, the potential interactions between groundfish fisheries and protected species under the Action Alternative 2 should be similar to those under the No Action Alternative. Under Action Alternative 2, the trawl fleet fishing in the area between the U.S./border with Canada and 40°10' N latitude and shoreward of 100 fm would be required to use selective flatfish gear. It is unknown how this gear will affect the bycatch of marine mammals or seabirds, but with only 10% observer coverage

less information about the interactions between the trawl fishery and protected species will be generated than under Action Alternative 1.

Alternative 3. Harvest levels projected for 2005-2006 are the higher under Action Alternative 3 than under No Action and Alternatives 1 and 2; similarly, management measures are generally less restrictive than under all other alternatives. Therefore, interactions between groundfish fisheries and protected species have the potential to be highest under this alternative. Much like Action Alternative 2, the use of selective flatfish gear will be required for those vessels trawling in the area between the U.S./border with Canada and 40°10' N latitude and shoreward of 100 fm and approximately 10% of vessel with observer coverage. In general, RCAs are less extensive under this alternative than under No Action and Alternatives 1 and 2.

The Council-preferred Alternative. The Council-preferred Alternative is projected to have the highest harvest levels of all the alternatives in 2005-2006. It has the smallest trawl RCA of all the alternatives (see Table 3-1) and generally higher trawl trip limits. The fixed gear and open access RCA does not differ from the No Action Alternative. To the degree that higher harvest limits correlate with greater fishing effort, there is a greater likelihood under this alternative for interactions between protected species and groundfish vessels. If these interactions result in a higher incidental take, then this alternative would have the greatest impact on protected species in comparison to the other alternatives.

Based on data collected by the West Coast Groundfish Observer Program (WCGOP), significant differences in the impacts on protected species between action alternatives proposed for 2005-2006 are not predicted. There is little information on interactions between recreational groundfish vessels and protected species; however, significant differences between recreational alternatives are not predicted. Under any of the action alternatives, there is no expectation that take limits established in relevant BOs, or potential biological removal thresholds under the MMPA would be exceeded as a consequence of the proposed action.

ES.6.5 Impacts on the Management Regime

Broadly, the fishery management regime faces two key tasks in meeting the goal of constraining short-term total fishing so that MSY is achieved over the long term. First, resource status must be effectively monitored. Accurately determining total fishing mortality has been the most problematic monitoring task in the West Coast groundfish management regime. Unmonitored bycatch, especially of overfished species, can frustrate effective management. Second, managers must assure that resource users comply with regulations. This involves both enforcement activities, to ensure high levels of compliance, and compliance monitoring to get an accurate picture of the efficacy of regulations. The overall complexity of the management regime is an important factor in both monitoring and enforcement. More complex measures can make these activities more costly. This adds to public costs, either through increases in government spending or management failure due to inadequate monitoring and enforcement, which increases the risk that maximum sustainable yield (MSY) will not be achieved. Therefore, the alternatives can be evaluated in terms of their likely effect on the complexity of the management regime. Factors contributing to management complexity are:

- Implementing at-sea observer programs, such as the WCGOP.
- Collecting biological data using fishery catches, which can become difficult as harvests are reduced.
- Monitoring and enforcing full retention, which requires vessels to land all fish caught.
- Monitoring and enforcing bycatch caps.
- Establishing region-specific management measures.

- Monitoring and enforcing closed areas, such as the RCA.
- Modifying existing measures or implementing new measures inseason during the management cycle. Potential changes include implementing closed areas in the Pacific whiting fishery, bringing additional EFP fisheries under the regulatory regime and expanding the VMS program to more vessels than currently covered.

The impact of the alternatives on the management regime are as follows:

No Action Alternative. Impacts are similar to those associated with Action Alternative 1, but generally less than the action alternatives. Factors contributing to management efficacy and complexity under this alternative are: implementing measures to reduce canary rockfish fishing mortality, regional management measures, and large RCAs. Monitoring and enforcement problems are mitigated by the implementation of VMS.

The action alternatives have similar effects on the management regime and generally increase management complexity in comparison to No Action. However, it is not possible to distinguish between the action alternatives in terms of their relative impact on the management regime. Differences from No Action contributing to management complexity include implementation of the selective flatfish trawl gear requirement north of 40°10' N latitude and the implementation of area-specific management concepts. The buffer between constraining species' OYs—canary rockfish in particular—and projected catches varies among the alternatives; Alternative 1 has the largest buffer while Alternative 3 has the smallest. A larger buffer could reduce the likelihood of inseason management changes necessitated if harvest projections are too low, and there is a risk OYs will be exceeded. Measures under each alternative requiring increased monitoring enforcement and increasing overall complexity include:

Alternative 1: the largest RCA, 100% observer coverage and bycatch caps required for the selective flatfish trawl fishery.

Alternatives 2 and 3: bycatch reduction measures in the Pacific whiting fishery, including area management, establishing a whiting RCA, and “penalty box” measures.

Council-preferred Alternative: regional management areas for recreational harvest of lingcod, canary rockfish, and yelloweye rockfish, de facto bycatch caps for the Pacific whiting fishery, depth-based closed areas for recreational fisheries.

ES.6.6 Impacts on the Socioeconomic Environment

Change in projected income impacts associated with commercial and recreational fisheries is used as a bottom-line indicator of overall impacts on the West Coast socioeconomic environment under the 2005-2006 management alternatives. For commercial fishing and shoreside processing activities, income impacts under No Action are projected to be \$649 million. Projected commercial fishery income impacts fall by \$2 million under Alternative 1, increase by \$1.5 million under Alternative 2, increase by \$2.5 million under Alternative 3, and increase by \$3 million under the Council-preferred Alternative. Since there is no difference in proposed recreational fishery management measures for the Washington and Oregon, and very little difference between the alternatives for California, income impacts resulting from recreational fishing activities projected under the action alternatives are the same as under No Action (\$235.5 million).

The management alternatives are all based on the Council OY harvest alternative. Income impacts under the other harvest alternatives were not explicitly projected. But in general, impacts under the Council OY alternative are very close to what they would have been under the Medium OY, and slightly higher than under the No Action harvest alternative. Impacts of these three harvest alternatives are higher than what they would have been under the Low OY harvest alternative, and lower than what they would have been under the High OY harvest alternative.

ES.6.7 Environmentally Preferable Alternatives and Rationale for the Preferred Alternatives

The Low OY harvest alternative and management measure Alternative 1 are the environmentally preferable alternatives as defined at 40 CFR 1502.(b).

For the harvest level alternatives, the Council OY Alternative is consistent with adopted rebuilding plans and establishes OYs which are generally intermediate in the range of likely values suggested by uncertainties about stock status (and reflected in stock assessments for assessed stocks).

For the management measure alternatives, the Council-preferred Alternative allows higher catches of target species than is projected to occur under the other alternatives while preventing overfishing. Total catch of overfished species, while higher than the other alternatives, except for canary and widow rockfish, is still below the respective OYs. Except for canary, widow, and yelloweye rockfish, projected fishing mortality is less than half of the OYs. Target species catch is projected to be 25% above the catch occurring under Alternative 1; most of this increase occurs shoreward of the RCA. This produces greater short-term beneficial impacts while not jeopardizing long-term sustainability.

TABLE ES-1. Comparison of harvest level alternatives. (Page 1 of 1)

No Action (2004 OYs)	Low OY Alternative	Medium OY Alternative	High OY Alternative	Council OY Alternative
<ul style="list-style-type: none"> • OYs not based on new stock assessments (lingcod & cabezon), forward projections from recent stock assessments, or rebuilding plans adopted by Amendment 16-3. • For other stocks, except yellowtail rockfish, OYs within Low OY-High OY range. • New precautionary reductions for Pacific cod, other flatfish, and "other fish" complexes not applied. 	<p>Most precautionary alternative, assumes least long-term risk for highest short-term cost. Significantly adverse socioeconomic impacts likely.</p>	<p>Same as Council OY alternative except lingcod, canary rockfish, and yelloweye rockfish OYs are higher; OYs for four other stocks not identified in this alternative. (see Section 2.1 for explanations). Slightly less precautionary than Council OY Alternative.</p>	<p>Least precautionary alternative, assumes most long-term risk for greatest short-term benefit.</p>	<p>As with Medium OY Alternative, adopts OYs with intermediate level of precaution. Lingcod and yelloweye rockfish OYs apply the lower OY value of 2005/2006 to both years. Canary rockfish OY based on actual commercial-recreational catch sharing. Defers choice of Pacific whiting OY pending new stock assessment and bycatch information from 2004 season.</p>

TABLE ES-2. Summary of impacts of management measure alternatives. (Page 1 of 2)

	No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Council-preferred Alternative
EFH and Ecosystem	Second largest RCA, fishing effort similar to Alts 2 & 3, likely second least impact	Largest RCA, least fishing effort, likely least impact	RCA area smaller than Alt 1, intermediate fishing effort, impacts likely greater than No Action & Alt 1	Same RCA area as Alt 2, intermediate fishing effort, impacts likely equal Alt 2	Smallest RCA, highest fishing effort, likely greatest impact
Groundfish Species					
Overfished species	Rebuilding OYs not exceeded, but not all projected harvests consistent with adopted 2005-2006 OYs	Rebuilding OYs not exceeded, most precautionary alternative	Canary and widow rockfish rebuilding OYs exceeded, without mitigation overfishing occurs	Canary and widow rockfish rebuilding OYs exceeded, without mitigation overfishing occurs, least precautionary	Rebuilding OYs not exceeded if whiting fishery canary & widow rockfish "caps" not exceeded, modestly precautionary
Target species	OYs not exceeded, but not all projected harvests consistent with 2005-2006 OYs, harvest levels similar to Alt 1	OYs not exceeded, lowest harvest levels	OYs not exceeded, intermediate harvest levels	OYs not exceeded, intermediate harvest levels	OYs not exceeded, highest harvest levels
Non-groundfish Species	Alternatives indistinguishable, no significant impacts to nongroundfish species				
Protected Species	Fishing effort similar to Alts 2 & 3, likely second least impact	Least fishing effort, likely least impact	Intermediate fishing effort, impacts likely greater than No Action & Alt 1	Impacts likely equal Alt 2	Highest fishing effort, likely greatest impact, but ESA, MMPA threshold not exceeded
Management Regime (Public sector)	Least impact to management regime in terms of monitoring and enforcement requirements, regulatory complexity	Action alternatives indistinguishable in terms of impacts; factors contributing to complexity include implementation of selective flatfish trawl gear requirement, whiting bycatch reduction measures, area management			

TABLE ES-2. Summary of impacts of management measure alternatives. (Page 2 of 2)

	No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Council-preferred Alternative
Fisheries Impacts					
LE Trawl (\$ mil exvessel)	\$36.4	\$33.6	\$35.5	\$36.0	\$37.0
LE FG Sablefish (\$ mil exvessel)	\$9.8	\$9.8	\$9.7	\$9.8	\$9.8
Other Groundfish (\$ mil exvessel)	\$23.4	\$25.9	\$26.2	\$26.2	\$25.2
Tribal (\$ mil exvessel)	\$6.9	\$8.1	\$8.2	\$8.3	\$8.3
Recreational Impacts ('000 trips)	4,309	4,309	4,309	4,309	4,309
Buyers and Processors (\$ mil exvessel groundfish)	\$86.3	\$86.0	\$88.1	\$88.8	\$88.8
General Public (relative change in net benefits)	0	+	+	-	-
Communities (\$ mil income impacts)	\$648.8	\$646.8	\$650.3	\$651.4	\$651.8

