ENVIRONMENTAL ASSESSMENT/ REGULATORY IMPACT REVIEW
For
PROPOSED GROUNDFISH MANAGEMENT MEASURES TO IMPLEMENT A 30 FM BOUNDARY LINE OFF SOUTHERN CALIFORNIA

2003 PACIFIC COAST GROUNDFISH FISHERY

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PROPOSED ACTION: Implementation of a conservation area boundary line approximating the 30 fm depth contour for use as a 2003 management measure for federally managed Pacific groundfish commercial non-trawl gear (limited entry and open access) and recreational fisheries occurring off the coast of Southern California. This action will increase the area in which the fishery can take place, and decrease the closed area that was implemented to protect overfished groundfish species.

Abstract

The purpose of this action is to ensure that Pacific coast groundfish subject to federal management are harvested at optimum yield during 2003 and in a manner consistent with the Pacific Coast Groundfish Fishery Management Plan, the Magnuson-Stevens Fishery Conservation and Management Act, and the 10 National Standards enumerated in the Act. This action is needed to provide economic relief to commercial fixed gear and recreational fishermen in southern California while keeping impacts on bocaccio and canary rockfish, and other overfished groundfish species, minimal.

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1 PURPOSE AND NEED FOR ACTION

1.1 How this document is organized

This document is an environmental assessment (EA) and regulatory impact review (RIR) for proposed management measures to implement a conservation area boundary line approximating the 30 fm depth contour for federally managed Pacific Coast groundfish commercial fixed gear and recreational fisheries occurring off the coast of Southern California. This document tiers off of the *2003 Final Environmental Impact Statement for the Proposed Groundfish Acceptable Biological Catch and Optimum Yield Specifications and Management Measures* (2003 Specs EIS) prepared by the Pacific Fishery Management Council (Council) in January 2003. This EA analyzes an additional management measure not originally analyzed in the 2003 Specs EIS which was intended to evaluate all possible management measures for the 2003 fishing year (January through December). This EA is a combined document for compliance with, not only the National Environmental Policy Act (NEPA), but also with the Pacific Coast Groundfish Fishery Management Plan (Groundfish FMP), the Magnuson-Stevens Fisheries Conservation and Management Act (Magnuson-Stevens Act), EO 12866 (which requires an RIR) and other applicable law.

- Chapter 1 discusses the ***purpose and need*** for the action and the process that has been used to develop these management measures. This description defines the need for, and goals and objectives of, the proposed action, which helps to determine the scope of the subsequent analysis.
- Chapter 2 outlines different ***alternatives*** considered to address the purpose and need. One of these alternatives was chosen as the preferred alternative.
- Chapter 3 describes the ***affected environment***, which provides relevant background information as a basis for the analysis contained in Chapter 4.
- Chapter 4 assesses the potential ***environmental consequences*** of the alternatives outlined in Chapter 2.
- Chapter 5 makes a ***determination about the preferred alternative*** and describes why it was chosen.
- Chapter 6 contains the ***finding of no significant impacts***.
- Chapter 7 explains how the proposed action is consistent with ***other applicable law***, including the Groundfish FMP and 10 National Standards set forth in the Magnuson-Stevens Act (§301(a)), the Marine Mammal Protection Act, the Endangered Species Act, the Migratory Bird Treaty Act, the Coastal Zone Management Act. This chapter also contains the RIR as required by Executive Order (EO) 12866 and describes how the alternatives address other relevant laws and EOs.
- Chapter 8 provides a ***list of preparers***.
- Chapter 9 lists the ***bibliography***.

1.2 The Proposed Action

The *proposed action*, evaluated in this document, is the implementation of a conservation area boundary line approximating the 30 fm depth contour for use as a 2003 management measure for federally managed Pacific groundfish commercial non-trawl gear (limited entry and open access) and recreational fisheries occurring off the coast of Southern California. This action will increase the area in which the fishery can take place, and decrease the closed area that was implemented to protect overfished groundfish species.

1.3 Purpose and Need

The purpose of this action is the same as that discussed in the 2003 Specs EIS, to ensure that Pacific

Coast groundfish subject to federal management are harvested at their optimum yield (OY) during 2003 and in a manner consistent with the Groundfish FMP and the Magnuson-Stevens Act. However, the need for the proposed action is more specific than the need for the 2003 Specs EIS proposed action, which this EA tiers off of. For the 2003 Specs EIS, the proposed action was needed to constrain commercial and recreational harvests in 2003 to levels that would ensure groundfish stocks are maintained at, or restored to, sizes and structures that would produce the highest net benefit to the nation, while balancing environmental and social values. In this EA, the proposed action is needed to provide economic relief to commercial non-trawl gear and recreational fishermen in southern California while keeping impacts on bocaccio and canary rockfish, overfished groundfish species, minimal.

This document provides background information about, and analysis of, a proposed management measure for fisheries covered by the Groundfish FMP and developed by the Council. This measure must conform to the Magnuson-Stevens Act, the principal legal basis for fishery management within the U.S. Exclusive Economic Zone (EEZ), which extends from the outer boundary of the territorial sea to a distance of 200 nautical miles from shore. The Groundfish FMP establishes a framework authorizing the range and type of measures that may be used, enumerates 18 objectives that management measures should satisfy (organized under three broad goals), and describes more specific criteria for determining the level of harvest that will provide the greatest overall benefit to the Nation (termed "optimum yield" or OY). The management regime described in the Groundfish FMP is itself consistent with the Magnuson-Stevens Act.

As mentioned earlier, this document tiers off of the *2003 Final Environmental Impact Statement for the Proposed Groundfish Acceptable Biological Catch and Optimum Yield Specifications and Management Measures* (2003 Specs EIS) prepared by the Council in January 2003. This EA analyzes an additional management measure, the proposed action, not originally analyzed in the 2003 Specs EIS which was intended to evaluate all possible management measures for the 2003 fishing year (January through December). The 2003 Specs EIS analyzed four alternatives for depth-based management for the commercial non-trawl gear fisheries (limited entry and open access), including no restrictions, no fishing inside 150 fm, no fishing in depths 20-150 fm and no fishing outside 20 fm. For the recreational groundfish fishery, the alternatives analyzed for depth-based management south of 36° N. lat. included: no fishing outside of 20 fm in the cowcod conservation area, no fishing inside 150 fm, and no fishing in depths 20-150 fm. Tables 1 and 2, condensed from the 2003 Specs EIS, describe these alternatives in more detail. None of the analyses in the 2003 Specs EIS analyzed conservation boundary lines marking no fishing between the 30-150 fm depth contours for the commercial limited entry and open access non-trawl fleets or a conservation area boundary line marking no fishing outside of the 30 fm depth contour for recreational fisheries. As mentioned earlier in this section, the Council felt the need to implement a new conservation boundary line approximating the 30 fm depth contour as a means to provide some economic relief to fishers in southern California. Because this new management measure was not analyzed in a previous NEPA analysis, this EA is required under NEPA to analyze the proposed 30 fm boundary line for use in groundfish management.

1.4 Background to the Purpose and Need

There are nine Pacific Coast groundfish species that have been designated as overfished. Those species are: bocaccio, lingcod, Pacific ocean perch (POP), canary rockfish, cowcod, darkblotched rockfish, widow rockfish, yelloweye rockfish and Pacific whiting. A species is designated as overfished under the Groundfish FMP if it falls below 25% of its estimated unfished biomass level or 50% of B_{MSY}, if known. All of the overfished species have some presence in southern California waters, however, only bocaccio, canary rockfish, lingcod, cowcod, yelloweye rockfish, and widow rockfish occur in abundance in shallow waters between 0 and 30 fm. Other overfished species tend to be more strongly distributed in northern waters. Of the overfished groundfish species that are abundant in southern California, bocaccio has the lowest OY for 2003, $\leq$20 mt, and is therefore the most constraining. Because many of the groundfish species co-occur with each other, a constraining species like bocaccio will limit the harvest of other co-

occurring species like canary rockfish.

When the 2003 specifications and management measures were developed for the Pacific Coast groundfish fishery in the fall of 2002, the Pacific Council's Groundfish Management Team (GMT) developed a bycatch scorecard to project and track estimated mortality of overfished groundfish species during 2003. The bycatch scorecard represents the best estimates of total catch and is an aid for making management decisions. The scorecard estimates which sectors are taking which overfished species and roughly how much of those species. This scorecard is updated throughout the year as catch data become available and was also updated using observer data. At the Pacific Council's June meeting, the scorecard was updated for inseason adjustments to be effective July 1. The proposed inseason adjustments presented at the June Council meeting remained below the OYs for all overfished species. Because estimated total mortality of all overfished species remained below their OYs for 2003, the California Department of Fish and Game (CDFG) proposed an additional inseason management measure to change the commercial non-trawl and recreational boundary line south of 34˚27' N. lat. from 20 fm to 30 fm to provide some additional fishing area to those sectors. The GMT and Pacific Council then reviewed analysis presented by CDFG on estimates of total mortality based on the proposed action. Estimated total mortality as a result of the proposed action brought estimated take of bocaccio and canary rockfish over their 2003 OY as a result of some of the alternatives. The Council and NMFS normally implement management measures that are projected to keep the fishery within the OYs for all species, especially overfished species. However, new information on the status of bocaccio that was presented at the June Council meeting indicates that bocaccio is healthier than had been thought at the beginning of 2003.

Chapter 6 in the Groundfish FMP describes the management measures the Council may recommend NMFS use and the process of establishing and adjusting such measures. Various biological reference points and information on fishery performance are used to determine, on an annual basis, the OYs for particular species or species groups. (See Section 3.2.1 in the 2003 Specs EIS for a description of these reference points.) The Groundfish FMP also describes “points of concern” and socioeconomic frameworks which help managers determine whether and what types of management measures are needed. Section 6.2 of the Groundfish FMP describes the deliberative process the Council must follow, and the parallel process NMFS uses to translate Council recommendations into regulations. NEPA-mandated environmental impact assessments are a central component of this process.

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. Over 80 species of groundfish are managed under the Groundfish FMP, although only about 20 of these species are assessed for stock size and status on a regular basis. Each of the assessed stocks usually receives a stock assessment update once every two to four years. Thus, when the Council recommends a new set of harvest specifications in a given year, normally only specifications for those species with new assessments are changed from the previous year’s value.

Harvest specifications and management measures for 2003 were shaped by new assessments for bocaccio, canary rockfish, and yelloweye rockfish, as well as sablefish and whiting. The bocaccio assessment that was used to determine the rebuilding analysis for setting 2003 harvest specification and management measures showed that bocaccio would not rebuild in the maximum time frame (T_{MAX}) even with zero fishing mortality (i.e., no fishing). The National Standard Guidelines never contemplated a situation where rebuilding would pre-empt all sources of potential fishing mortality. The fact the stock cannot be rebuilt within T_{MAX} was also not contemplated. Therefore, the National Standard Guidelines did not provide adequate guidance for this case. NMFS went to the Magnuson-Stevens Act for guidance. The biology of the stock and the needs of fishing communities argues against a zero fishing mortality scenario. NMFS determined the criteria to determine the appropriate level of fishing mortality were consistency with the Magnuson-Stevens Act, a high probability of not driving the stock to extinction or into further decline, not jeopardize future rebuilding, and to not drive the stock to be listed under the

Endangered Species Act (ESA). The bocaccio sustainability analysis (Table 3) was the guide for this decision, which supported adoption of a 2003 OY as close to 0 mt as possible and no greater than 20 mt. Although current bocaccio stock levels are low when compared to historic bocaccio biomass, bocaccio stocks are still larger than those of other, more specialized rockfish. Bocaccio is also broadly distributed along the coast and within the water column, making it susceptible to interception in a wide range of fisheries. Based on the above considerations, an OY of ≤20 mt was implemented for bocaccio for 2003. MacCall and He (2002b) estimate this fishing mortality rate would have a greater than 80% probability of causing no further decline in the next 100 years.

A new stock assessment and rebuilding analysis for bocaccio were released in May 2003 (MacCall 2003a, MacCall 2003b). The stock assessment record and details on review and selection of an updated rebuilding analysis is described in more detail later in this paragraph and in Section 3.1.1.1. The new assessment is different from the bocaccio assessment in 2002, which had indicated that the 1999 year class for bocaccio was weaker than previously thought. The 2002 assessment results were driven by the 2001 Triennial Survey which showed very low abundance of bocaccio and no sign of the 1999 year class. For the new assessment, additional information on larval abundance from the California Cooperative Oceanic Fisheries Investigation (CalCOFI), and both length and catch per unit effort (CPUE) data from recreational fisheries were used. The new data, which also assumed a new rate of natural mortality (0.15 as opposed to 0.20 in the 2002 assessment), indicate a much stronger 1999 year class and a sharp increase in abundance. The assessment and rebuilding analyses were reviewed by the Council's Stock Assessment and Review Panel (STAR Panel) and presented to the Council at its June 2003 Council meeting. To bracket uncertainty from the apparently conflicting signals in the different data sources, the STAR Panel recommended two models, STAR B1 and STAR B2. STAR B1 omits data from the Triennial Surveys and holds estimated recruitment constant to 1959, whereas STAR B2 omits the recreational CPUE data and holds estimated recruitment constant to 1969. Each of these models de-emphasizes the other data source. The Stock Assessment Team (STAT Team) considered a third model, STAT C, that considered both data sources to be important and thus, included both data from the survey and recreational CPUE, and holds estimated recruitment constant to 1959, and places a low emphasis on the stock-recruitment relationship to stabilize estimates of post-1999 recruitment. The results of the STAT C model were not complete during the STAR Panel review. The STAR Panel did briefly discuss the STAT C model and rejected the approach of the STAT C model because the two sources of data used in the model were contradictory. The results from the STAR Panel review and the third model produced by the STAT Team were then reviewed by the Council's Scientific and Statistical Committee (SSC) at the June Council meeting. The SSC and other advisory bodies to the Council (GMT and GAP) made recommendations to the Council based on the new stock assessment and rebuilding analysis, which are considered to be the best available science. The SSC recommended use of the STAT C model for bocaccio.

Based on the new stock assessment and rebuilding analysis discussed above, the Council adopted a preliminary range of OYs for bocaccio for 2004. The range of OYs contemplated for 2004 (199-526 mt) is an order of magnitude higher than the ≤20 mt OY implemented for management in 2003. Based on the new bocaccio stock assessment and rebuilding analysis, the Council decided it could provide some relief in 2003 to the severely constrained commercial and recreational fishers in southern California without risk to the status of the stock. The Council also discussed the new 2003 stock assessment for widow rockfish, which supports a lower harvest for 2004 than for 2003 (181-501 mt versus 832 mt). However, current widow rockfish harvest rates seem to be slow enough to keep 2003 widow rockfish harvest within the proposed harvest range for 2004.

Beginning in 2003, the limited entry fixed gear fleet in California has been severely constrained by low trip limits and limited nearshore fishing opportunities, with the non-trawl RCA (the area closed to most fishing with non-trawl gear) extending from the 20 fm depth contour to latitude and longitude coordinates approximating the 150 fm depth contour. These management measures were designed to limit the incidental take of bocaccio rockfish and keep the catch of bocaccio within its 2003 OY of no more than 20 mt. The recreational fishing fleet in California has also been constrained, by a reduced season length

(July - December) and has generally been restricted to fishing inshore of the 20 fm depth contour, to minimize the incidental take of bocaccio. Prior to 2000, the recreational fishery has been year round. Since 2000, the recreational fishery has been closed for part of the year. Between 2000 and 2002, the California recreational fishery seasons have been from 8 to 10 months long. Beginning in 2001, some area restrictions were implemented. In 2003, the recreational fishery has been restricted to a 6 month season and it has been allowed mainly inside of the 20 fm (37 m) depth contour. Taking into account the most recent bocaccio stock assessment information discussed above and the economic hardship resulting from restrictive management measures necessary to keep the incidental catch of bocaccio within its 2003 OY, CDFG proposed to the Council that the 2003 bocaccio OY be flexible enough to allow for a modest increase in nearshore fishing opportunity. Specifically, CDFG proposed that during the months of September-December the eastern boundary for the non-trawl RCA and recreational fisheries closed area in southern California be moved from the 20 fm depth contour out to the 30 fm depth contour, except in the Cowcod Conservation Areas where the inshore boundary will remain at 20 fm. This boundary change was recommended by the Council because it would provide much needed harvest opportunity and economic relief for commercial non-trawl fishermen (limited entry fixed gear and open access non-trawl gear) and recreational fishers with a minimal increase in the expected take of bocaccio. This proposal would also allow commercial non-trawl and recreational fishermen some access to harvest species of groundfish that occur mainly on the continental shelf (in waters deeper than 20 fm) and have OYs that remain largely unharvested in 2003, such as vermillion rockfish.

Generally, stock assessments that are released in 2003 would only be used for management in 2004 and beyond. In this case, however, the new assessment and rebuilding analysis forecast are being considered to allow for a change in the management measures which may cause the OY for bocaccio to be exceeded. Because of the new science for bocaccio that indicates that a modest increase in bocaccio harvest in 2003 should not interfere with stock rebuilding and because of the severe restrictions commercial non-trawl and recreational fisheries in southern California are experiencing, the Council recommended to NMFS to use the new bocaccio information as a means to relieve restrictions on southern California fisheries without additional risk to the status of the stock.

In summary, in addition to a general need to manage fisheries for sustainable harvests, the proposed action satisfies several objectives. Management is based on “the best available science,” the second National Standard enumerated in the Magnuson-Stevens Act. Regular stock assessments for target species in groundfish fisheries, whenever possible, are an example of the application of this requirement. As a result of a new bocaccio stock assessment during 2003, the best available science indicates the additional estimated take of bocaccio as a result of moving the boundary line to 30 fm, while slightly above the OY for 2003, is below the range of proposed OYs for 2004. Continuing efforts to improve the quality of data and analysis support assessment and catch accounting. Because of the decline in several groundfish stocks revealed by these assessments, preventing overfishing and rebuilding overfished stocks is a paramount concern. However, the ability of fishers to access healthy stocks is also considered, because a competing goal in the Groundfish FMP is to maximize the value of the groundfish resource. Meeting the conservation requirements of the statute while taking into account the direct social benefit from groundfish is another way to understand the purpose and need of this action.

1.5 Scoping Summary

Scoping is an “early and open process” for determining the range of issues and alternatives for implementing the proposed action (40 CFR 1501.7). The process by which the Council adopts annual harvest specifications and management measures and adjusts those management measures through inseason actions allows early and open scoping and public involvement. Public and stakeholder involvement lies at the core of the Council process. The Council, subcommittees, and advisory bodies all hold public meetings with opportunity for public comment. Further, advisory bodies directly represent stakeholders. For groundfish management these bodies include the Groundfish Management Team

(GMT), with representation from state, federal, and tribal fishery scientists; the Groundfish Advisory Subpanel (GAP), whose members are drawn from the commercial and recreational fishery, processing, and conservation sectors; and the Ad Hoc Allocation Committee, which provides advice on allocating harvest opportunity among the various fishery sectors.

In the past, the development of annual specifications was accompanied by an environmental assessment (EA). For the 2003 specifications, early scoping revealed the action might have significant impacts and generate substantial controversy. Therefore, the Council and NMFS decided to prepare an EIS without first preparing an EA. A summary of scoping opportunities and public comments received during the scoping process for the 2003 Spec EIS are described in Section 1.5 of the 2003 Sepcs EIS. Public comments received were separated into categories, including bycatch, charter boats, commercial fisheries, fathom lines, etc. (See Table 1.5-2 in the 2003 Specs EIS) Some of the comments relevant to the proposed action in this EA are as follows: charter boats avoid canary rockfish, charter boats don't catch many bocaccio, significant loss of income in past 2-3 years, set closure at 6-70 fm in southern California, bocaccio are abundant in southern California, most of the live fish fishery is already concentrated within 20 fm, southern California anglers have not participated widely in the Council process, recreational fishing has larger economic impact than commercial fishing, closures in recreational fishing south of Mendocino [40°10' N. lat.] increases possibility of collisions in smaller fishing areas, and artisanal fisheries in southern California are highly regulated and sustainable.

Comments for the proposed action in this EA were received from three people at the June 16-20, 2003 Council meeting in Foster City, CA.

Darby Neil of Morro Bay (CPFV Owner) summarized a study by Dan Fink (United Anglers) detailing the decline in income from sport fishing landings in southern California. Many operations were down from 25% to 55%. Coastwide, tackle stores, suppliers, sport fishing businesses and support community are feeling the economic impacts. The study shows the economic impacts get worse the further north you go because of the higher dependence on rockfish in the north. These communities and businesses need as much economic relief as possible. Moving the boundary line out to 30 fm will help, especially if it's from Lopez Point [36° N. lat.] south to Mexico border. Understand that canary rockfish becomes constraining. There are some buffers this year, such as fishing opportunity for albacore. Some effort will shift to albacore because they have shown up earlier than usual, usually don't show up until August. In the south, targeting will be on surface fish come July 1, not targeting rockfish, but that's typical every year. Commented that MRFSS data also provides a buffer because the data has been high year after year. Another buffer is that there were higher bag limits and hook limits in the past. Request to use rational data to make this decision.

Bob Osbourne of United Anglers, Southern California commented on the dire economic situation that the recreational community is in between northern Los Angeles and Santa Barbara. Commercial fishermen have long understood the importance of maintaining steady markets and have found success by metering fish into the market. Unlike commercial fishermen, the problem with recreational fisheries is in maintaining customers when fishing opportunities inadequate. Santa Barbara recreational fisheries are evidence of that. Need to be careful in economic analysis of these issues and thresholds. The recreational fleet in southern California should not be impacted by canary rockfish, canary rockfish are rare in southern California. In 40 years of recreational fishing in southern California, including a few seasons working rockfish in southern California as a deckhand on party boats, I've never seen one. Council's interest is to protect jobs where practicable; it just makes sense to find a solution in this case.

Bob Fletcher, President of California's Sport Fishing Association remarked on moving the boundary line from 20 to 30 fm south of Point Conception [34°27' N. lat.]. Can't remark on moving the line from south of Lopez Point [36° N. lat.]. Restated Tom Barnes, CDFG, comment that the estimated canary impacts are a maximum impact. Talked about the marine reserve at San Miguel, an area where if there were canary rockfish south of Pt. Conception, they'd be found; and the Cowcod Conservation Area (CCA).

Canary rockfish have been recorded taken near Bag Rock, now part of the CCA. Another point, that Tom didn't bring up, is that commercial fishermen at times have found it to their benefit to run trips out of Santa Barbara, go up around the corner from Conception a far north as Arguello, make their catch and deliver back into Santa Barbara. All catches didn't come from south of Conception, even if landed south of Conception, although all of these landings were counted toward the catch south of Conception. Movement of the boundary line to 30 fm would send a message to the very strapped recreational and CPFV anglers that the Council recognizes there is a new stock assessment for bocaccio that will allow for more access to the resource next year and can help out with a little more access this year to get through the rest of year. Understand problems with changing the OY mid-year, although would probably recommend that be done. Thus, just asking that the Council give back something in recognition of the new abundance of bocaccio and in recognition that canary is really not an issue south of Conception.

2 ALTERNATIVES INCLUDING PROPOSED ACTION

This chapter describes the alternatives, or potential actions. There are four alternatives analyzed in this EA: status quo, moving the conservation area boundary line from 20 fm to 30 fm between 36° N. lat. and the US/ Mexico border, moving the boundary line from 20 fm to 30 fm between 36° N. lat. and 34°27' N. lat., and moving the boundary line from 20 fm to 30 fm between 34°27' N. lat. and the US/Mexico border. These alternatives differ from each other in the area of ocean off southern California that would open to fishing inshore of 30 fm. These alternatives were presented as a proposal by the California Department of Fish and Game (CDFG) at the Council's June meeting. They were developed as options to relieve restrictions on commercial nontrawl and recreational fisheries in southern California and reviewed by the Council for their impacts on bocaccio and canary rockfish, overfished groundfish species. All alternatives are proposed for September through December 2003 only. This time frame was selected because it had less impacts on overfished species than considering the alternatives for July through December of 2003. In addition, there was not adequate time to complete the required analyses and draft regulations before September 1, 2003. The proposed action would only apply to the remainder of the 2003 fishing year, until December 31, 2003. Regulations for 2004 will be analyzed in a future NEPA analysis. All of the alternatives consider whether or not to shift a boundary line in waters along different portions of the southern California coast. Thus, the alternatives differ in the area (measured in square miles) of ocean that would open to groundfish fishing with commercial nontrawl and recreational gear. The conservation area boundary line is a management measure used to delineate where fishing with a particular gear type, such as fixed gear, or in a certain sector of the groundfish fishery, such as the recreational sector, may occur. For 2003, large gear and sector specific closures have been implemented, known as rockfish conservation areas (RCAs). The non-trawl RCA, a closed area affecting the commercial non-trawl fleet (both limited entry and open access non-trawl gear) is the subject of all four alternatives. In addition, the boundary line which marks the closed area for the recreational sector is also the subject of all four alternatives, although this boundary line is not part of an RCA per se. The boundary line for the recreational sector is simply termed a boundary line or management line and recreational fishing for groundfish is prohibited seaward of that line. Generally, the RCA boundary lines are generated by a series of latitude and longitude coordinates that when connected by straight lines between points, make a line that approximates a fathom contour. The reason for re-creating the fathom contour with a series of latitude/longitude coordinates is for enforcement purposes. In-the-air enforcement cannot read the actual fathom contours and must rely on a series of coordinates approximating the line to determine whether vessels are or are not fishing in the closed areas. The exception to this standard is the 20 fm boundary line off southern California. California has used a 20 fm depth contour for groundfish management since 2001. The boundary line had already been established in management as a fathom contour and not a line with a series of coordinates approximating the fathom contour. In addition, this line falls almost entirely in California state waters. While this complicates enforcement by air surveillance, CDFG recommended and NMFS approved that the 20 fm line remain a depth contour line for 2003.

2.1 Status Quo Alternative (No Action Alternative)

The status quo alternative, or no action alternative, is to maintain the 20 fm boundary line as the eastern boundary of the non-trawl Rockfish Conservation Area (RCA) for the commercial fixed gear fleet, both limited entry and open access, and as the boundary for the recreational fishery south of 40°10' N. lat. during July through December. This management measure was also analyzed in the 2003 Specs EIS. Although this alternative does not meet the purpose and need, it is evaluated as a comparison of impacts as required by NEPA.

2.2 30 fm Boundary Line from 36° N. lat. to US/Mexico Border Alternative (36° to Mexico Alternative)

The 30 fm Boundary Line Alternative, between 36° N. lat. and the US/Mexico Border, would move the boundary line from 20 fm to 30 fm during September through December. This line change would affect both the commercial fixed gear and recreational sectors.

2.3 30 fm Boundary Line from 36° N. lat. to 34°27' N. lat. Alternative (36° to 34°27' Alternative)

The 30 fm Boundary Line Alternative, from 36° N. lat. to 34°27' N. lat., would move the boundary line from 20 fm to 30 fm during September through December. The area from 36° N. lat. to 34°27' N. lat. is commonly referred to as the Morro Bay area. This line change would affect both the commercial fixed gear and recreational sectors.

2.4 30 fm Boundary Line from 34°27' N. lat. to US/Mexico Border Alternative (34°27' to Mexico Alternative– Preferred Alternative)

The 30 fm Boundary Line Alternative, between 34°27' N. lat. and the US/Mexico Border, would move the boundary line from 20 fm to 30 fm during September through December. The area from 34°27' N. lat.to the US/Mexico border is commonly referred to as the Southern California Bight area. This line change would affect both the commercial fixed gear and recreational sectors.

2.5 Issues considered but eliminated from further analysis

Different dates for implementing the possible line changes were discussed. In particular, the alternatives for the proposed action, except for status quo, were all discussed with effective dates of July through December. Guidance from the Council on Environmental Quality (CEQ) states that alternatives must be feasible and make common sense as noted in CEQ's 40 most asked questions #2. During review of the data for southern California, moving the line effective July through December rather than September through December is predicted to result in the OY for canary rockfish being exceeded. Unlike bocaccio, there is no new information on canary rockfish showing increased biomass and productivity, therefore potentially exceeding the OY in 2003 is not a feasible alternative and does not meet the purpose and need for this action. This option for each of the alternatives was eliminated from further analysis.

3 AFFECTED ENVIRONMENT

This chapter describes the environment, in resources, that would be affected either directly or indirectly by the alternatives. The extent of the discussion for each resource is relative to the predicted impact to that resource. Thus, resources expected to only be minimally impacted are discussed briefly. While the federally managed Pacific coast groundfish fishery occurs in waters off Washington, Oregon and California

from 3 to 200 nm (within the US EEZ), the proposed alternatives in this EA all occur off Southern California. Therefore, the affected environment chapter will be focused in Southern California, south of 36° N. lat., recognizing that some environmental processes and species that range outside of the southern California may also be indirectly affected by ecological shifts in the southern California area.

3.1 Biological Environment

3.1.1 Overfished Groundfish Stocks

Harvest levels for overfished groundfish species must comport with rebuilding constraints specified in the Magnuson-Stevens Act, Groundfish FMP, and other legal mandates. Among these mandates are consideration of rebuilding strategies that have at least a 50% probability of rebuilding (achieving a spawning abundance of $B_{40\%}$ in West Coast groundfish management) within the maximum allowable time (T_{MAX}). The National Standard Guidelines (50 CFR Part 600) specify that rebuilding should occur within the lower limit of the time period required for rebuilding if fishing-related mortality were eliminated entirely. The National Standard Guidelines use 10 years as a cut off date for different rebuilding scenarios. For most of the overfished groundfish species, which are long-lived species, the lower limit of rebuilding is over 10 years. If the lower limit is estimated to take longer than 10 years at zero fishing mortality, then the maximum allowable rebuilding time specified in the National Standard Guidelines is the minimum possible rebuilding time (T_{MIN} = rebuilding at zero fishing mortality) plus one mean generation time. One mean generation time is the average length of time it takes for a spawning female to replace herself in the population and is an index of relative productivity. All of these rebuilding specifications are determined in rebuilding analyses generated from peer reviewed stock assessments. The standards, procedures, methodological approaches, and other terms of reference for conducting stock assessments and rebuilding analyses are formally reviewed, endorsed, and recommended by the Council's SSC. These documents, once formally endorsed by the Scientific and Statistical Committee (SSC) and adopted by the Council, are considered the best available science for rebuilding overfished groundfish species and prescribing harvest levels and management measures for the West Coast groundfish fishery.

Based on the Groundfish FMP's standards for defining overfished groundfish species, nine West Coast groundfish species have been declared overfished by NMFS. These nine species are bocaccio, canary rockfish, cowcod, darkblotched rockfish, lingcod, Pacific ocean perch, Pacific whiting, widow rockfish, and yelloweye rockfish. Rebuilding parameters estimated for these stocks are found in Tables 4 and 5.

3.1.1.1 Bocaccio

Distribution and Life History: Bocaccio (*Sebastes paucispinis*) are found in the Gulf of Alaska off Krozoff and Kodiak Islands, south as far as Sacramento Reef, Baja, California (Hart 1988; Miller and Lea 1972). In survey catches, Allen and Smith (1988) found bocaccio to be most common at 100 m to 150 m over the outer continental shelf. Casillas *et al.* (1998) determined the depth zone where the southern bocaccio stock is most prevalent is 54 fm to 82 fm. Sakuma and Ralston (1995) categorized bocaccio as both a nearshore and offshore species. Larvae and small juveniles are pelagic (Garrison and Miller 1982) and are commonly found in the upper 100 m of the water column, often far from shore (MBC 1987). Large juveniles and adults are semi-demersal and are most often found in shallow coastal waters over rocky bottoms associated with algae (Sakuma and Ralston 1995). Adults are commonly found in eelgrass beds, or congregated around floating kelp beds (Love *et al.* 1990; Sakuma and Ralston 1995). Young and adult bocaccio also occur around artificial structures, such as piers and oil platforms (MBC 1987.) Although juveniles and adults are usually found around vertical relief, adult aggregations also occur over firm sand-mud bottoms (MBC 1987). Bocaccio move into shallow waters during their first year of life (Hart 1988), then move into deeper water with increased size and age (Garrison and Miller 1982).

Bocaccio are ovoviviparous (Garrison and Miller 1982; Hart 1988). Love *et al.* (1990) reported the spawning season to be protracted and last almost year-round (>10 months). Parturition occurs during January to April off Washington, November to March off Northern and Central California, and October to March off Southern California (MBC 1987). Two or more broods may be born in a year in California (Love *et al.* 1990). The spawning season is not well known in northern waters. Males mature at three years to seven years with 50% mature in four years to five years. Females mature at three years to eight years with 50% mature in four years to six years (MBC 1987).

Larval bocaccio often eat diatoms, dinoflagellates, tintinnids, and cladocerans (Sumida and Moser 1984). Copepods and euphausiids of all life stages (adults, nauplii and egg masses) are common prey for juveniles (Sumida and Moser 1984). Adults eat small fishes associated with kelp beds, including other species of rockfishes, and occasionally small amounts of shellfish (Sumida and Moser 1984). Bocaccio are eaten by sharks, salmon, other rockfishes, lingcod, albacore, sea lions, porpoises, and whales (MBC 1987). Bocaccio directly compete with chilipepper and widow rockfish, yellowtail, and shortbelly rockfishes for both food and habitat resources (Reilly *et al.* 1992).

Stock Status and Management History: There are two separate West Coast bocaccio populations. The southern stock exists south of Cape Mendocino (40°30' N. lat.) and the northern stock north of 48° N latitude in northern Washington (off Cape Flattery). It is unclear whether the southern and northern stock separation implies stock structure. The disjoint distribution of the two populations and evidence of lack of genetic intermixing suggests stock structure, although MacCall (2002a), spoke to some recent evidence for limited genetic mixing between the two populations. Nonetheless, assessment scientists and managers have treated the two populations as independent stocks north and south of Cape Mendocino.

The northern stock has not been assessed. The southern stock has been assessed (Bence and Hightower 1990; Bence and Rogers 1992; MacCall *et al.* 1999; Ralston *et al.* 1996b) and has suffered poor recruitment during the warm water conditions that have prevailed off Southern California since the late 1980s. The 1996 assessment (Ralston *et al.* 1996b) indicated the stock was in severe decline and overfished. NMFS formally declared the stock overfished in March 1999 after the Groundfish FMP was amended to incorporate the tenets of the Sustainable Fisheries Act. MacCall *et al.* (1999) confirmed the overfished status of bocaccio and estimated spawning output of the southern stock to be 2.1% of its unfished biomass and 5.1% of the MSY level.

While previous assessments only used data from Central and Northern California, the 2002 assessment (MacCall 2002b) also includes data for Southern California. While relative abundance increased slightly from the last assessment (4.8% of unfished biomass), potential productivity appeared lower than previously thought, making for a more pessimistic outlook. The Council assumed a medium recruitment scenario for the 1999 year class, which was not assessed by MacCall *et al.* (1999). But the 2002 assessment revealed the 1999 year class experienced relatively lower recruitment. Therefore, the 1999 year class—though contributing a substantial quantity of fish to the population—did not contribute as much to rebuilding as was previously thought.

As discussed in more detail in Section 1.4 of this EA, the 2003 assessment of the southern stock of bocaccio shows improvement from the 2002 assessment, largely due to the strength of the 1999 year class (MacCall 2003). The 1999 year class had not recruited into the indices used in the 2002 assessment, but did show up as a strong year class in the indices used for the 2003 assessment. This had dramatic effects on the rebuilding projections due to improved estimates of current biomass and productivity of the stock. There are 3 separate models presented in the rebuilding analysis. Two were approved by the STAR panel: one of which omits a new recreational data source developed by Dr. Alec MacCall and the other rejects the results from recent NMFS trawl surveys. Dr. MacCall proposed a third approach that is a hybrid of the previous two models and utilizes all data sources, the STAT C model. All three models show an improvement in the stock status for bocaccio. Bocaccio is still overfished, but is improving at a faster rate than previously expected. The Council's Groundfish Scientific and Statistical

Committee (SSC) reviewed all three rebuilding analysis models at the June 2003 Council meeting. The SSC felt the STAT C model was a reasonable way to integrate the survey and CPUE data and, therefore, recommended use of the STAT C model for bocaccio.

3.1.1.2 Canary

Distribution and Life History: Canary rockfish (*Sebastes pinniger*) are found between Cape Colnett, Baja, California, and southeastern Alaska (Boehlert 1980; Boehlert and Kappenman 1980; Hart 1988; Love 1991; Miller and Lea 1972; Richardson and Laroche 1979). There is a major population concentration of canary rockfish off Oregon (Richardson and Laroche 1979). Canary rockfish primarily inhabit waters 91 m to 183 m (50 fm to 100 fm) deep (Boehlert and Kappenman 1980). In general, canary rockfish inhabit shallow water when they are young, and deep water as adults (Mason 1995). Adult canary rockfish are associated with pinnacles and sharp drop-offs (Love 1991) and are most abundant above hard bottoms (Boehlert and Kappenman 1980). Canary rockfish appear to be a reef-associated species in the southern part of its range (Boehlert 1980). In Central California, newly settled canary rockfish are first observed at the seaward sand-rock interface and farther seaward in deeper water (18 m to 24 m). Canary rockfish off the West Coast exhibit a protracted spawning period from September through March, probably peaking in December and January off Washington and Oregon (Hart 1988; Johnson *et al.* 1982). Female canary rockfish reach sexual maturity at roughly eight years of age. Like many members of *Sebastes*, canary rockfish are ovoviviparous, whereby eggs are internally fertilized within females, and hatched eggs are released as live young (Bond 1979; Golden and Demory 1984; Kendall and Lenarz 1986). Canary rockfish are a relatively fecund species, with egg production being correlated with size, (e.g., a 49 cm female can produce roughly 0.8 million eggs, and a female that has realized maximum length (approximately 60 cm) produces approximately 1.5 million eggs (Gunderson 1971). Very little is known about the early life history strategies of canary rockfish, but limited research indicates larvae which are strictly pelagic (near ocean surface) for a short period of time, begin to migrate to demersal waters during the summer of their first year of life and develop into juveniles around nearshore rocky reefs, where they may congregate for up to three years (Boehlert 1980; Sampson 1996). Evaluations of length distributions by depth developed from NMFS shelf trawl survey data generally supported other research that suggests this species is characterized by an increasing trend in mean size of fish with depth (Archibald *et al.* 1981; Boehlert 1980). Female canary rockfish generally grow faster and reach slightly larger sizes than males, but do not appear to live longer than males. Adult canary rockfish feed primarily on small fishes, as well as planktonic creatures, such as krill and euphausiids (Love 1991; Phillips 1964).

Stock Status and Management History: From 1983 through 1994, canary rockfish were managed as part of the *Sebastes* complex, with various trip limits imposed over this period. In 1995, limits specific to canary rockfish (cumulative monthly landing limit of 6,000 pounds) were imposed, and commercial vessels were expected to sort the canary rockfish from the mixed species categories such as the *Sebastes* complex. For 1998, catches of canary rockfish were regulated using a two-month cumulative landing limit of 40,000 pounds for the *Sebastes* complex, of which, no more than 15,000 pounds (38%) could be composed of canary rockfish. From 1998 to present, commercial groundfish fishing for canary rockfish has been drastically reduced, and the only significant take is that from incidental bycatch. Canary rockfish has become a limiting factor for other nongroundfish fisheries on the West Coast shelf.

The 1999 stock assessment documented the stock had declined below the overfished level ($B_{25\%}$) in the northern area (Columbia and U.S. Vancouver International North Pacific Fishery Commission (INPFC) areas Crone *et al.* 1999) and in the southern area (Conception, Monterey, and Eureka areas Williams *et al.* 1999) and was declared overfished in January. The first rebuilding analysis (Methot 2000a) used results from the northern area assessment to project rates of potential stock recovery. The stock was found to have extremely low productivity, defined as production of recruits in excess of the level necessary to maintain the stock at its current, low level. Rates of recovery were highly dependent upon the level of recent recruitment, which could not be estimated with high certainty. The initial rebuilding OY for 2001

and 2002 was set at 93 mt based upon a 50% probability of rebuilding by the year 2057, a medium level for these recent recruitments, and maintaining a constant annual catch of 93 mt through 2002 (see Table 4).

A new assessment was done coastwide in 2001 for canary rockfish, treating the stock as a single unit from the Monterey INPFC area north through the U.S. Vancouver INPFC area, and thus, departing from the methodologies of past assessments (Methot and Piner 2002b). Although there is some evidence of genetic separation of the northern and southern stocks (Boehlert and Kappenman 1980; Wishard *et al.* 1980), the observed variability in growth rate by sex and area was not significantly different at small versus large spatial scales. They also determined the areas of highest canary rockfish density were off headlands that separate INPFC areas, which would tend to bias results if the assessment was stratified by area. A critical uncertainty in canary rockfish assessments is the lack of older, mature females in surveys and other assessment indices. The are two competing explanations for this observation. Older females could have a higher natural mortality rate, resulting in their disproportionate disappearance from the population. Alternatively, survey and fishing gears may be less effective at catching them, because older females hide in places inaccessible to the gear, for example. If this is the case, then these fish (which, because of their higher spawning output may make an important contribution to future recruitment) are part of the population, but remain un-sampled. Methot and Piner (2002b) combined these two hypotheses in a single age-structured version of the SSC-endorsed stock synthesis assessment model (Methot 2000b) by allowing female natural mortality to increase with the maturity function, but also allowing selectivity to be domed (the model determines the selectivity of survey and fishery gear as opposed to assuming a fixed selectivity). They estimated the current abundance of canary rockfish coastwide is about 8% of B_0.

3.1.1.3 Lingcod

Distribution and Life History: Lingcod (*Ophiodon elongatus*), a top order predator of the family Hexagrammidae, ranges from Baja, California to Kodiak Island in the Gulf of Alaska. Lingcod are demersal at all life stages (Allen and Smith 1988; NOAA 1990; Shaw and Hassler 1989). Adult lingcod prefer two main habitat types: slopes of submerged banks 10 m to 70 m below the surface with seaweed, kelp, and eelgrass beds and channels with swift currents that flow around rocky reefs (Emmett *et al.* 1991; Giorgi and Congleton 1984; NOAA 1990; Shaw and Hassler 1989). Juveniles prefer sandy substrates in estuaries and shallow subtidal zones (Emmett *et al.* 1991; Forrester 1969; Hart 1988; NOAA 1990; Shaw and Hassler 1989). As the juveniles grow they move to deeper waters. Adult lingcod are considered a relatively sedentary species, but there are reports of migrations of greater than 100 km by sexually immature fish (Jagielo 1990; Mathews and LaRiviere 1987; Matthews 1992; Smith *et al.* 1990).

Mature females live in deeper water than males and move from deep water to shallow water in the winter to spawn (Forrester 1969; Hart 1988; Jagielo 1990; LaRiviere *et al.* 1980; Mathews and LaRiviere 1987; Matthews 1992; Smith *et al.* 1990). Mature males may live their whole lives associated with a single rock reef, possibly out of fidelity to a prime spawning or feeding area (Allen and Smith 1988; Shaw and Hassler 1989). Spawning generally occurs over rocky reefs in areas of swift current (Adams 1986; Adams and Hardwick 1992; Giorgi 1981; Giorgi and Congleton 1984; LaRiviere *et al.* 1980). After the females leave the spawning grounds, the males remain in nearshore areas to guard the nests until the eggs hatch. Hatching occurs in April off Washington, but as early as January and as late as June at the geographic extremes of the lingcod range. Males begin maturing at about two years (50 cm), whereas females mature at three plus years (76 cm). In the northern extent of their range, fish mature at an older age and larger size (Emmett *et al.* 1991; Hart 1988; Mathews and LaRiviere 1987; Miller and Geibel 1973; Shaw and Hassler 1989). The maximum age for lingcod is about 20 years (Adams and Hardwick 1992).

Lingcod are a visual predator, feeding primarily by day. Larvae are zooplanktivores (NOAA 1990). Small demersal juveniles prey upon copepods, shrimps, and other small crustaceans. Larger juveniles shift to clupeids and other small fishes (Emmett *et al.* 1991, NOAA 1990). Adults feed primarily on demersal fishes (including smaller lingcod), squids, octopi, and crabs (Hart 1988, Miller and Geibel 1973, Shaw and Hassler 1989). Lingcod eggs are eaten by gastropods, crabs, echinoderms, spiny dogfish, and cabezon. Juveniles and adults are eaten by marine mammals, sharks, and larger lingcod (Miller and Geibel 1973, NOAA 1990).

Stock Status and Management History: In 1997, U.S. scientists assessed the size and condition of the portion of the stock in the Columbia and Vancouver areas (including the Canadian portion of the Vancouver management area), and concluded the stock had fallen to below 10% of its unfished size (Jagielo *et al.* 1997). The Council responded by imposing substantial harvest reductions coastwide, reducing the harvest targets for the Eureka, Monterey, and Conception areas by the same percentage as in the north. In 1999, scientists assessed the southern portion of the stock and concluded the condition of the southern stock was similar to the northern stock, thus confirming the Council had taken appropriate action to reduce harvest coastwide (Adams *et al.* 1999).

Jagielo *et al.* (2000) conducted a coastwide lingcod assessment and determined the total biomass increased from 6,500 mt in the mid-1990s to about 8,900 mt in 2000. In the south, the population has also increased slightly from 5,600 mt in 1998 to 6,200 mt in 2000. In addition, the assessment concluded previous aging methods portrayed an older population; whereas new aging efforts showed the stock to be younger and more productive. Therefore, the ABC and OY were increased in 2001 on the basis of the new assessment. A revised rebuilding analysis of coastwide lingcod (Jagielo and Hastie 2001) was adopted by the Council in September 2001. It confirmed the major conclusions of the 2000 assessment and rebuilding analysis, but slightly modified recruitment projections to stay on the rebuilding trajectory that reaches target biomass in 2009. This modification resulted in a slight decrease in the 2002 ABC and OY.

3.1.1.4 Cowcod

Distribution and Life History: Cowcod *(Sebastes levis)* occur from Ranger Bank and Guadalupe Island, Baja, California to Usal, Mendocino County, California (Miller and Lea 1972). Cowcod range from 21 m to 366 m in depth (Miller and Lea 1972) and are considered to be parademersal (transitional between a midwater pelagic and benthic species). Adults are commonly found at depths of 180 m to 235 m and juveniles are most often found in 30 m to 149 m of water (Love *et al.* 1990). MacGregor (1986) found that larval cowcod are almost exclusively found in Southern California and may occur many miles offshore. Adult cowcod are primarily found over high relief rocky areas (Allen 1982). They are generally solitary, but occasionally aggregate (Love *et al.* 1990). Solitary subadult cowcod have been found in association with large white sea anemones on outfall pipes in Santa Monica Bay (Allen 1982). Juveniles occur over sandy bottom areas and solitary ones have been observed resting within a few centimeters of soft-bottom areas where gravel or other low relief was found (Allen 1982). Although cowcod are generally not migratory; they may move, to some extent, to follow food (Love *et al.* 1991). Cowcod are ovoviviparous, and large females may produce up to three broods per season (Love *et al.* 1990). Spawning peaks in January in the Southern California Bight (MacGregor 1986). Cowcod grow to 94 cm (Allen 1982). Larvae are extruded at about 5.0 mm (MacGregor 1986). Juveniles eat shrimp and crabs, and adults eat fish, octopus, and squid (Allen 1982).

Stock Status and Management History: The cowcod stock south of Cape Mendocino has experienced a long-term decline. Abundance indices decreased approximately ten-fold between the 1960s and the 1990s based on commercial passenger fishing vessel (CPFV) logs (Butler *et al.* 1999). Recreational and commercial catch also declined substantially from peaks in the 1970s and 1980s, respectively. The cowcod stock in the Conception INPFC area (Point Conception to the U.S./Mexico border) was assessed

for the first time in 1998 (Butler *et al.* 1999). Unfished spawning biomass (B_0) was estimated to be 3,370 mt, and 1998 spawning biomass was estimated at 7% of B_0, well below the 25% overfishing threshold. As a result, NMFS declared cowcod in the Conception and Monterey management areas overfished in January 2000. The stock's low productivity and declined spawning biomass necessitates an extended rebuilding period, estimated at 62 years with no fishing-related mortality (T_{MIN}) , to achieve a 1,350 mt B_{MSY} for the Conception management area (see Table 4).

3.1.1.5 Yelloweye Rockfish

Distribution and Life History: Yelloweye rockfish *(Sebastes ruberrimus*) range from the Aleutian Islands, Alaska to northern Baja, California and are common from Central California northward to the Gulf of Alaska (Eschmeyer *et al.* 1983; Hart 1988; Love *et al.* 1991; Miller and Lea 1972; O'Connell and Funk 1986). Yelloweye rockfish occur in water 25 m to 550 m deep with 95% of survey catches occurring from 50 m to 400 m (Allen and Smith 1988). Yelloweye rockfish are bottom dwelling, generally solitary, rocky reef fish, found either on or just over reefs (Eschmeyer *et al.* 1983; Love *et al.* 1991; O'Connell and Funk 1986). Boulder areas in deep water (>180 m) are the most densely populated habitat type, and juveniles prefer shallow-zone broken-rock habitat (O'Connell and Carlile 1993). They also reportedly occur around steep cliffs and offshore pinnacles (Rosenthal *et al.* 1982). The presence of refuge spaces is an important factor affecting their occurrence (O'Connell and Carlile 1993).

Yelloweye rockfish are ovoviviparous and give birth to live young in June off Washington (Hart 1988). The age of first maturity is estimated at six years and all are estimated to be mature by eight years (Wyllie Echeverria 1987). Yelloweye rockfish can grow to 91 cm (Eschmeyer *et al.* 1983; Hart 1988). Males and females probably grow at the same rates (Love *et al.* 1991, O'Connell and Funk 1986). The growth rate of yelloweye rockfish levels off at approximately 30 years of age (O'Connell and Funk 1986). Yelloweye rockfish can live to be 114 years old (Love *et al.* 1991, O'Connell and Funk 1986). Yelloweye rockfish are a large predatory reef fish that usually feeds close to the bottom (Rosenthal *et al.* 1988). They have a widely varied diet, including fish, crabs, shrimps and snails, rockfish, cods, sand lances, and herring (Love *et al.* 1991). Yelloweye rockfish have been observed underwater capturing smaller rockfish with rapid bursts of speed and agility. Off Oregon the major food items of the yelloweye rockfish include cancroid crabs, cottids, righteye flounders, adult rockfishes, and pandalid shrimps (Steiner 1978). Quillback and yelloweye rockfish have many trophic features in common (Rosenthal *et al.* 1988).

Stock Status and Management History: The first ever yelloweye rockfish stock assessment was conducted in 2001 (Wallace 2002). This assessment incorporated two area assessments: one from Northern California using catch per unit of effort (CPUE) indices constructed from Marine Recreational Fisheries Statistical Survey (MRFSS) sample data and California Department of Fish and Game (CDFG) data collected on board commercial passenger fishing vessels, and the other from Oregon using Oregon Department of Fish and Wildlife (ODFW) sampling data. The assessment concluded current yelloweye rockfish stock biomass is about 7% of unexploited biomass in Northern California and 13% of unexploited biomass in Oregon. The assessment revealed a thirty-year declining biomass trend in both areas with the last above average recruitment occurring in the late 1980s. The assessment's conclusion that yelloweye rockfish biomass was well below the 25% of unexploited biomass threshold for overfished stocks led to this stock being separated from the rockfish complexes in which it was previously listed. Until 2002, when yelloweye rockfish were declared overfished, they were listed in the "remaining rockfish" complex on the shelf in the Vancouver, Columbia, and Eureka INPFC areas and the "other rockfish" complex on the shelf in the Monterey and Conception areas. As with the other overfished stocks, yelloweye rockfish harvest is now tracked separately.

In June 2002 the SSC recommended that managers should carry out a new assessment incorporating Washington catch and age data. This recommendation was based on evidence the biomass distribution of yelloweye rockfish on the West Coast was centered in waters off Washington and that workable data

from Washington were available. The Council received that testimony and recommended completing a new assessment in the summer of 2002, before a final decision was made on 2003 management measures. Methot *et al.* (2002) did the assessment, which was reviewed by a STAR Panel in August. The assessment result was much more optimistic than the one prepared by Wallace (2002), largely due to the incorporation of Washington fishery data. While the overfished status of the stock was confirmed (24% of unfished biomass), Methot *et al.* (2002) provided evidence of higher stock productivity than originally assumed. The assessment also treated the stock as a coastwide assemblage. A revised rebuilding analysis was prepared following completion of the 2002 assessment. Due to the less depleted stock status and higher productivity estimated by the updated assessment, the rebuilding period is shorter than had been estimated following the initial rebuilding analysis. The SSC indicated that the revised rebuilding analysis represented the best available science and advised using it to set 2003 harvest levels. The 22 mt OY for yelloweye rockfish adopted in 2003 is based on a 50% probability of yelloweye rockfish rebuilding by 2052.

3.1.1.6 Widow Rockfish

Distribution and Life History: Widow rockfish (*Sebastes entomelas*) range from Albatross Bank of Kodiak Island to Todos Santos Bay, Baja, California (Eschmeyer *et al.* 1983; Miller and Lea 1972; NOAA 1990). Widow rockfish occur over hard bottoms along the continental shelf (NOAA 1990). Widow rockfish prefer rocky banks, seamounts, ridges near canyons, headlands, and muddy bottoms near rocks. Large widow rockfish concentrations occur off headlands such as Cape Blanco, Cape Mendocino, Point Reyes, and Point Sur. Adults form dense, irregular, midwater and semi-demersal schools deeper than 100 m at night and disperse during the day (Eschmeyer *et al.* 1983, NOAA 1990, Wilkins 1986). All life stages are pelagic, but older juveniles and adults are often associated with the bottom (NOAA 1990). All life stages are fairly common from Washington to California (NOAA 1990). Pelagic larvae and juveniles co-occur with yellowtail rockfish, chilipepper, shortbelly rockfish, and bocaccio larvae and juveniles off Central California (Reilly *et al.* 1992).

Widow rockfish are viviparous, have internal fertilization, and brood their eggs until released as larvae (NOAA 1990; Ralston *et al.* 1996a; Reilly *et al.* 1992). Mating occurs from late fall-early winter. Larval release occurs from December through February off California, and from February through March off Oregon. Juveniles are 21 mm to 31 mm at metamorphosis, and they grow to 25 cm to 26 cm over three years. Age and size at sexual maturity varies by region and sex, generally increasing northward and at older ages and larger sizes for females. Some mature in three years (25 cm to 26 cm), 50% are mature by four years to five years (25 cm to 35 cm), and most are mature in eight years (39 cm to 40 cm) (NOAA 1990). The maximum age of widow rockfish is 28 years, but rarely over 20 years for females and 15 years for males (NOAA 1990). The largest size is 53 cm and about 2.1 kg (Eschmeyer *et al.* 1983, NOAA 1990).

Widow rockfish are carnivorous. Adults feed on small pelagic crustaceans, midwater fishes (such as age-one or younger Pacific whiting), salps, caridean shrimp, and small squids (Adams 1987; NOAA 1990). During spring, the most important prey item is salps, during the fall fish are more important, and during the winter widow rockfish primarily eat sergestid shrimp (Adams 1987). Feeding is most intense in the spring after spawning (NOAA 1990). Pelagic juveniles are opportunistic feeders, and their prey consists of various life stages of calanoid copepods, and euphausiids (Reilly *et al.* 1992).

Stock Status and Management History: The most recent assessment of the widow rockfish stock occurred in 2000 (Williams *et al.* 2000). The spawning output level (8,223 mt), based on that assessment and a revised rebuilding analysis (Punt and MacCall 2002) adopted by the Council in June 2001, was at 24.6% of the unfished level (33,490 mt) in 1999, which was computed using the average recruitment from 1968 to 1979 multiplied by the spawning output-per-recruit at zero fishing mortality. The analysis concluded the rebuilding period in the absence of fishing is 22 years, and with a mean generation time of

16 years, the maximum allowable time to rebuild (T_{MAX}) is 38 years.

The 2003 widow rockfish ABC (3,871 mt) was based on estimated biomass and an $F_{50\%}$ harvest rate. The 2003 OY for widow rockfish was 832 mt, which conforms with a 60% probability of rebuilding by 2039.

3.1.2 Other Groundfish Species

For the commercial non-trawl gear fleet (limited entry fixed gear and open access non-trawl) south of 40°10' N. lat., other groundfish species that are both targeted or caught incidentally include minor slope rockfish, splitnose rockfish, sablefish, thornyheads, flatfish, whiting, minor shelf rockfish and minor nearshore rockfish. In the recreational fishery south of 40°10' N. lat., targeted species include rockfish (except for bocaccio cowcod, canary rockfish and yelloweye rockfish), kelp greenling, rock greenling, cabezon, California scorpionfish, lingcod and sanddabs. Table 2 in the final rule for the 2003 specifications and management measures (68 FR 11182; March 7, 2003) lists species in the minor rockfish categories south of 40°10' N. lat. For a detailed description of these other groundfish species, refer to Sections 3.2.1.2 and 3.2.1.3 of the 2003 Specs EIS, which provides distribution, life history, stock status and management information on these species.

3.1.3 Nongroundfish Fish Species

For information on nongroundfish species harvested with fixed gear that may incidentally harvest groundfish in southern California, such as California halibut and salmon, see Section 3.2.2 of the 2003 Specs EIS, which provides distribution, stock status and management information on these species.

3.1.4 Protected Species

Certain species are protected from certain activities, such as harvest, by any of the following 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. Protected species in southern California, such as sea turtles, marine mammals and seabirds, are part of the affected environment. For a description of protected species, see Section 3.2.3 of the 2003 Specs EIS, which provides distribution, stock status and management information on these species.

3.2 Habitat

The 1996 Sustainable Fisheries Act re-authorizing and amending the Magnuson-Stevens Act obligates the Councils and NMFS to identify and characterize essential fish habitat (EFH), which for West Coast groundfish is defined as the aquatic habitat necessary to allow for groundfish production to support long-term sustainable fisheries for groundfish and for groundfish contributions to a healthy ecosystem. To satisfy this description EFH must be described for all life history stages of managed species. EFH descriptions have been incorporated into the Groundfish FMP in both section 11.10 and in a detailed appendix (available online at: http://www.nwr.noaa.gov/1sustfsh/efhappendix/page1.html). West Coast groundfish species managed by the Groundfish FMP occur throughout the EEZ and occupy diverse habitats at all stages in their life histories. EFH for a particular species may be large, because a species' pelagic eggs and larvae are widely dispersed for example, or comparatively small as is the case with the adults of many nearshore rockfishes which show strong affinities to a particular location or type of substrate. For a detailed description of habitat, see Section 3.1.2 in the 2003 Specs EIS.

3.3 Socioeconomic Environment

The alternatives discussed in this EA all affect the commercial fixed gear (limited entry and open access) and recreational sectors in southern California. In recent years, these fisheries have been severely constrained both in area open to fishing, trip limits and, for the recreational fishery, in seasons open to fishing. Beginning in 2003, the limited entry fixed gear fleet in California has been severely constrained by low trip limits and limited nearshore fishing opportunities, with the non-trawl RCA (the area closed to most fishing with non-trawl gear) extended from the 20 fm (37 m) depth contour to latitude and longitude coordinates approximating the 150 fm (274 m) depth contour. These management measures were designed to limit the incidental take of overfished groundfish species, namely bocaccio. The recreational fishing fleet in California has been similarly constrained in 2003, by a reduced season length (July - December) and limited nearshore fishing opportunities, generally shoreward of the 20 fm (37 m) depth contour, to minimize the incidental take of bocaccio. Since 2000, the recreational fishery has been subject to fishery closures for part of the year. Between 2000 and 2002, the California recreational fishery seasons have extended for between 8 and 10 months. Beginning in 2001, area restrictions were implemented with only restricted recreational fishing in the Cowcod Conservation Areas and fishing restricted to inside the 20 fm (37 m) depth contour for part of the year. In 2003, the recreational fishery has been restricted to a 6 month season entirely inside of the 20 fm (37 m) depth contour. These restrictions on the non-trawl commercial and recreational fishing sectors in southern California set the stage for the socioeconomic environment.

Of the roughly 450 vessels with Pacific Coast groundfish limited entry permits, approximately 46% are fixed gear (longline or trap/pot gear) (2003 Specs EIS). Unlike the limited entry sector, the open access fishery has unrestricted participation and is comprised of vessels targeting or incidentally catching groundfish with a variety of gears, excluding groundfish trawl gear. While the open access groundfish fishery is under federal management and does not have participation restrictions, some state and federally-managed fisheries that land groundfish in the open access fishery have implemented their own limited entry (restricted access) fisheries or enacted management provisions that have affected participation in groundfish fisheries.

The 2003 Specs EIS describes the socioeconomic environment in detail (Section 3.3). As provided by CEQ NEPA implementing regulations at 40 CFR 1502.21, the detailed socioeconomic baseline environment is hereby incorporated by reference. In further compliance with the CEQ regulations at 1502.21, this EA summarizes some of the relevant information from that document. Based on the 2000 through 2001 base period in PacFIN, the 178 vessels in the limited entry fixed gear fleet are concentrated in the northern ports of Bellingham, Port Angeles, Newport, Port Orford, Westport, Astoria, and Moss Landing. This group is dominated by the sablefish fleet operating primarily on the shelf and slope. Open access vessels deriving at least 5% of revenue from groundfish is the largest groundfish category in the table. These 771 vessels are distributed throughout the coast. In the North, these vessels are more engaged in shelf and slope fisheries. The southern fleet is more engaged nearshore. The second most numerous groundfish category is composed of the open access vessels deriving less than 5% of revenue from groundfish. Major concentrations of these 517 vessels operate from Newport, Charleston, Santa Barbara, and Garibaldi. The southern fleet is more active nearshore. Altogether there were 1,710 vessels recorded as landing significant quantities of groundfish of the total 4,589 vessels operating in all fisheries coastwide. For recreational fisheries in the U.S., over 9 million anglers took part in 76 million marine recreational fishing trips in 2000. The Pacific coast accounted for about 22% of these participants and 12% of trips. Seventy percent of West Coast trips were made off California. Table 6 shows the numbers of marine anglers by West Coast state in 2000. The table shows that California's marine recreational fishery dominates the other West Coast states both in terms of numbers of anglers and trips. Table 7, at the end of this document, shows the relative importance of groundfish in West Coast states' recreational fisheries between 1996 and 2001. Although only a relatively minor share of West Coast recreational effort overall, in three of the four regions, groundfish catch, either targeted or incidental, accompanied a significant share of both charter and private recreational trips. Only in Southern California

did groundfish appear to be a relatively minor part of regional marine recreational effort.

3.4 Bycatch of overfished species among sectors

Two major classes of fishing gear are used in the limited entry fixed gear sector: traps and longlines. These gears have different rates of observed bycatch of the overfished species. Baited longlines, whether deployed horizontally on the bottom or deployed vertically in the water column, are much more effective at capturing rockfish, and therefore, more prone to incidentally catch overfished rockfish species than traps. Limited entry fixed gear fisheries have primarily targeted rockfish and sablefish on the shelf and slope. Groundfish landings for this sector are depicted in Tables 8 and 9. With no corresponding bycatch model for this fishery, discard in the fishery is not as well known nor understood as in the limited entry trawl fishery. The proportion of shelf rockfish species landed with fixed gear has increased in recent years. This has been especially true since the small footrope restrictions were imposed on the trawl fishery in 2000. Some shelf rockfish species, such as canary rockfish and yelloweye rockfish, have been a highly valued target for this sector of the fishery.

Directed open access fisheries that target groundfish use the same fixed gear types and fish in the same areas as the limited entry fixed gear sector. Rockfish are targeted species for this sector as well. The landings of overfished groundfish species in open access non-shrimp fisheries (Table 9) include landed catch from open access fisheries targeting groundfish and landings of incidentally-caught groundfish in incidental (non-shrimp) open access fisheries. The distribution of groundfish catch and bycatch in incidental open access fisheries is far less certain than in the other sectors (Table 10). In some cases, groundfish landings may have been an important supplement to the income generated while pursuing nongroundfish targets, while, in other cases, groundfish bycatch was truly incidental.

Most bocaccio harvest occurred in Southern California in recent years, although in 2000, Northern California had a slightly higher harvest than Southern California (Table 11). Canary rockfish are harvested primarily in Northern California and Oregon, with minor amounts in Southern California and Washington. Cowcod are encountered almost exclusively in Southern California. Widow rockfish are caught primarily in Northern California, and occasionally in Oregon but rarely in Southern California and Washington. Yelloweye rockfish are caught throughout Washington, Oregon, and Northern California, although most of the Northern California catch occurs north of Cape Mendocino. Yelloweye are caught rarely in Southern California. Lingcod is popular throughout the West Coast , but the majority of harvest occurs in Northern California and Oregon.

4 IMPACTS OF THE ALTERNATIVES

This chapter analyzes the impacts, or environmental consequences, of the alternatives. It is organized by resource with the impacts of each alternative appearing under the discussion of that resource. Table 15, below, provides a list of the alternatives and summarizes their impacts.

TABLE 15. Potential affects of the alternatives on key resources.

	Status Quo (no action) ***0 sq. miles***	**36° to Mexico Alternative** ***~465 sq. miles***	**36° to 34°27' Alternative** ***~140 sq. miles***	**34°27' to Mexico Alternative (preferred)** ***~325 sq. miles***
Biological				
Bocaccio (≤20 mt OY)	0 mt (total: 19.5 mt)	2.53 mt (total: 22.03 mt)	0.31mt (total: 19.81 mt)	2.22 mt (total: 21.71 mt)
Canary (44 mt OY)	0 mt (total: 43.7 mt)	0.64 mt (total: 44.34 mt)	0.41 mt (total: 44.11 mt)	0.23 mt (total: 43.93 mt)
Lingcod (651 mt OY)	0 mt (total: 552.2 mt)	10.1 mt (total: 562.3 mt)	6.7 mt (total: 558.9 mt)	3.4 mt (total: 555.6 mt)
Cowcod (2.4 mt OY)	0 mt (total: 0.4 mt)	0.3 mt * (total: 0.7 mt)	0.2 mt * (total: 0.6 mt)	0.1 mt (total: 0.5 mt)
Yelloweye Rockfish (22 mt OY)	0 mt (total: 16.7 mt)	1.1 mt * (total: 17.8 mt)	1.1 mt * (total: 17.8 mt)	trace (total: ~16.7 mt)
Widow Rockfish (832 mt OY)	0 mt (total: 269 mt)	4.8 mt * (total: 273.8 mt)	4.8 mt * (total: 273.8 mt)	trace (total: ~269 mt)
Other Groundfish Species	effects neutral	greatest take	least take	medium take
Nongroundfish Species	effects neutral	greatest groundfish retention	least groundfish retention	medium groundfish retention
Protected Species	effects neutral	greatest increase in protected species effects	least increase in protected species effects	medium increase in protected species effects
Habitat	effects neutral	greatest increase in habitat effects	least increase in habitat effects	medium increase in habitat effects
Socioeconomic				
Commercial & Recreational Groundfish Revenue	effects neutral	greatest revenue gained	least revenue gained	medium revenue gained
Nongroundfish Revenue	effects neutral	greatest revenue gained	least revenue gained	medium revenue gained

* Recreational catch by depth data not available for these species between 36° N. lat. and 34°27' N. lat. Recreational estimates for these species are estimated total catch during September through December for all depths, not just the 21-30 fm depth range. Therefore, the estimated mortality for these species for the "36° to Mexico" and "36° to 34°27' " Alternatives is high because it includes estimates from depths other than just 21-30 fm.

trace= <0.1 mt

There are direct, indirect and cumulative effects on the biological and socioeconomic environments as a result of the alternatives. Biological impacts might include localized depletion of a population or individuals at a particular life stage in that population, changes in prey availability or presence of predators. The biological impacts discussed in this chapter focus on the estimated harvest of overfished species as a result of the alternatives. This is measured in relation to the overall OY for the species. The socioeconomic impacts of the alternatives might include changes in revenue, changes in the fishing

behavior, shifts in fishing effort by area, etc. The socioeconomic impacts mentioned in this chapter are, for the most part, qualitative because of a lack of socioeconomic data specific to the area of ocean available for fishing. The socioeconomic impacts discussed in this EA focus on the square miles of ocean that would become available for groundfish fishing as a result of the alternatives. The assumption is made that more area open to fishing equals increased potential revenue. Table 16 below shows the area of ocean that would open to fishing as a result of the alternatives. The area around islands, shown at the bottom of Table 16, would be added to both the "36° to Mexico" Alternative and the "34°27' to Mexico" Alternative (preferred alternative) because they fall within the geographic area of those alternatives. Figures 1 through 4, at the end of this document, are GIS maps showing the 20 fm and 30 fm depth contours for the preferred alternative, "34°27' to Mexico" Alternative. These figures also show a series of numbered points which represent latitude and longitude coordinates used to approximate the depth contour.

TABLE 16. Planimetric Area Estimates between 20 fm and 30 fm depth contours. (M. Park, CDFG, unpublished data)

N-S Extent	Square Meters	Square Kilometers	Square Miles
"36° to 34°27' " Alternative	362,683,583	362.7	140.03
"34°27' to Mexico" Alternative	569,255,296	569.3	219.79 (325.50 w/islands)
"36° to Mexico" Alternative	931,938,879	931.9	359.82 (465.53 w/islands)
Islands:			
Northern Channel Islands	232,165,234	232.2	89.64
Santa Catalina	16,347,855	16.3	6.31
San Clemente	25,270,634	25.3	9.76

Area calculations made with X-Tools, an ArcView extension that can calculate areas (sq m) polygon shapefiles.
Equations for conversion to square miles and square km obtained from http://www.unitconverter/
Area figures have not been rounded.

The data used to analyze the alternatives was compiled by CDFG as part of their proposal to the Council on a boundary line change for the recreational and commercial fixed gear sectors. At the June 2003 Council meeting, data was presented on estimated take of bocaccio and canary rockfish for the commercial and recreational sectors as a result of the alternatives. Since the June 2003 Council meeting, CDFG staff have also analyzed the estimated take of other overfished species, including cowcod, lingcod, yelloweye rockfish and widow rockfish. The data compiled by CDFG since the June Council meeting has not been reviewed by the Council and its advisory bodies.

To estimate impacts from a boundary line change between 20 fm and 30 fm, CDFG staff reviewed catch by depth data, seasonal distribution of catches and estimated total catch (T. Barnes and J. Curtis, CDFG, unpublished data). Catch by depth data was based on the most recent information available (2001 and 2002) from the Marine Recreational Fisheries Statistical Survey (MRFSS) for bocaccio and canary rockfish. MRFSS data has species-specific catch by depth data only for the recreational fishery. For the commercial fixed gear fishery, there is no historical catch by depth data for the gillnet fishery during the base years selected (1995-1999). Therefore, CDFG assumed that catch by depth data from the recreational fishery was a reasonable proxy for catch by depth for the commercial fixed gear fishery given that similar species are taken in these fisheries. CDFG looked at data from recreational fisheries during 1993-1999 to figure the seasonal distribution of catches, in order to get a larger sample size and reduce inter-annual variation. The base years used for the estimated total catch in the analysis were intended to represent recent years when shelf rockfish opportunities were not constrained by season closures or depth restrictions, thus giving a better representation of catch by depth in the absence of restrictions. The base years selected for the analysis differed for the commercial fixed gear and recreational fisheries. For the commercial fixed gear fishery, the base years selected for analysis were 1995-1999 for bocaccio and canary rockfish. For the recreational fishery, the base years selected were 1993-1999. Both base year

periods ended at 1999 because there have been more restrictions on the fishery in recent years (2000 to present), which may have skewed data about fishery distribution. The base years for the commercial fishery did not go earlier than 1995 because of a change in commercial landing receipts before 1995. The base years for the recreational fishery did not go earlier than 1993 because there were data gaps in the recreational information before 1993 and CDFG felt that using data earlier than 1993 was using data that was too far in the past to be representative. Table 17 shows the results of the CDFG analysis presented at the June 2003 Council meeting.

After the June 2003 Council meeting, CDFG compiled data on the estimated take of lingcod, cowcod, yelloweye rockfish, and widow rockfish in the commercial non-trawl and recreational fisheries (T. Barnes and J. Curtis, CDFG, unpublished data). For the commercial fishery, the same base years used to get the average commercial non-trawl catch for canary rockfish and bocaccio, 1995-1999, were used to gather data on these overfished species. These species and years were used because species-specific catch by depth data is available. The average of the percent of canary and bocaccio species caught between 20 fm and 30 fm was 11%. This 11% was then applied to the historical catch of each of the following species: lingcod, cowcod, yelloweye rockfish and widow rockfish. This number was then divided by 1/3 for each species to represent the estimated catch that may occur between 20 fm and 30 fm for the last 1/3 of the calendar year for which this action is proposed. For the recreational fishery, the data continues to be derived from MRFSS but uses more recent years. The base catch, depth analysis, and region analysis for lingcod, cowcod, yelloweye rockfish and widow rockfish all used data from 1999 and 2000, recent years when there were no major area closures in place. The wave analysis continued to use data from 1993 through 1999. Table 18 shows the results of the commercial and recreational data for these overfished species.

As part of an effort by the Council to track how management decisions affect estimated mortality of overfished groundfish species, the Council's GMT works through a "bycatch scorecard." The bycatch scorecard, first introduced in developing the 2003 specifications and management measures, tracks estimated fishing mortality from the commercial limited entry, commercial open access, and recreational sectors as well as mortality from research catch and exempted fishing permits. These categories are further broken down by gear type, target fishery or state, depending on the category. The bycatch scorecard is tallied in developing the annual management measures and is updated inseason as new estimates of mortality become available or management measures change. A copy of the bycatch scorecard as tallied at the June 2003 Council meeting after all inseason adjustments had been adopted (including estimates for bocaccio and canary rockfish only of moving the boundary line to 30 fm south of 34°27' N. lat. for commercial non-trawl and recreational fisheries during September through December) is included as Table 12. An additional supporting document presented at the June Council meeting is included as Table 13. The bycatch scorecard represents the best estimates of total catch and is an aid for management decisions. The scorecard estimates which sectors are taking which overfished species and roughly how much of those species.

4.1 Biological Impacts

4.1.1 Overfished Groundfish Species

The bycatch scorecard (Table 12), discussed in the introduction to Section 4 of this EA, along with commercial non-trawl and recreational data compiled by CDFG (Table 18) was used to analyze the biological impacts of overfished groundfish species. For the commercial non-trawl fishery, CDFG data on estimated mortality for each overfished species in the commercial non-trawl fishery discussed in this EA was added to the following rows in the bycatch scorecard: limited entry fixed gear, open access groundfish directed, open access California gillnet, and open access salmon troll. These rows represent categories of participants in the groundfish fishery that use non-trawl gear. All of these categories for the commercial

fishery are coastwide, except for the open access California gillnet category. Therefore, estimates of total mortality for overfished groundfish species taken from the bycatch scorecard are high because they include coastwide estimates for the commercial nontrawl fishery rather than estimates specific to the subject area of this analysis (southern California). Tribal commercial fixed gear fisheries were not included because they occur exclusively off Washington and are, therefore, not in the area of this proposed action. For the recreational fishery, CDFG data on estimated mortality for each overfished species in the recreational fishery discussed in this EA was added to the row in the bycatch scorecard titled "recreational groundfish CA (S)." This category for the recreational fishery includes estimates on total mortality of overfished groundfish species south of 40°10' N. lat. Because all alternatives in this EA affect areas south of 36° N. lat., estimates of total mortality of overfished groundfish from the bycatch scorecard for the recreational fishery will also be slightly high because they include estimates on total mortality south of 40°10' N. lat. rather than estimates specific to the subject area of this analysis (southern California). Data from CDFG estimating the total mortality of overfished species as a result of the proposed action are specific to the areas delineated in the alternatives. Thus, the first step in the analysis evaluated the direct effects from the commercial non-trawl and recreational fisheries of each alternative on overfished species.

The second, and final, step in the analysis of the direct effects of the alternatives on overfished groundfish species was to add estimates of total mortality from the CDFG data for commercial non-trawl and recreational fisheries (Table 18) to total estimated mortality from all categories listed at the bottom of the bycatch scorecard (Table 12). This number was then compared to the OY for 2003 to determine the overall impact of the alternatives on overfished groundfish stocks. [NOTE: The bycatch scorecard in Table 12, as tallied at the June 2003 Council meeting after all inseason adjustments had been adopted, includes estimates for the preferred alternative ("34°27' to Mexico" Alternative) for bocaccio and canary rockfish. For the analysis in this EA, estimates for the other alternatives for bocaccio and canary were back-calculated by removing the preferred alternative estimates from the scorecard for these species and then adding CDFG data for the appropriate alternative.]

4.1.1.1 Impacts on Bocaccio

While there is currently no target fishery for bocaccio, because of its broad distribution, bocaccio are still intercepted in the prosecution of fisheries targeting other species. The direct effect of the status quo alternative on estimated mortality of bocaccio in southern California, south of 40°10' N. lat., for 2003 is 5-6 mt (5.0 mt from southern CA recreational fisheries plus 1.0 mt from commercial fixed gear (limited entry and open access) fisheries south of 40°10' N. lat.). Adding this estimated mortality into the estimated mortality for all other sectors and fisheries that intercept groundfish on the West Coast, 19.5 mt out of a $\leq$20 mt OY are estimated to have been taken. Thus, the estimated bocaccio take under the status quo alternative is <0.5 mt under the OY for 2003 and is, therefore, minimal.

The direct effect of the "36° to Mexico" alternative on estimated mortality of bocaccio in southern California, south of 40°10' N. lat., for 2003 is 6.34-8.53 mt (6.34 mt from southern CA recreational fisheries plus 2.19 mt from commercial fixed gear (limited entry and open access) fisheries south of 40°10' N. lat.). Adding this estimated mortality into the estimated mortality for all other sectors and fisheries that intercept groundfish on the West Coast, 22.03 mt out of a $\leq$20 mt OY are estimated to be taken. Thus, the estimated bocaccio take under the "36° to Mexico" alternative is at least 2.03 mt over the OY for 2003. While managers generally try to implement management measures that remain within the OY for a species, especially an overfished species, new information on the stock status (discussed in Sections 1.4 and 3.1.1.1) will likely lead to a much higher bocaccio OY for 2004. Based on the new information, exceeding the 2003 OY by a few metric tons will have a minimal impact on bocaccio.

The direct effect of the "36° to 34°27' " alternative on estimated mortality of bocaccio in southern California, south of 40°10' N. lat., for 2003 is 5.07-6.31 mt (5.07 mt from southern CA recreational fisheries

plus 1.24 mt from commercial fixed gear (limited entry and open access) fisheries south of 40°10' N. lat.). Adding this estimated mortality into the estimated mortality for all other sectors and fisheries that intercept groundfish on the West Coast, 19.81 mt out of a ≤20 mt OY are estimated to be taken. Thus, the estimated bocaccio take under the "36° to 34°27' " alternative is <0.19 mt under the OY for 2003 and is, therefore, minimal.

The direct effect of the "34°27' to Mexico" alternative (preferred alternative) on estimated mortality of bocaccio in southern California, south of 40°10' N. lat., for 2003 is 6.27-8.22 mt (6.27 mt from southern CA recreational fisheries plus 1.95 mt from commercial fixed gear (limited entry and open access) fisheries south of 40°10' N. lat.). Adding this estimated mortality into the estimated mortality for all other sectors and fisheries that intercept groundfish on the West Coast, 21.72 mt out of a ≤20 mt OY are estimated to be taken. Thus, the estimated bocaccio take under the "34°27' to Mexico" alternative is at least 1.72 mt over the OY for 2003. While managers generally try to implement management measures that remain within the OY for a species, especially an overfished species, new information on the stock status (discussed in Sections 1.4 and 3.1.1.1) will likely lead to a much higher bocaccio OY for 2004. Based on the new information, exceeding the 2003 OY by a few metric tons will have a minimal impact on bocaccio.

As mentioned in Section 3.1.1.1, bocaccio are most prevalent in waters between 54 fm and 82 fm (Casillas *et al.* 1998). However, bocaccio do range into waters less than 20 fm, particularly large juveniles and adults, which are semi-demersal and are most often found in shallow coastal waters over rocky bottoms associated with algae (Sakuma and Ralston 1995). Young and adult bocaccio also occur around artificial structures, such as piers and oil platforms (MBC 1987). Thus, while the alternatives all remain within the OY or slightly above OY for this species, there are predicted to be impacts, particularly on large juveniles and adults, from allowing recreational and commercial fixed gear fishing in waters less than 30 fm. However, because the species is most prevalent in deeper waters (54 fm to 82 fm), these impacts are expected to be minimal because the impacts would occur outside of the range where bocaccio are most prevalent.

In addition to direct effects, there are likely indirect effects as well, including changes in predator/prey relationships. As mentioned in Section 3.1.1.1, adult bocaccio eat small fishes associated with kelp beds, including other species of rockfishes, and occasionally small amounts of shellfish (Sumida and Moser 1984). Bocaccio are eaten by sharks, salmon, other rockfishes, lingcod, albacore, sea lions, porpoises, and whales (MBC 1987). Bocaccio directly compete with chilipepper and widow rockfish, yellowtail, and shortbelly rockfishes for both food and habitat resources (Reilly *et al.* 1992). Predator/prey relationships, like the ecosystems on which they depend, are always in flux. Thus, any take of bocaccio from fishing activities, in addition to natural mortality, will change the balance of predator/prey relationships and the ecosystem functioning. The magnitude of change on predator and prey availability is difficult to determine. The indirect impacts, while predicted to be minimal, would vary from most to least impacts as follows: "36° to Mexico" alternative (most), "34°27' to Mexico" alternative (preferred alternative), "36° to 34°27' " alternative, and the status quo alternative (least). The differences between the alternatives driving the indirect impacts is related to the amount of area that would open up to commercial fixed gear and recreational fisheries. However, indirect impacts of all of the alternatives on bocaccio are predicted to be minimal because the impacts would occur outside of the range where bocaccio are most prevalent.

The cumulative effects of the biological and habitat impacts (see Section 4.2 for habitat impacts) of all of the alternatives, in addition to all of the management measures for groundfish in 2003 as discussed in the 2003 Specs EIS, and all past and foreseeable future actions, are predicted to have a minimal impact on bocaccio because of the limited area proposed to open to fishing and because the stock will continue to be managed to rebuild to sustainable population levels. While in the past, bocaccio has been subject to adverse impacts from fishing that have driven the stock to an overfished status, present and future actions are intended to rebuild the stock while relieving some economic pressure on the fishing industry.

4.1.1.2 Impacts on Canary Rockfish

While there is currently no target non-trawl fishery for canary rockfish, because of its overfished status, canary rockfish are still intercepted in the prosecution of fisheries targeting other species. The direct effect of the status quo alternative on estimated mortality of canary rockfish in southern California, south of 40°10' N. lat., for 2003 is 2.7-5.1 mt (2.7 mt from southern CA recreational fisheries plus 2.4 mt from commercial fixed gear (limited entry and open access) fisheries coastwide). Adding this estimated mortality into the estimated mortality for all other sectors and fisheries that intercept groundfish on the West Coast, 43.7 mt out of a 44.0 mt OY are predicted to be taken. Thus, the predicted canary rockfish take is 0.3 mt under the OY for 2003 and is, therefore, minimal.

The direct effect of the "36° to Mexico" alternative on estimated mortality of canary rockfish in southern California, south of 40°10' N. lat., for 2003 is 3.01-5.74 mt (3.01 mt from southern CA recreational fisheries plus 2.73 mt from commercial fixed gear (limited entry and open access) fisheries coastwide). Adding this estimated mortality into the estimated mortality for all other sectors and fisheries that intercept groundfish on the West Coast, 44.34 mt out of a 44.0 mt OY are predicted to be taken. Thus, the estimated canary rockfish take under the "36° to Mexico" alternative is 0.34 mt over the OY for 2003. Managers generally try to implement management measures that remain within the OY for a species, especially an overfished species. Without new information on the stock status, it is difficult to determine if this additional take of canary rockfish over the OY will be enough to have a substantial impact on the stock.

The direct effect of the "36° to 34°27' " alternative on estimated mortality of canary rockfish in southern California, south of 40°10' N. lat., for 2003 is 2.94-5.51 mt (2.94 mt from southern CA recreational fisheries plus 2.57 mt from commercial fixed gear (limited entry and open access) fisheries coastwide). Adding this estimated mortality into the estimated mortality for all other sectors and fisheries that intercept groundfish on the West Coast, 44.11 mt out of a 44.0 mt OY are predicted to be taken. Thus, the estimated canary rockfish take under the "36° to 34°27' " alternative is 0.11 mt over the OY for 2003. Managers generally try to implement management measures that remain within the OY for a species, especially an overfished species. Without new information on the stock status, it is difficult to determine if this additional take of canary rockfish over the OY will be enough to have a substantial impact on the stock.

The direct effect of the "34°27' to Mexico" alternative (preferred alternative) on estimated mortality of canary rockfish in southern California, south of 40°10' N. lat., for 2003 is 2.77-5.33 mt (2.77 mt from southern CA recreational fisheries plus 2.56 mt from commercial fixed gear (limited entry and open access) fisheries coastwide). Adding this estimated mortality into the estimated mortality for all other sectors and fisheries that intercept groundfish on the West Coast, 43.93 mt out of a 44.0 mt OY are predicted to be taken. Thus, the predicted canary rockfish take under the "34°27' to Mexico" alternative is 0.07 mt under the OY for 2003 and is, therefore, minimal.

As mentioned in Section 3.1.1.2, canary rockfish primarily inhabit waters 91 m to 183 m (50 fm to 100 fm) deep (Boehlert and Kappenman 1980). In general, canary rockfish inhabit shallow water when they are young, and deep water as adults (Mason 1995). Canary rockfish do range into waters less than 30 fm, particularly as juveniles. Thus, while remaining within the OY for this species, there are impacts (discussed below) from allowing recreational and commercial fixed gear fishing in waters less than 30 fm.

In addition to direct effects, there are likely indirect effects as well, including changes in predator/prey relationships. As mentioned in section 3.1.1.2, adult canary rockfish feed primarily on small fishes, as well as planktonic creatures, such as krill and euphausiids (Love 1991; Phillips 1964). Canary rockfish are eaten by salmon, other fishes, marine birds and mammals (Love *et al.* 2002). Canary rockfish are caught with yellowtail, yelloweye, bocaccio, and sharpchin rockfishes and lingcod (Love *et al.* 2002). Predator/prey relationships, like the ecosystem on which they depend, are always in flux. Thus, any take of canary rockfish from fishing activities, in addition to natural mortality, will change the balance of predator/prey relationships and the ecosystem functioning. The magnitude of change on predator and

prey availability is difficult to determine. The indirect impacts, while predicted to be minimal, would vary from most to least impacts as follows: “36° to Mexico” alternative (most), “34°27' to Mexico” alternative (preferred alternative), “36° to 34°27' “ alternative, and the status quo alternative (least). The differences between the alternatives driving the indirect impacts is related to the amount of area that would open up to commercial fixed gear and recreational fisheries. However, indirect impacts of all of the alternatives on canary rockfish are predicted to be minimal because the impacts would occur outside of the range where canary rockfish are most prevalent.

The cumulative effects of the biological and habitat impacts (see Section 4.2 for habitat impacts) of all of the alternatives, in addition to all of the management measures for groundfish in 2003 as discussed in the 2003 Specs EIS, and all past and foreseeable future actions, are predicted to have a minimal impact because of the limited area proposed to open to fishing and because the stock will continue to be managed to rebuild to sustainable population levels. While in the past, canary rockfish has been subject to adverse impacts from fishing that have driven the stock to an overfished status, present and future actions are intended to rebuild the stock while relieving some economic pressure on the fishing industry. Canary rockfish is managed within rebuilding parameters (Table 4) that ensure that the stock grows in size until it is at a sustainable biomass, or B_{MSY}.

4.1.1.3 Impacts on Lingcod

For 2003, there is both a commercial and recreational fishery for lingcod. In the commercial fishery south of 40°10' N. lat., the limited entry fixed gear fisheries have a trip limit of 400 lb per month while the open access non-trawl fisheries have a trip limit of 300 lb per month during May through October. In the recreational fishery south of 40°10' N. lat., there is a bag limit of 2 lingcod per day with a gear restriction of 2 hooks and one line when fishing for lingcod during July through December. These fisheries are closed during the winter months to protect lingcod during a sensitive stage of their reproductive cycle when the males are guarding nests of eggs. Taking into account this information, the direct effect of the status quo alternative on estimated mortality of lingcod in southern California, south of 40°10' N. lat., for 2003 is 20-110.3 mt (20 mt from southern CA recreational fisheries plus 90.3 mt from commercial fixed gear (limited entry and open access) fisheries coastwide). Adding this estimated mortality into the estimated mortality for all other sectors and fisheries that intercept groundfish on the West Coast, 552.2 mt out of a 651 mt OY are predicted to be taken. Thus, the predicted lingcod take is 98.8 mt under the OY for 2003 and is, therefore, minimal.

The direct effect of the “36° to Mexico” alternative on estimated mortality of lingcod in southern California, south of 40°10' N. lat., for 2003 is 28.9-120.4 mt (28.9 mt from southern CA recreational fisheries plus 91.5 mt from commercial fixed gear (limited entry and open access) fisheries coastwide). Adding this estimated mortality into the estimated mortality for all other sectors and fisheries that intercept groundfish on the West Coast, 562.3 mt out of a 651 mt OY are predicted to be taken. Thus, the estimated lingcod take under the “36° to Mexico” alternative is 88.7 mt under the OY for 2003 and is, therefore, minimal.

The direct effect of the “36° to 34°27' ” alternative on estimated mortality of lingcod in southern California, south of 40°10' N. lat., for 2003 is 25.6-97 mt (25.6 mt from southern CA recreational fisheries plus 71.4 mt from commercial fixed gear (limited entry and open access) fisheries coastwide). Adding this estimated mortality into the estimated mortality for all other sectors and fisheries that intercept groundfish on the West Coast, 558.9 mt out of a 651 mt OY are predicted to be taken. Thus, the estimated lingcod take under the “36° to 34°27' ” alternative is 92.1 mt under the OY for 2003 and is, therefore, minimal.

The direct effect of the “34°27' to Mexico” alternative (preferred alternative) on estimated mortality of lingcod in southern California, south of 40°10' N. lat., for 2003 is 23.3-93.7 mt (23.3 mt from southern CA recreational fisheries plus 70.4 mt from commercial fixed gear (limited entry and open access) fisheries coastwide). Adding this estimated mortality into the estimated mortality for all other sectors and fisheries

that intercept groundfish on the West Coast, 555.6 mt out of a 651 mt OY are predicted to be taken. Thus, the predicted lingcod take under the "34°27' to Mexico" alternative is 95.4 mt under the OY for 2003 and is, therefore, minimal.

As mentioned in Section 3.1.1.3, adult lingcod prefer two main habitat types that occur within 30 fm: slopes of submerged banks 10 m to 70 m (5 fm to 38 fm) below the surface with seaweed, kelp, and eelgrass beds and channels with swift currents that flow around rocky reefs (Emmett *et al.* 1991; Giorgi and Congleton 1984; NOAA 1990; Shaw and Hassler 1989). In addition, adult lingcod are considered a relatively sedentary species, but there are reports of migrations of greater than 100 km by sexually immature fish (Jagielo 1990; Mathews and LaRiviere 1987; Matthews 1992; Smith *et al.* 1990). Mature females live in deeper water than males and move from deep water to shallow water in the winter to spawn (Forrester 1969; Hart 1988; Jagielo 1990; LaRiviere *et al.* 1980; Mathews and LaRiviere 1987; Matthews 1992; Smith *et al.* 1990). Mature males may live their whole lives associated with a single rock reef, possibly out of fidelity to a prime spawning or feeding area (Allen and Smith 1988; Shaw and Hassler 1989). Thus, while remaining within the OY for this species, there are impacts from allowing recreational and commercial fixed gear fishing in waters less than 30 fm.

In addition to direct effects, there are likely indirect effects as well, including changes in predator/prey relationships. As mentioned in section 3.1.1.3, lingcod are a visual predator, feeding primarily by day. Larvae are zooplanktivores (NOAA 1990). Small demersal juveniles prey upon copepods, shrimps, and other small crustaceans. Larger juveniles shift to clupeids and other small fishes (Emmett *et al.* 1991, NOAA 1990). Adults feed primarily on demersal fishes (including smaller lingcod), squids, octopi, and crabs (Hart 1988, Miller and Geibel 1973, Shaw and Hassler 1989). Lingcod eggs are eaten by gastropods, crabs, echinoderms, spiny dogfish, and cabezon. Juveniles and adults are eaten by marine mammals, sharks, and larger lingcod (Miller and Geibel 1973, NOAA 1990). Predator/prey relationships, like the ecosystem on which they depend, are always in flux. Thus, any take of lingcod from fishing activities, in addition to natural mortality, will change the balance of predator/prey relationships and the ecosystem functioning. The magnitude of change on predator and prey availability is difficult to determine. The indirect impacts, while predicted to be minimal, would vary from most to least impacts as follows: "36° to Mexico" alternative (most), "34°27' to Mexico" alternative (preferred alternative), "36° to 34°27' " alternative, and the status quo alternative (least). The differences between the alternatives driving the indirect impacts is related to the amount of area that would open up to commercial fixed gear and recreational fisheries. However, indirect impacts of all of the alternatives on lingcod are predicted to be minimal.

The cumulative effects of the biological and habitat impacts (see Section 4.2 for habitat impacts) of all of the alternatives, in addition to all of the management measures for groundfish in 2003 as discussed in the 2003 Specs EIS, and all past and foreseeable future actions, are predicted to have a minimal impact because of the limited area proposed to open to fishing and because the stock will continue to be managed to rebuild to sustainable population levels. While in the past, lingcod has been subject to adverse impacts from fishing that have driven the stock to an overfished status, present and future actions are intended to rebuild the stock while relieving some economic pressure on the fishing industry. Lingcod is managed within rebuilding parameters (Table 4) that ensure that the stock grows in size until it is at a sustainable biomass, or B_{MSY}.

4.1.1.4 Impacts on Cowcod

While there is currently no target fishery for cowcod, because of its overfished status, cowcod are still intercepted in the prosecution of fisheries targeting other species. However, due to the sedentary nature of the species and Cowcod Conservation Areas closed to fishing where this species primarily occurs, interception of cowcod is reduced. The direct effect of the status quo alternative on estimated mortality of

cowcod in southern California, south of 40°10' N. lat., for 2003 is 0-0.1 mt (0 mt[1/] from southern CA recreational fisheries plus 0.1 mt from commercial fixed gear (limited entry and open access) fisheries coastwide). Adding this estimated mortality into the estimated mortality for all other sectors and fisheries that intercept groundfish on the West Coast, 0.4 mt out of a 2.4 mt OY are predicted to be taken. Thus, the predicted cowcod take is 2 mt under the OY for 2003 and is, therefore, minimal.

The direct effect of the "36° to Mexico" alternative on estimated mortality of cowcod in southern California, south of 40°10' N. lat., for 2003 is 0.1-0.4 mt (0.1 mt[2/] from southern CA recreational fisheries plus 0.3 mt from commercial fixed gear (limited entry and open access) fisheries coastwide). Adding this estimated mortality into the estimated mortality for all other sectors and fisheries that intercept groundfish on the West Coast, 0.7 mt out of a 2.4 mt OY are predicted to be taken. Thus, the estimated cowcod take under the "36° to Mexico" alternative is 1.7 mt under the OY for 2003 and is, therefore, minimal.

The direct effect of the "36° to 34°27' " alternative on estimated mortality of cowcod in southern California, south of 40°10' N. lat., for 2003 is 0.1-0.2 mt (0.1 mt[2/] from southern CA recreational fisheries plus 0.1 mt from commercial fixed gear (limited entry and open access) fisheries coastwide). Adding this estimated mortality into the estimated mortality for all other sectors and fisheries that intercept groundfish on the West Coast, 0.6 mt out of a 2.4 mt OY are predicted to be taken. Thus, the estimated cowcod take under the "36° to 34°27' " alternative is 1.8 mt under the OY for 2003 and is, therefore, minimal.

The direct effect of the "34°27' to Mexico" alternative (preferred alternative) on estimated mortality of cowcod in southern California, south of 40°10' N. lat., for 2003 is 0-0.1 mt (0 mt from southern CA recreational fisheries plus 0.1 mt from commercial fixed gear (limited entry and open access) fisheries coastwide). Adding this estimated mortality into the estimated mortality for all other sectors and fisheries that intercept groundfish on the West Coast, 0.5 mt out of a 2.4 mt OY are predicted to be taken. Thus, the predicted cowcod take under the "34°27' to Mexico" alternative is 1.9 mt under the OY for 2003 and is, therefore, minimal.

As mentioned in Section 3.1.1.4, cowcod range from 21 m to 366 m (11 fm to 200 fm) in depth (Miller and Lea 1972) and are considered to be parademersal (transitional between a midwater pelagic and benthic species). Adults are commonly found at depths of 180 m to 235 m (98 fm to 128 fm) and juveniles are most often found in 30 m to 149 m (16 fm to 81 fm) of water (Love *et al.* 1990). MacGregor (1986) found that larval cowcod are almost exclusively found in Southern California and may occur many miles offshore. Adult cowcod are generally solitary, but occasionally aggregate (Love *et al.* 1990). Although cowcod are generally not migratory; they may move, to some extent, to follow food (Love *et al.* 1991). Thus, while remaining within the OY for this species, there are impacts from allowing recreational and commercial fixed gear fishing in waters less than 30 fm.

In addition to direct effects, there are likely indirect effects as well, including changes in predator/prey relationships. As mentioned in section 3.1.1.4, juvenile cowcod eat shrimp and crabs, and adults eat fish, octopus, and squid (Allen 1982). Cowcod are undoubtedly preyed upon by animals higher up on the food chain, such as marine mammals and sharks. Predator/prey relationships, like the ecosystem on which they depend, are always in flux. Thus, any take of cowcod from fishing activities, in addition to natural mortality, will change the balance of predator/prey relationships and the ecosystem functioning. The

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1/ The bycatch scorecard (Table 12) reports that recreational catch of cowcod is either trace amounts (<0.01 mt), not applicable, or not reported in available data sources.

2/ Recreational catch by depth data not available for this species between 36° N. lat. and 34°27' N. lat. Recreational estimates for this species are estimated for total catch during September through December for all depths, not just the 21-30 fm depth range. Therefore, the estimated mortality for this species for the "36° to Mexico" and "36° to 34°27' " Alternatives is high because it includes estimates from depths other than just 21-30 fm.

magnitude of change on predator and prey availability is difficult to determine. The indirect impacts, while predicted to be minimal, would vary from most to least impacts as follows: “36° to Mexico” alternative (most), “34°27' to Mexico” alternative (preferred alternative), “36° to 34°27' “ alternative, and the status quo alternative (least). The differences between the alternatives driving the indirect impacts is related to the amount of area that would open up to commercial fixed gear and recreational fisheries. However, indirect impacts of all of the alternatives on cowcod are predicted to be minimal because the Cowcod Conservation Areas remain closed to fishing to protect cowcod.

The cumulative effects of the biological and habitat impacts (see Section 4.2 for habitat impacts) of all of the alternatives, in addition to all of the management measures for groundfish in 2003 as discussed in the 2003 Specs EIS, and all past and foreseeable future actions, are predicted to have a minimal impact because of the limited area proposed to open to fishing and because the stock will continue to be managed to rebuild to sustainable population levels. While in the past, cowcod has been subject to adverse impacts from fishing that have driven the stock to an overfished status, present and future actions are intended to rebuild the stock while relieving some economic pressure on the fishing industry. Cowcod is managed within rebuilding parameters (Table 4) that ensure that the stock grows in size until it is at a sustainable biomass, or B_{MSY}.

4.1.1.5 Impacts on Yelloweye Rockfish

While there is currently no target non-trawl fishery for yelloweye rockfish, because of its overfished status, yelloweye rockfish are still intercepted in the prosecution of fisheries targeting other species. The direct effect of the status quo alternative on estimated mortality of yelloweye rockfish in southern California, south of 40°10' N. lat., for 2003 is 0.4-2.1 mt (0.4 mt from southern CA recreational fisheries plus 1.7 mt from commercial fixed gear (limited entry and open access) fisheries coastwide). Adding this estimated mortality into the estimated mortality for all other sectors and fisheries that intercept groundfish on the West Coast, 16.7 mt out of a 22 mt OY are predicted to be taken. Thus, the predicted yelloweye rockfish take is 5.3 mt under the OY for 2003 and is, therefore, minimal.

The direct effect of the “36° to Mexico” alternative on estimated mortality of yelloweye rockfish in southern California, south of 40°10' N. lat., for 2003 is 1-1.1 mt (1 mt[3/] from southern CA recreational fisheries plus 0.1 mt from commercial fixed gear (limited entry and open access) fisheries coastwide). Adding this estimated mortality into the estimated mortality for all other sectors and fisheries that intercept groundfish on the West Coast, 17.8 mt out of a 22 mt OY are predicted to be taken. Thus, the estimated yelloweye rockfish take under the “36° to Mexico” alternative is 4.2 mt under the OY for 2003 and is, therefore, minimal.

The direct effect of the “36° to 34°27' ” alternative on estimated mortality of yelloweye rockfish in southern California, south of 40°10' N. lat., for 2003 is 1-1.1 mt (1 mt[3/] from southern CA recreational fisheries plus 0.1 mt from commercial fixed gear (limited entry and open access) fisheries coastwide). Adding this estimated mortality into the estimated mortality for all other sectors and fisheries that intercept groundfish on the West Coast, 17.8 mt out of a 22 mt OY are predicted to be taken. Thus, the estimated yelloweye rockfish take under the “36° to 34°27' ” alternative is 4.2 mt under the OY for 2003 and is, therefore, minimal.

The direct effect of the “34°27' to Mexico” alternative (preferred alternative) on estimated mortality of

3/ Recreational catch by depth data not available for this species between 36° N. lat. and 34°27' N. lat. Recreational estimates for this species are estimated for total catch during September through December for all depths, not just the 21-30 fm depth range. Therefore, the estimated mortality for this species for the “36° to Mexico” and “36° to 34°27' “ Alternatives is high because it includes estimates from depths other than just 21-30 fm.

yelloweye rockfish in southern California, south of 40°10' N. lat., for 2003 is 0-0.01 mt (0 mt from southern CA recreational fisheries plus only trace amounts (<0.01 mt) from commercial fixed gear (limited entry and open access) fisheries coastwide). Adding this estimated mortality into the estimated mortality for all other sectors and fisheries that intercept groundfish on the West Coast, ~16.7 mt out of a 22 mt OY are predicted to be taken. Thus, the predicted yelloweye rockfish take under the "34°27' to Mexico" alternative is ~5.3 mt under the OY for 2003 and is, therefore, minimal.

As mentioned in Section 3.1.1.5, yelloweye rockfish occur in waters 25 m to 550 m (14 fm to 301 fm) deep with 95% of survey catches occurring from 50 m to 400 m (27 fm to 219 fm) (Allen and Smith 1988). Yelloweye rockfish are bottom dwelling, generally solitary, rocky reef fish, found either on or just over reefs (Eschmeyer *et al.* 1983; Love *et al.* 1991; O'Connell and Funk 1986). Boulder areas in deep water (>180 m or >98 fm) are the most densely populated habitat type, and juveniles prefer shallow-zone broken-rock habitat (O'Connell and Carlile 1993). While yelloweye rockfish primarily occur in waters deeper than 30 fm and the impacts from this action are predicted to remain within the OY for the species, there are impacts from allowing recreational and commercial fixed gear fishing in waters less than 30 fm.

In addition to direct effects, there are likely indirect effects as well, including changes in predator/prey relationships. As mentioned in section 3.1.1.5, yelloweye rockfish are a large predatory reef fish that usually feeds close to the bottom (Rosenthal *et al.* 1988). They have a widely varied diet, including fish, crabs, shrimps and snails, rockfish, cods, sand lances, and herring (Love *et al.* 1991). Yelloweye rockfish have been observed underwater capturing smaller rockfish with rapid bursts of speed and agility. Off Oregon the major food items of the yelloweye rockfish include cancroid crabs, cottids, righteye flounders, adult rockfishes, and pandalid shrimps (Steiner 1978). Predator/prey relationships, like the ecosystem on which they depend, are always in flux. Thus, any take of yelloweye rockfish from fishing activities, in addition to natural mortality, will change the balance of predator/prey relationships and the ecosystem functioning. The magnitude of change on predator and prey availability is difficult to determine. The indirect impacts, while predicted to be minimal, would vary from most to least impacts as follows: "36° to Mexico" alternative (most), "34°27' to Mexico" alternative (preferred alternative), "36° to 34°27' " alternative, and the status quo alternative (least). The differences between the alternatives driving the indirect impacts is related to the amount of area that would open up to commercial fixed gear and recreational fisheries. However, indirect impacts of all of the alternatives on yelloweye rockfish are predicted to be minimal because the impacts would occur outside of the range where yelloweye rockfish are most prevalent.

The cumulative effects of the biological and habitat impacts (see Section 4.2 for habitat impacts) of all of the alternatives, in addition to all of the management measures for groundfish in 2003 as discussed in the 2003 Specs EIS, and all past and foreseeable future actions, are predicted to have a minimal impact because of the limited area proposed to open to fishing and because the stock will continue to be managed to rebuild to sustainable population levels. While in the past, yelloweye rockfish has been subject to adverse impacts from fishing that have driven the stock to an overfished status, present and future actions are intended to rebuild the stock while relieving some economic pressure on the fishing industry. Yelloweye rockfish is managed within rebuilding parameters (Table 4) that ensure that the stock grows in size until it is at a sustainable biomass, or B_{MSY}.

4.1.1.6 Impacts on Widow Rockfish

Although widow rockfish is an overfished species that co-occurs with bocaccio, these species are caught in the prosecution of different fisheries. Widow rockfish is a pelagic, shelf species and is primarily caught by trawl gear. For 2003, there is a commercial non-trawl and recreational fishery for widow rockfish. In the commercial fishery south of 40°10' N. lat., the limited entry fixed gear fisheries have a trip limit of 300 lb per month for minor shelf species including widow rockfish, while the open access non-trawl fisheries have trip limits of between 100 and 250 lb per month for minor shelf species including widow rockfish

during the rest of the year. For the recreational fishery, widow rockfish is included in the Rockfish, Cabezon, Greenling Complex (RCG Complex) south of 40°10' N. lat. which has a bag limit of 10 RCG Complex fish per day and a gear restriction of 2 hook and one line. The recreational fishery is open from July through December. Taking into account this information, the direct effect of the status quo alternative on estimated mortality of widow rockfish in southern California, south of 40°10' N. lat., for 2003 is 0 mt (0 mt from southern CA recreational fisheries plus 0 mt from commercial fixed gear (limited entry and open access) fisheries coastwide). Adding this estimated mortality into the estimated mortality for all other sectors and fisheries that intercept groundfish on the West Coast, 269 mt out of a 832 mt OY are predicted to be taken. Thus, the predicted widow rockfish take is 563 mt under the OY for 2003 and is, therefore, minimal.

The direct effect of the "36° to Mexico" alternative on estimated mortality of widow rockfish in southern California, south of 40°10' N. lat., for 2003 is 1.6-4.8 mt (3.2 mt[4/] from southern CA recreational fisheries plus 1.6 mt from commercial fixed gear (limited entry and open access) fisheries coastwide). Adding this estimated mortality into the estimated mortality for all other sectors and fisheries that intercept groundfish on the West Coast, 273.8 mt out of a 832 mt OY are predicted to be taken. Thus, the estimated widow rockfish take under the "36° to Mexico" alternative is 558.2 mt under the OY for 2003 and is, therefore, minimal.

The direct effect of the "36° to 34°27' " alternative on estimated mortality of widow rockfish in southern California, south of 40°10' N. lat., for 2003 is 1.6-4.8 mt (3.2 mt[4/] from southern CA recreational fisheries plus 1.6 mt from commercial fixed gear (limited entry and open access) fisheries coastwide). Adding this estimated mortality into the estimated mortality for all other sectors and fisheries that intercept groundfish on the West Coast, 273.8 mt out of a 832 mt OY are predicted to be taken. Thus, the estimated widow rockfish take under the "36° to 34°27' " alternative is 558.2 mt under the OY for 2003 and is, therefore, minimal.

The direct effect of the "34°27' to Mexico" alternative (preferred alternative) on estimated mortality of widow rockfish in southern California, south of 40°10' N. lat., for 2003 is 0-0.01 mt (0 mt from southern CA recreational fisheries plus only trace amounts (<0.01 mt) from commercial fixed gear (limited entry and open access) fisheries coastwide). Adding this estimated mortality into the estimated mortality for all other sectors and fisheries that intercept groundfish on the West Coast, ~269 mt out of a 832 mt OY are predicted to be taken. Thus, the predicted widow rockfish take under the "34°27' to Mexico" alternative is ~563 mt under the OY for 2003 and is, therefore, minimal.

As mentioned in Section 3.1.1.6, adult widow rockfish form dense, irregular, midwater and semi-demersal schools deeper than 100 m (55 fm) at night and disperse during the day (Eschmeyer *et al.* 1983, NOAA 1990, Wilkins 1986). All life stages are pelagic, but older juveniles and adults are often associated with the bottom (NOAA 1990). While widow rockfish are pelagic and primarily occur in waters deeper than 30 fm, there are impacts from allowing recreational and commercial fixed gear fishing in waters less than 30 fm.

In addition to direct effects, there are likely indirect effects as well, including changes in predator/prey relationships. As mentioned in section 3.1.1.6, widow rockfish are carnivorous. Adults feed on small pelagic crustaceans, midwater fishes (such as age-one or younger Pacific whiting), salps, caridean shrimp, and small squids (Adams 1987; NOAA 1990). During spring, the most important prey item is salps, during the fall fish are more important, and during the winter widow rockfish primarily eat sergestid

4/ Recreational catch by depth data not available for this species between 36° N. lat. and 34°27' N. lat. Recreational estimates for this species are estimated for total catch during September through December for all depths, not just the 21-30 fm depth range. Therefore, the estimated mortality for this species for the "36° to Mexico" and "36° to 34°27' " Alternatives is high because it includes estimates from depths other than just 21-30 fm.

shrimp (Adams 1987). Feeding is most intense in the spring after spawning (NOAA 1990). Pelagic juveniles are opportunistic feeders, and their prey consists of various life stages of calanoid copepods, and euphausiids (Reilly *et al.* 1992). Predator/prey relationships, like the ecosystem on which they depend, are always in flux. Thus, any take of widow rockfish from fishing activities, in addition to natural mortality, will change the balance of predator/prey relationships and the ecosystem functioning. The magnitude of change on predator and prey availability is difficult to determine. The indirect impacts, while predicted to be minimal, would vary from most to least impacts as follows: "36° to Mexico" alternative (most), "34°27' to Mexico" alternative (preferred alternative), "36° to 34°27' " alternative, and the status quo alternative (least). The differences between the alternatives driving the indirect impacts is related to the amount of area that would open up to commercial fixed gear and recreational fisheries. However, indirect impacts of all of the alternatives on widow rockfish are predicted to be minimal because the impacts would primarily occur outside of the range where widow rockfish are most prevalent.

The cumulative effects of the biological and habitat impacts (see Section 4.2 for habitat impacts) of all of the alternatives, in addition to all of the management measures for groundfish in 2003 as discussed in the 2003 Specs EIS, and all past and foreseeable future actions, are predicted to have a minimal impact because of the limited area proposed to open to fishing and because the stock will continue to be managed to rebuild to sustainable population levels. While in the past, widow rockfish has been subject to adverse impacts from fishing that have driven the stock to an overfished status, present and future actions are intended to rebuild the stock while relieving some economic pressure on the fishing industry. Widow rockfish is managed within rebuilding parameters (Table 5) that ensure that the stock grows in size until it is at a sustainable biomass, or B_{MSY}.

4.1.2 Impacts on Other Groundfish Species

The direct biological impacts on other groundfish species of all of the alternatives are predicted to be minimal and remain within the 2003 OY set for those species as a sustainable harvest level, and are minimal. Any indirect and cumulative impacts that might occur are also predicted to be minimal because other groundfish species will continue to be managed at sustainable levels and the various areas that might open to fishing opportunity are a minor part of the range that these species inhabit. For a more detailed description, see Sections 4.2.1.2 and 4.2.1.3 of the 2003 Specs EIS.

4.1.3 Impacts on Nongroundfish Fish Species

Nongroundfish fish species are minimally affected by direct, indirect, and cumulative changes in the groundfish fisheries resulting from any of the alternatives because take of these species is only incidental in groundfish fisheries and the area available to fishing for open access groundfish fishery participants targeting nongroundfish species only covers part of that range that these species inhabit. For a more detailed description of nongroundfish fisheries that incidentally take groundfish and on the species they target, see Section 4.2.2 of the 2003 Specs EIS.

4.1.4 Impacts on Protected Species

There is limited information documenting the interactions of groundfish fisheries and marine mammals, seabirds and sea turtles, but they are all potentially affected by many aspects of groundfish fisheries. The incidental take of marine mammals, defined as any serious injury or mortality resulting from commercial fishing operations, is reported to NMFS by vessel operators. In the West Coast groundfish fisheries, incidental take is infrequent and primarily occurs in trawl fisheries (Forney *et al.* 2000). Additional effects of groundfish fisheries on marine mammals are more difficult to quantify due to a lack of behavioral and ecological information about marine mammals. However, marine mammals may be indirectly affected by

increased noise in the oceans, change in prey availability, habitat changes due to fishing gear, vessel traffic in and around important habitat (i.e., areas used for foraging, breeding, raising offspring, or hauling-out), at-sea garbage dumping, and diesel or oil discharged into the water associated with commercial fisheries. Based on NMFS annual list of fisheries, the incidental take of marine mammals in the West Coast groundfish fisheries is predicted to minimally effect marine mammal stocks. All alternatives are predicted to have a minimal direct effect on either resident, transient, or ESA-listed marine mammal species because fixed gear and recreational fisheries have minimal to no take of marine mammals. Indirect effects are also predicted to have minimal effect on marine mammals because the magnitude of the proposed action is small compared to the affected marine mammal population and range.

Interactions between seabirds and fishing operations are wide-spread and have led to conservation concerns in many fisheries throughout the world. Abundant food in the form of offal (discarded fish and fish processing waste) and bait attract birds to fishing vessels. Of the gear used in the groundfish fisheries on the West Coast, seabirds are occasionally taken incidentally by trawl and pot gear, but they are most often taken by longline gear. Around longline vessels, seabirds forage for offal and bait that has fallen off hooks at or near the water's surface, and are attracted to baited hooks near the water's surface, during the setting of gear. If a bird becomes hooked while feeding on bait or offal, it can be dragged underwater and drowned. Of the incidental catch of seabirds by longline groundfish fisheries in Alaska, northern fulmars represented about 66% of the total estimated catch of all bird species, gulls contributed 18%, Laysan albatross 5%, and black-footed albatross about 4% (Stehn *et al.* 2001). Longline gear and fishing strategies in Alaska are similar to some, but not all, of those used in Washington, Oregon, and California (WOC) longline fisheries. Besides entanglement in fishing gear, seabirds may be indirectly affected by commercial fisheries in various ways. Change in prey availability may be linked to directed fishing and the discarding of fish and offal. Vessel traffic may affect seabirds when it occurs in and around important foraging and breeding habitat and increases the likelihood of bird storms. In addition, seabirds may be exposed to at-sea garbage dumping and the diesel and oil discharged into the water associated with commercial fisheries. All alternatives are predicted to have only minimal direct effects on seabird species, including any ESA-listed seabird species. While seabirds may be taken incidentally in longline and other hook and line fisheries in southern California, low harvest opportunities for groundfish are not predicted to draw new entrants into the fishery. Thus, the direct effects of the proposed action on seabirds of opening up additional area to harvest of groundfish with fixed gear should be approximately the same as the status quo alternative or slightly increased due to additional area open to fishing. Increased area open to fishing may increase the interactions with seabirds. Indirect effects are also predicted to have a minimal effect on seabirds because the magnitude of the proposed action is small compared to the affected seabird population and range.

Sea turtles are known to be taken incidentally by the California-based pelagic longline fleet and the California halibut gillnet fishery. Because of gear and fishing strategies differences between those fisheries and the groundfish fisheries, the predicted take of sea turtles by groundfish gear is minimal. In addition to being incidentally taken in fishing gear, turtles are vulnerable to collisions with vessels and can be killed or injured when struck, especially if struck with an engaged propeller. Entanglement in abandoned fishing gear can also cause death or injury to sea turtles by drowning or loss of a limb. The discard of garbage at sea can be harmful for sea turtles, because the ingestion of such garbage may choke or poison them. Sea turtles have ingested plastic bags, beverage six-pack rings, Styrofoam, and other items commonly found aboard fishing vessels. The accidental discharge of diesel and oil from fishing vessels may also put sea turtles at risk, as they are sensitive to chemical contaminates in the water. All alternatives are predicted to have a minimal direct effect on any sea turtle species, including any ESA-listed sea turtle species because commercial fixed gear and recreational gear used in groundfish fisheries have minimal to no take of sea turtles. Indirect effects are also predicted to have a minimal effect on sea turtles because the magnitude of the proposed action is small compared to the affected sea turtle population and range.

As the West Coast Groundfish Observer Program collects more information about the effects of the West

Coast groundfish fishery on marine mammals, seabirds and sea turtles, additional management measures may be taken to mitigate the effects of the fisheries on protected species, if necessary.

Cumulative impacts to protected species result from the combination of past, present and future direct and indirect impacts of management measures combined with the effects of other activities. A variety of human activities affect protected species and contribute to their listing under relevant laws. These effects include habitat loss and the direct effects of marine activities not related to fishing, such as vessel traffic and at-sea dumping and discharges. As with ecosystem and habitat impacts, cumulative effects cannot be distinguished among the alternatives except in relation to the intensity of direct and indirect impacts. In general, cumulative effects are predicted to vary from most to least impacts as follows: “36° to Mexico” alternative (most), “34°27' to Mexico” alternative (preferred alternative), “36° to 34°27' “ alternative, and the status quo alternative (least/effects neutral). The differences between the alternatives driving the cumulative effects is related to the amount of area that would open up to commercial fixed gear and recreational fisheries. However, because harvest opportunity is not increasing along with the additional area opening up, the cumulative effects are predicted to be minimal.

4.2 Impacts on Habitat

The impacts on habitat of the status quo alternative are described in the more detail in Section 4.1.1 of the 2003 Specs EIS. Summarizing from that EIS, the status quo alternative does have some effect on the environment and habitat, however, these effects are reduced from historic levels due to lower trip limits, depth based restrictions (closed areas), and seasonal closures on the groundfish fishery. The proposed action analyzed in this EA and the alternatives developed will also have some effect on the environment and habitat due to various sizes of increased area opening up to fishing between 20 and 30 fathoms in southern California. As shown in Table 16 at the beginning of Section 4, the “36° to Mexico” Alternative opens up the greatest area to groundfish fishing (~465 sq. miles), the “34°27' to Mexico” Alternative (preferred alternative) is next with ~325 sq. miles, followed by the “36° to 34°27' “ Alternative with 140 sq. miles, and finally the status quo alternative would not open any additional area up to fishing. Even with these various sizes of ocean opening to fishing, the direct, indirect and cumulative effects of all of the alternatives is still predicted to be minimal because these effects would still be reduced from historic levels (i.e., there are still large closed areas protecting ocean habitat from groundfish fishing) and because commercial fixed gear and recreational gear which are proposed to be used in the areas opening up generally do not cause extensive damage to habitat.

4.3 Socioeconomic Impacts

The distribution, low spawning biomass, and particularly low productivity of bocaccio has posed the largest constraints on fisheries south of 40°10' N. lat. (Cape Mendocino) in 2003. While the proposed action does not change the amount of fish that can be harvested (i.e., does not change trip limits, bag limits or OYs), it does propose to increase the areas that can be fished. The direct effects of the alternatives on the socioeconomic environment thus stem from the effects of opening up an additional 10 fm area to fishing in southern California. The assumption is made that more area available to fishing equals more revenue. Both the commercial and recreational sectors would benefit from all three alternatives except for status quo. The benefit, in qualitative terms, is from the increased area available to fishing. By increasing the area available to fishing, there is predicted to be less effort concentrated in the nearshore inside 20 fm. Reducing this effort concentration is predicted to slightly increase safety due to less competition for space. There is also predicted to be some economic relief on the commercial and recreational fleets by increasing the areas available to be fished. In addition, indirect effects on buyers and support businesses are predicted to benefit from the increased area, proportional to the benefits received by the commercial and recreational fleets. Among the alternatives, Table 16 at the beginning of Section 4, the “36° to Mexico” Alternative opens up the greatest area to groundfish fishing (~465 sq. miles), the “34°27' to Mexico”

Alternative (preferred alternative) is next with ~325 sq. miles, followed by the “36° to 34°27' “ Alternative with 140 sq. miles, and finally the status quo alternative would not open any additional area up to fishing.

The commercial non-trawl sector consists of both the limited entry and open access non-trawl fisheries. The majority of the limited entry non-trawl effort occurs north of 36° N. lat. and is tied with the primary sablefish fishery. The sablefish fishery is a high value fishery which occurs primarily off Washington and Oregon. Therefore, the alternatives are predicted to have a minimal socioeconomic impact on the limited entry non-trawl fisheries aside from some positive benefits of allowing additional area open to fishing. Open access non-trawl effort in southern California, on the other hand, is relatively high in proportion to open access effort along the coast. The number of vessels that participated in the open access fishery and made more than 5% of their revenue from groundfish landed into ports south of approximately 36° N. lat. (south of San Simeon, CA) is 234 out of 771 vessels coastwide (Washington, Oregon and California), or roughly 30% (Table 14). However, the alternatives are also predicted to have a minimal socioeconomic impact on the commercial open access non-trawl fleet because only a small area, between 140 and ~465 sq. miles, would open to fishing.

As shown in Tables 6 and 7, most of the recreational activity on the West Coast is in California, especially southern California. California has roughly 1.7 million out of the 2.5 million anglers on the West Coast participating in the recreational fishery (Table 6). In 2001, southern California has 577,000 out of 927,000 angler trips coastwide from charter boats and 1,757,000 out of 2,886,000 angler trips coastwide from private boats (Table 7). Of these angler trips, groundfish catch occurred on 35% of the charter trips (204,000 out of 577,000 trips) and 14% of the private trips (252,000 out of 1,757,000 trips). While there will be socioeconomic benefits from any of the alternatives under the proposed action, the alternatives are predicted to have a minimal socioeconomic impact on the recreational sector because only a small area, between 140 and ~465 sq. miles, would open to fishing.

For the nongroundfish fisheries, opening up an extra 10 fm of that area is predicted to benefit other nongroundfish fisheries, like salmon troll and California set gillnet fisheries. These fisheries will benefit from the increased area to retain incidental catch of groundfish. Species other than groundfish are not under the management authority of the Groundfish FMP and therefore not the focus of this EA.

In general, the direct, indirect and cumulative socioeconomic effects of the alternatives are predicted to vary from most to least negative effects among the alternatives in the following order: status quo alternative (most), “36° to 34°27' “ alternative, “34°27' to Mexico” alternative, and “36° to Mexico” alternative (least/effects neutral). The differences between the alternatives driving the effects is related to the amount of area that would open up to commercial fixed gear and recreational fisheries. However, because harvest opportunity is not increasing along with the additional area opening up, the effects are predicted to be minimal and, therefore, not significant.

4.4 Unavoidable Adverse Impacts (on all resources)

The proposed action represents a tradeoff between different adverse effects, balancing short-term resource and socioeconomic impacts against long-term sustainability of those resources. Thus, although a given adverse effect may be avoided, it may be at the expense of incurring some other effect. All of the alternatives would likely incur the following adverse effects even if mitigation measures are implemented.

The risk or likelihood that certain fish stocks will not recover or decline further: Rebuilding analyses model the probability of stock recovery for a given harvest policy. The Council follows a risk-averse policy in that harvest policies have a greater than 50% probability of recovery within the maximum specified time period (T_{MAX}). But this means there is some likelihood, albeit less than 50%, of stocks not recovering.

The risk that total fishing mortality could exceed the OY for one or more species: For species with low OYs, inaccurate total catch data, or data that is not available to managers in time, could result in total catch exceeding OYs. Managers would not have the necessary information in time to close fisheries or impose other management measures to prevent such an overage. This is especially a problem with recreational catch information.

The risk that OY values will be met early in the year: Even with the restrictive management measures developed for the 2003 season, there is some chance the harvest specification for one or more species may be met before the end of the fishing year. For critical overfished species, such as bocaccio, the OY values are so low relative to possible landings that fisheries may have to be closed. If a fishery is closed for most of the year, firms may go out of business, may not be able to find the necessary skilled labor when they eventually reopen, or for charter boat fisheries, may lose their clientele.

4.5 Relationship of Short-Term Uses and Long-Term Productivity (on all resources)

Short-term uses generally affect the present quality of life for the public, in contrast to long-term productivity, which affects the quality of life for future generations, based on environmental sustainability. The proposed action indirectly affects the sustainability of marine resources by allowing fishing in an area that was previously closed. However, while there is predicted to be additional take of groundfish associated with opening this area, the additional take of groundfish, including overfished species, is predicted to be within sustainable levels of harvest. This represents a tradeoff between short-term benefits, reflected in revenue generated from fishing in 2003, and long-term productivity of fish stocks, which determines the abundance of fish in the future, and thus future harvests. Managers must respond to changes in resource status, whether as a result of harvests or other environmental factors– this requires effective monitoring of total fishing mortality. A better understanding of the role environmental and ecological factors play in affecting stock productivity would also enhance managers' ability to predict future stock response to current harvest levels. The proposed action in this EA is tied to the annual groundfish management cycle. Annual management is based on the framework in the FMP, which dictates how harvest control rules and management measures should be set in order to produce sustainable harvests over the long term. While harvests in any one year affect long-term productivity, they are part of an ongoing activity, fishing over many years, that cumulatively affect productivity.

4.6 Irreversible and Irretrievable Commitments of Resources (on all resources)

An irreversible commitment represents some permanent loss of an environmental attribute or service. The use of non-renewable resources are irreversible; unsustainable renewable resource use may be irreversible if future production is permanently reduced or, at the extreme, is extinguished.

The use of non-renewable energy resources, such as fossil fuel, represents a pervasive irreversible commitment associated with the proposed action, because fishing vessels are mechanically powered.

The proposed action, however, does not by itself represent an irreversible commitment, because harvest levels are specified and management measures set on an annual basis and adjusted through inseason actions throughout the year. Cumulatively, past, current, and future specifications have resulted in an irreversible commitment if the time necessary for overfished stocks to recover is considered so long as to be irreversible.

A resource is irretrievably committed if its use is lost for time, but is not actually or practically lost permanently. The analysis of direct, indirect and cumulative impacts in Chapter 4 generally describes irretrievable resource commitments and in the case of renewable resources these parallel the tradeoff between short-term use and long-term productivity. All of the alternatives would allow fishing in an area

previously closed within the previously announced harvest specifications for 2003. The fish that are harvested in this area represent an irretrievable resource commitment, as do the inputs in terms of capital and labor (including energy and resources) needed to harvest and market these fish.

5 DETERMINATION OF A PREFERRED ALTERNATIVE

NMFS has chosen the "34°27' N. lat. to Mexico" alternative as the preferred alternative by examining which alternative would provide some economic relief to the commercial non-trawl and recreational fleets, with minimal impacts to overfished species prevalent in this area, namely bocaccio and canary rockfish. The agency has reviewed how additional harvest of overfished species would change depending on which alternative was selected (this analysis appears in Section 4.1). Because of the new science for bocaccio that indicates a modest increase in bocaccio harvest in 2003 should not interfere with stock rebuilding and because of the severe restrictions commercial non-trawl and recreational fisheries in southern California are experiencing, the Pacific Council recommended to NMFS to use the knowledge of the improved bocaccio forecast as a means to relieve restrictions on southern California fisheries without additional risk to the status of the stock. NMFS contemplated all of the alternatives for this EA. For bocaccio, there was not a large difference between the "34°27' N. lat. to Mexico" alternative and the "36° N. lat. to Mexico" alternative. While the "36° N. lat. to 34°27' N. lat." alternative has the least biological impact on bocaccio, the agency concurred with CDFG's preference to provide economic relief to commercial non-trawl and recreational fishers in the southern end of the area. Opening the area between 20 and 30 fm in the more southern end of the area would provide more relief because there are more fishery participants in that area. The agency then considered what has become the more constraining species, canary rockfish, since bocaccio abundance is projected to be higher than previously expected. Between the two alternatives, the "34°27' N. lat. to Mexico" alternative and the "36° N. lat. to Mexico" alternative, the predicted take of canary from the "36° N. lat. to Mexico" alternative is too high. Thus, the agency chose the "34°27' N. lat. to Mexico" alternative as the preferred alternative. The preferred alternative meets the purpose of and need for action by providing some economic relief to southern California fishermen while keeping harvest of groundfish stocks at sustainable levels.

The environmentally preferred alternative would be the status quo alternative. The status quo alternative is more environmentally conservative because it does not open up additional area to fishing. Thus, it is more likely to protect habitat and possibly minimize interception of overfished species, like bocaccio and canary rockfish.

6 FINDING OF NO SIGNIFICANT IMPACT

To determine the significance of the action analyzed in this EA, NMFS is required by NEPA, 40 CFR 1508.27 and NOAA Administrative Order 216-6 Section 6.02 to consider the context and intensity of the proposed action. Based on the EA, review of the National Environmental Policy Act (NEPA) criteria for significant effects, and my knowledge of the predicted impacts, I have determined that the actions to be implemented would not have a significant effect upon the quality of the human environment. Therefore, preparation of an EIS on the final action is not required under Section 102(2)(c) of the NEPA, its implementing regulations (40 CFR Part 1500-1508), or NOAA/NMFS environmental review procedures (NAO 216-6). This determination is based on the following factors from CEQ's implementing regulations at 1508.27 and from NAO 216-6 Section 6.02:

1) In reaching my conclusion of no significant impacts, I recognize that there are both beneficial and adverse impacts of this project as discussed in Section 4.0. However, none of the impacts associated with the proposed actions were significant.

2) The proposed action does not significantly affect public health or safety as discussed in

Section 4.3. Fishing itself is a dangerous occupation. However, safety regulations for boat and fishing operations are mandated by state and federal agencies. Fishing regulations are developed in consultation with these agencies in order to ensure they are compatible with the safety regulations. The proposed action assumes these safety regulations will continue. In addition, the proposed action opens an additional 10 fm of ocean to fishing, thus, slightly reducing effort concentration in the nearshore and the chances of accidents.

3) There are no significant effects to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas as a result of the proposed action, including the preferred alternative. Further, this action will not cause loss or destruction of significant scientific, cultural, or historical resources.

4) The effects on the human environment detailed in Section 3.0 and 4.0 of the EA are non-controversial. As discussed in Section 1.5, NMFS and the Council conducted public scoping soliciting information from the public at the June Council meeting on the public's concerns with the proposed actions. NMFS and the Council did not receive comments indicating the public viewed the potential impacts of the proposed actions to be controversial.

5) The degree to which effects on the human environment are highly uncertain or involve unique or unknown risks is limited to the inherent uncertainties in fisheries science and management. Uncertainties and risks exist in stock assessments due to the mobile nature of fish stocks being difficult to quantify. Uncertainties and risk also exist in the rebuilding analysis for overfished species, which is tied to the uncertainties and risk in stock assessments and fisheries science, in general. Uncertainties and risk exist in fisheries management to the degree that the cumulative effects of management decisions and their socioeconomic ramifications are difficult to quantify. Uncertainties and risk are reduced by cross referencing data from different sources, including stock assessments, fish landing receipts, logbooks and observer data. In addition, uncertainties and risk are reduced in management decisions by applying precautionary adjustments to the ABCs for groundfish species, resulting in harvest levels that are risk averse. Although, uncertainty and risk exist as a part of this action, the degree to which they exist is not predicted to have a significant impact on the resource.

6) The proposed action will not establish a precedent for future actions with significant effects, nor does it represent a decision in principle about future considerations. The action implements a new management line at 30 fm in southern California, while this line may be used for management in 2004 and beyond, the line may extend beyond southern California and will be analyzed in another NEPA document (either an EA or an Environmental Impact Statement, as appropriate). The line implemented through this proposed action will only be in effect September 1 through December 31, 2003.

7) The proposed actions will not result in individually insignificant but cumulatively significant impacts on the environment, as discussed in Section 4.

8) This action will not significantly adversely affect endangered or threatened species, marine mammals or critical habitat as discussed in Sections 4.1.4, 4.2 and 7.3-7.5.

9) This action does not violate Federal, State or local law or requirements imposed for protection of the environment. The major laws identified with the implementation of the proposed action are the Endangered Species Act, Marine Mammal Protection Act, Coastal Zone Management Act, Paperwork Reduction Act, Executive Order 12866, Executive Order 13175, Migratory Bird Treaty Act and Executive Order 13186, Executive Order 12898 and Executive Order 13132. The conformance of the action with these laws is discussed in Section 7 of this EA.

10) The proposed action will not result in the introduction or spread of a non-indigenous species because most, if not all fishing activity will be from vessels local to southern California. The spread of non-indigenous species by vessels has primarily been from the ballast of larger vessels traveling from outside destinations that did not exchange their ballast water at sea or from smaller, private vessels that are moved by trailer to various lakes, rivers, estuaries, etc. and act as a pathway for non-indigenous species.

11) The proposed action is not predicted to jeopardize the sustainability of any target or non-target species that may be affected by the proposed actions, as discussed in Section 4.1.

12) The proposed action is not predicted to affect or cause substantial damage to the ocean and coastal habitats and/or essential fish habitat as defined under the Magnuson-Stevens Act and identified in FMPs, and as discussed in Sections 4.2 of the EA.

13) The proposed action is not predicted to have a substantial impact on biodiversity and ecosystem function within the affected area (e.g., predator-prey relationships, etc) as discussed in Sections 4.1 of the EA.

14) The proposed action is not predicted to have significant social or economic impacts tied to any natural or physical environmental effects as discussed in Sections 4 and 7 of this EA or identified through public scoping.

I request your concurrence in this determination by signing below.

1. I concur._____.
Date

2. I do not concur._____.
Date

7 OTHER APPLICABLE LAW

7.1 Consistency with the Groundfish FMP

The Groundfish FMP goals and objectives are listed below. The way in which the proposed action addresses each objective is briefly described in italics below the relevant statement.

Management Goals.

Goal 1 - Conservation. Prevent overfishing by managing for appropriate harvest levels and prevent any net loss of the habitat of living marine resources.

Goal 2 - Economics. Maximize the value of the groundfish resource as a whole.

Goal 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.

Objectives. To accomplish these management goals, a number of objectives will be considered and followed as closely as practicable:

Conservation.

Objective 1. Maintain an information flow on the status of the fishery and the fishery resource which allows for informed management decisions as the fishery occurs.

All alternatives, including the preferred alternative, employ the same data sources that have been used in past years to monitor groundfish fisheries, with the addition of observer data for commercial fisheries.

Objective 2. Adopt harvest specifications and management measures consistent with resource stewardship responsibilities for each groundfish species or species group.

The preferred alternative, "34°27' to Mexico" Alternative, adopts a management measure that supports rebuilding of overfished and precautionary stocks and sustainable harvest of healthy stocks. While this alternative does estimate that the OY for bocaccio, an overfished species, will be exceeded as a result of this action, a new stock assessment on bocaccio in 2003 shows a larger biomass and increased productivity of the stock than previously thought. Based on this new information, exceeded the OY by an estimated 2 mt will not have a adverse impact on the status of the stock and, therefore, complies with this objective. The other action alternatives fall within the management framework, but represent different tradeoffs between overfishing risk and socioeconomic impacts. The "36° to Mexico" Alternative would not meet this objective because it would allow the fisheries to exceed the canary rockfish OY with no new information to support that exceedance.

Objective 3. For species or species groups which are below the level necessary to produce maximum sustainable yield (MSY), consider rebuilding the stock to the MSY level and, if necessary, develop a plan to rebuild the stock.

All of the alternatives propose a management measure that is within the parameters of rebuilding for overfished stocks. Since the proposed action does not change the OY for any species, harvest levels that were analyzed in the 2003 Specs EIS are still effective. Harvest levels set in 2003 for overfished species were risk averse (in that the probability of rebuilding within the specified time frame is greater than 50%). Previously, the rebuilding analysis for bocaccio estimated that even in the absence of fishing, a "risk neutral" management strategy could not be achieved. A new stock assessment and rebuilding analysis released in May 2003 show a much larger biomass and higher productivity of bocaccio than previously expected. The result is a much shorter rebuilding time for bocaccio. The additional mortality of bocaccio from the alternatives is not predicted to pose a risk to the southern stock of bocaccio.

Objective 4. Where conservation problems have been identified for nongroundfish species and the best scientific information shows the groundfish fishery has a direct impact on the ability of that species to maintain its long-term reproductive health, the Council may consider establishing management measures to control the impacts of groundfish fishing on those species. Management measures may be imposed on the groundfish fishery to reduce fishing mortality of a nongroundfish species for documented conservation reasons. The action will be designed to minimize disruption of the groundfish fishery, in so far as consistent with the goal to minimize the bycatch of nongroundfish species, and will not preclude achievement of a quota, harvest guideline, or allocation of groundfish, if any, unless such action is required by other applicable law.

None of the alternatives include new measures intended to control the impacts of groundfish fishing on nongroundfish stocks.

Objective 5. Describe and identify essential fish habitat (EFH), adverse impacts on EFH, and other actions to conserve and enhance EFH, and adopt management measures that minimize, to the extent practicable, adverse impacts from fishing on EFH.

All alternatives, except for the status quo alternative, are likely to increase impacts on EFH to the degree that additional area of the ocean is available to groundfish fishing with non-trawl gear. However, beginning in 2003, large closed areas were adopted coastwide affecting all sectors of the groundfish fishery to protect overfished groundfish stocks and their habitat. The proposed action will only open an additional 10 fm of ocean to fishing in southern California.

Economics.

Objective 6. Attempt to achieve the greatest possible net economic benefit to the nation from the managed fisheries.

The proposed action is intended to provide some economic relief to the severely constrained southern California fisheries without posing additional risk to overfished species. Of the alternatives, all, except for the "36° to Mexico" Alternative, do not pose a risk to overfished species. Among the remaining alternatives, the preferred alternative (34°27' to Mexico) was predicted to provide the greatest possible net economic benefit to the nation because it opens up the largest area of ocean. By opening this area to fishing, there is a larger area for fishermen to access and therefore, more possible economic benefit to fishermen. Future best use of resources (in terms of economic return), which would predicate future allocation decisions, cannot be predicted. However, all of the alternatives, except for the "36° to Mexico" Alternative, fall within the management framework intended to achieve maximum sustained yield over the long term. This gives greater latitude for future decision making to achieve maximum economic net benefit.

Objective 7. Identify those sectors of the groundfish fishery for which it is beneficial to promote year-round marketing opportunities and establish management policies that extend those sectors' fishing and marketing opportunities as long as practicable during the fishing year.

All of the alternatives are intended to allow commercial fisheries year-round access, bearing in mind that individual fisheries are seasonally constrained. For the recreational sector, the fishery was constrained to 6 months in 2003 (July-December) to keep harvest within the OY for overfished species. Given low harvest specifications for some overfished species, actual harvests may result in early attainment of an OY for a species, necessitating the closure of that fishery and any fisheries for co-occurring species.

Objective 8. Gear restrictions to minimize the necessity for other management measures will be used whenever practicable.

No new gear restrictions are proposed for groundfish fisheries under any of the alternatives.

Utilization.

Objective 9. Develop management measures and policies that foster and encourage full utilization (harvesting and processing) of the Pacific Coast groundfish resources by domestic fisheries.

There has been no foreign fishing on the West Coast for more than a decade, so all of the alternatives meet this objective.

Objective 10. Recognizing the multispecies nature of the fishery and establish a concept of managing by species and gear or by groups of interrelated species.

All of the alternatives deal with depth-based management for all groundfish species by gear type and , therefore, recognize and manage based on the multispecies nature of the fishery.

Objective 11. Strive to reduce the economic incentives and regulatory measures that lead to wastage

of fish. Also, develop management measures that minimize bycatch to the extent practicable and, to the extent that bycatch cannot be avoided, minimize the mortality of such bycatch. In addition, promote and support monitoring programs to improve estimates of total fishing-related mortality and bycatch, as well as those to improve other information necessary to determine the extent to which it is practicable to reduce bycatch and bycatch mortality.

Depth-based restrictions, like those proposed in the alternatives, are meant to reduce bycatch of overfished species by prohibiting fishing that generates significant bycatch in areas where these species are most abundant. While the proposed action may increase bycatch by opening 10 fm of the ocean to fishing, large depth-based closures will remain in place that are predicted to minimize bycatch from historical levels. Among the alternatives, the status quo alternative is predicted to reduce bycatch the most among the alternatives because it does not open an additional 10 fm to fishing in southern California. In addition, the Observer Program implemented in 2001 will continue to provide better estimates of total fishing-related mortality and bycatch than currently available.

Objective 12. Provide for foreign participation in the fishery, consistent with the other goals to take that portion of the optimum yield (OY) not utilized by domestic fisheries while minimizing conflict with domestic fisheries.

This objective is no longer relevant since all stocks are fully utilized by domestic fishers.

Social Factors.

Objective 13. When conservation actions are necessary to protect a stock or stock assemblage, attempt to develop management measures that will affect users equitably.

The Council process facilitates input from resource user groups, state and federal agencies, and the general public. This promotes the formulation of equitable management measures.

Objective 14. Minimize gear conflicts among resource users.

Depth-based restrictions may increase crowding in nearshore areas, increasing gear conflicts. All of the alternatives, except the status quo alternative, will allow an additional 10 fm of ocean open to fishing in southern California. This additional 10 fm should slightly reduce any gear conflicts in the southern California nearshore.

Objective 15. When considering alternative management measures to resolve an issue, choose the measure that best accomplishes the change with the least disruption of current domestic fishing practices, marketing procedures, and the environment.

All of the alternatives will not disrupt current fishing practices, marketing procedures or the environment because they simply open an additional 10 fm of the ocean to fishing in southern California.

Objective 16. Avoid unnecessary adverse impacts on small entities.

None of the alternatives will adversely impact small entities. All alternatives, except for status quo, will allow additional area for fishing by southern California fishermen fishing with non-trawl gear. These alternatives allow additional area for fishing for small and large entities alike.

Objective 17. Consider the importance of groundfish resources to fishing communities, provide for the sustained participation of fishing communities, and minimize adverse economic impacts on fishing communities to the extent practicable.

All of the alternatives, except status quo, are intended to provide economic relief to non-trawl fishers in southern California. Of the reasonable alternatives, those that do not pose a risk to overfished groundfish species, the preferred alternative (34°27' to Mexico) provides the greatest benefit to fishing communities by opening the largest area to fishing.

Objective 18. Promote the safety of human life at sea.

The alternatives may promote safety by allowing additional area in the nearshore open to fishing, thus slightly reducing crowding of vessels.

7.2 Consistency with Magnuson-Stevens Act National Standards

An FMP or plan amendment and any pursuant regulations must be consistent with ten national standards contained in the Magnuson-Stevens Act (§301). These are:

National Standard 1 states that conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

The preferred alternative, "34°27' to Mexico" Alternative, and all of the other alternatives adopt a management measure that is intended to prevent overfishing while achieving the OY on a continuing basis. The preferred alternative does estimate that the OY for bocaccio, an overfished species, will be exceeded by 2 mt as a result of this action. However, this brings the total estimated mortality of bocaccio in 2003 to 21.72 mt (1.72 mt over the ≤20 mt OY) which is still below the ABC of 198 mt. Therefore, this additional take of bocaccio under the preferred alternative is not expected to result in overfishing of bocaccio or any other groundfish species. In addition, a new stock assessment on bocaccio in 2003 shows a larger biomass and increased productivity of the stock, than previously thought. The other action alternatives fall within the management framework, but represent different tradeoffs between overfishing risk and socioeconomic impacts. The "36° to Mexico" Alternative is not expected to result in overfishing but runs the highest risk among the alternatives because it has the highest take of bocaccio and canary rockfish.

National Standard 2 states that conservation and management measures shall be based on the best scientific information available.

The alternatives presented are based on data presented by the California Department of Fish and Game (CDFG) on historic catch by depth profiles for overfished species in southern California and the most recent stock assessments, developed through the peer-review STAR process. Stock assessments released in 2003 are generally only used for management in 2004 and beyond. In this case, however, the new assessment and rebuilding analysis forecast are being recommended for use not to change the OY for 2003, which is done on an annual cycle, but to allow for a change in the management measures which may cause the OY for bocaccio to be exceeded. Thus, the alternatives represent the use of the best available science.

National Standard 3 states that, to the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.

While the management measures proposed in the alternatives do not directly address this National Standard because they deal with a small area in southern California, groundfish management in general does. Some groundfish stocks are managed as individual units with specific trip limits. However, given the multi-species nature of many groundfish fisheries, other stocks are grouped in stock complexes and

managed accordingly. This generally applies to non-target species for which no individual stock assessments have been performed. Until recently many species were not reported individually in groundfish fisheries and, nongroundfish fisheries may not report incidental groundfish catches at the species level. This limits the amount of time series data available for stock assessments on which individual stocks could be managed. Stocks are managed throughout the range of that stock (as opposed to the species), although issues do arise in the case of stocks straddling international borders. For example, allocation of the harvestable surplus of Pacific whiting between the U.S. and Canada has not been fully resolved. All alternatives are consistent with this National Standard.

National Standard 4 states that conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various United States fishers, such allocation shall be (A) fair and equitable to all such fishers; (B) reasonably calculated to promote conservation; and (C) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges. The proposed measures will not discriminate between residents of different states.

Management measures are developed through the Council process, which facilitates substantial participation by state representatives. Generally, state proposals are brought forward when alternatives are crafted and integrated to the degree practicable. While all of the alternatives affect commercial and recreational non-trawl fishery participants in southern California, all states and the Council were involved in the development of alternatives. None of the alternatives allocate fishing privileges in an unfair or inequitable manner. None of the management measures in the alternatives would allocate specific shares or privileges to one individual or corporation.

National Standard 5 states that conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

The management measures presented in the alternatives did not consider efficiency in the utilization of resources, but rather considered where economic relief could be provided to the severely constrained southern California fisheries without posing risk to overfished groundfish species.

National Standard 6 states that conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources and catches.

Management measures reflect differences in catch, and in particular bycatch of overfished species, among the different areas detailed in the alternatives. Because of the low OYs for overfished species, especially bocaccio and canary rockfish in the south, the management measure in the preferred alternative allows for additional area open to fishing while minimizing bycatch of these species in southern California.

National Standard 7 states that conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

The alternatives do not explicitly address this standard. Generally, by coordinating management, monitoring and enforcement activities between the three West Coast states, duplication, and thus cost, is minimized. Necessary monitoring and enforcement programs, such as the use of fishery observers, increase management costs. But these efforts are necessary for effective management.

National Standard 8 states that conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.

The preferred alternative represents the best tradeoff between the need to conserve and rebuild fish stocks and providing economic relief to fishing communities. As noted above, in discussing FMP objectives, all of the alternatives, except status quo, are intended to provide economic relief to non-trawl fishers in southern California. Of the reasonable alternatives, those that do not pose a risk to overfished groundfish species, the preferred alternative (34°27' to Mexico) provides the greatest benefit to fishing communities by opening the largest area to fishing.

National Standard 9 states that conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

Minimizing bycatch, of all species and overfished species in particular, is an important component of the preferred alternative and of the other alternatives. Depth-based management measures are meant to keep fishing away from areas where overfished species are most abundant, and therefore reduce bycatch. While the proposed action may increase bycatch by opening 10 fm of the ocean to fishing, large depth-based closures will remain in place that are predicted to minimize bycatch from historical levels. Among the alternatives, the status quo alternative is predicted to reduce bycatch the most among the alternatives because it does not open an additional 10 fm to fishing in southern California. Integration of observer data into the management process allows more accurate estimates of bycatch rates, and thus total catch estimates.

National Standard 10 states that conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

The alternatives may promote safety by allowing additional area in the nearshore open to fishing, thus slightly reducing crowding of vessels.

7.3 Endangered Species Act

Section 7(a)(2) of the Endangered Species Act (ESA), as amended, requires that federal agencies "shall, in consultation with and with the assistance of the Secretary [of Commerce or Interior], insure that any action authorized, funded, or carried out by such agency ... is not likely to jeopardize the continued existence of any endangered species, or result in the destruction or adverse modification of habitat of such species...." Based on this section of the law (section 7), action agencies consult with NMFS (for marine species) or U.S. Fish and Wildlife Service (USFWS) (for terrestrial and freshwater species) in cases where a "major construction activity" (which is considered equivalent to the "major federal action" standard under National Environmental Policy Act [NEPA]) could "jeopardize the continued existence" of an endangered species. For fishery management actions in federal waters NMFS is both the action and consulting agency (although different divisions fulfill these two roles). Consultations can begin informally, through "phone contacts, meetings, conversations, letters, project modifications and concurrences..." (USFWS and NMFS 1998). During consultations, if the lead agency is informed that listed species or critical habitat may be present in the action area, it prepares a biological assessment to disclose the likely adverse effects. Sections 3.1 and 4.1 in this EA contain the information necessary for a biological assessment of the effects of the proposed action on ESA-listed species occurring in the action area. If the action agency determines the proposed action may affect listed species or designated critical habitat, formal consultation is required. The consulting agency (in this case, NMFS) must issue a Biological Opinions (BOs) within 135 days of the initiation of formal consultation. The BO may contain "reasonable and prudent measures" that the action agency must implement (in addition to any proposed mitigation) to ensure the proposed action does not jeopardize the continued existence of the species in question. (These may be referred to as "no jeopardy standards." The Council manages ocean salmon fisheries in part based on such standards for listed salmon species).

NMFS has issued several BOs to assess the effects of the groundfish fishery on ESA-listed salmon. (Salmon may be listed by individual spawning runs, because these are considered evolutionarily significant units [ESUs] for the purposes of listing). The most recent BO was issued on December 15, 1999, covering the 22 ESUs listed by that time. This BO represents a re-initiation of previous consultations described in BOs issued on August 10, 1990, November 26, 1991, August 28, 1992, September 27, 1993, and May 14, 1996. NMFS has concluded that implementation of the groundfish FMP is not expected to jeopardize the continued existence of any endangered or threatened species under the jurisdiction of NMFS, or result in the destruction or adverse modification of critical habitat.

Based on the information in sections 3.1 and 4.1 of this EA, the proposed action, including the preferred alternative, fall within the scope of these consultations. Further, this EA serves as a biological assessment of the likely adverse effects to other listed species. Based best available scientific information, no adverse effects are expected.

7.4 Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) of 1972 is the principle federal legislation guiding marine mammal species protection and conservation policy in the United States. Under the MMPA, NMFS is responsible for the management and conservation of 153 stocks of whales, dolphins, porpoise, seals, sea lions, and fur seals, while the USFWS is responsible for walrus, sea otters, and the West Indian manatee.

In the Washington, Oregon and California (WOC) region, the Steller sea lion (*Eumetopias jubatus*) Eastern stock, Guadalupe fur seal (*Arctocephalus townsendi*), and Southern sea otter (*Enhydra lutris*) California stock are listed as threatened under the ESA and the sperm whale (*Physeter macrocephalus*) WOC Stock, humpback whale (*Megaptera novaeangliae*) WOC - Mexico stock, blue whale (*Balaenoptera musculus*) Eastern north Pacific stock, and Fin whale (*Balaenoptera physalus*) WOC Stock are listed as depleted under the MMPA. Any species listed as endangered or threatened under the ESA; is automatically considered depleted under the MMPA.

The West Coast groundfish fisheries are considered a Category III fishery—denoting a remote likelihood of or no known serious injuries or mortalities to marine mammals–in the annual list of fisheries published in the *Federal Register*. Based on its Category III status, the incidental take of marine mammals in the West Coast groundfish fisheries does not significantly impact marine mammal stocks.

Section 4.1.4 of this EA evaluates the impacts of the alternatives on protected species, including marine mammals. None of the proposed management alternatives are likely to affect the incidental mortality levels of species protected by the MMPA.

7.5 Migratory Bird Treaty Act and Executive Order 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds

The Migratory Bird Treaty Act of 1918 (MBTA) was enacted to end the commercial trade of migratory birds and their feathers that, by the early years of the 20th century, had diminished populations of many native bird species. The MBTA states it is unlawful to take, kill, or possess migratory birds and their parts (including eggs, nests, and feathers) and is a shared agreement between the United States, Canada, Japan, Mexico, and Russia to protect a common migratory bird resource.

Executive Order (EO) 13186 supplements the MBTA by requiring federal agencies to work with the USFWS to develop memoranda of agreement to conserve migratory birds. NMFS is currently developing its memorandum of understanding. The protocols developed by this consultation will guide agency regulatory actions and policy decisions in order to address this conservation goal. The EO also directs

agencies to evaluate the effects of their actions on migratory birds in environmental documents prepared pursuant to the National Environmental Policy Act.

Section 4.1.4 in this EA evaluates the impacts of the alternatives on protected species, including seabirds covered by the MBTA and EO 13186. The proposed action is not predicted to increase the incidental take of seabirds in managed groundfish fisheries.

7.6 Paperwork Reduction Act

In response to public complaints about the burden of federal paperwork, the Paperwork Reduction Act (PRA) and its implementing regulations require federal agencies to obtain clearance from the Office of Management and Budget (OMB) if they plan to collect information from the public. Collecting facts and opinions from ten or more people, by means of a survey for example; requiring individuals to provide information to the general public or to some third party; requiring items (e.g., boxes of fish, fishing gear) or vessels to be labeled or marked; or using technological methods to monitor public compliance with government requirements, including automated collection techniques such as Vessel Monitoring System (VMS), are all covered by the law and regulations.

The PRA requires agencies to compile an Information Collection Budget (ICB), the total burden the agency will be placing on the public, and to obtain OMB clearance by submitting an OMB-83I form (Paperwork Reduction Act Submission) and a supporting statement. The ICB is submitted annually and lists all new information collecting the agency plans for the upcoming fiscal year. As part of the ICB, for each planned collection the agency must describe the purpose of the collection, the approximate number of respondents, and the estimated time taken per respondent. If a proposed rule contains an information collection requirement needing clearance under the PRA, a clearance request needs to be submitted to OMB on or before the date the proposed rule is published in the *Federal Register*. Once OMB receives the request it has 60 days to review and act on it.

The proposed action does not have a paperwork burden.

7.7 Coastal Zone Management Act

Section 307(c)(1) of the Federal Coastal Zone Management Act (CZMA) of 1972 requires all federal activities that directly affect the coastal zone be consistent with the enforceable polies of approved state coastal zone management programs to the maximum extent practicable. The relationship of the Groundfish FMP with the CZMA is discussed in Section 11.7.3 of the Groundfish FMP. The Groundfish FMP has been found to be consistent with the Washington, Oregon, and California coastal zone management programs.

The proposed action is within the scope of the actions contemplated under the management framework described in the Groundfish FMP and will be implemented in a manner that is consistent to the maximum extent practicable with the enforceable policies of the aforementioned coastal zone management programs. This determination has been submitted to the responsible state agencies for review under section 307(c)(1) of the CZMA by forwarding a copy of this EA to each of the relevant state agencies.

7.8 Regulatory Flexibility Act and EO 12866 (Regulatory Impact Review)

In order to comply with EO 12866, this document also serves as a Regulatory Impact Review (RIR). The emergency rule tied with this proposed action is exempt from the Regulatory Flexibility Act (RFA) and associated analyses.

EO 12866, Regulatory Planning and Review, was signed on September 30, 1993, and established guidelines for promulgating new regulations and reviewing existing regulations. The EO covers a variety of regulatory policy considerations and establishes procedural requirements for analysis of the benefits and costs of regulatory actions. Section 1 of the EO deals with the regulatory philosophy and principles that are to guide agency development of regulations. It stresses that in deciding whether and how to regulate, agencies should assess all of the costs and benefits across all regulatory alternatives. Based on this analysis, NMFS should choose those approaches that maximize net benefits to society, unless a statute requires another regulatory approach.

The regulatory principles in EO 12866 emphasize careful identification of the problem to be addressed. The agency is to identify and assess alternatives to direct regulation, including economic incentives such as user fees or marketable permits, to encourage the desired behavior. Each agency is to assess both the costs and the benefits of the intended regulation and, recognizing that some costs and benefits are difficult to quantify, propose or adopt a regulation only after reasoned determination of the benefits of the intended regulation justify the costs. In reaching its decision, the agency must use the best reasonably obtainable information, including scientific, technical and economic data, about the need for and consequences of the intended regulation.

NMFS requires the preparation of an RIR for all regulatory actions of public interest, including fishery management measures. The RIR provides a comprehensive review of the changes in net economic benefits to society associated with proposed regulatory actions. The analysis also provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that could be used to solve the problems. The purpose of the analysis is to ensure the regulatory agency systematically and comprehensively considers all available alternatives, so the public welfare can be enhanced in the most efficient and cost-effective way. The RIR addresses many of the items in the regulatory philosophy and principles of EO 12866.

The RIR analysis and environmental analysis required by NEPA have many common elements and they have been combined in this document. The following table shows where the elements of an RIR, as required by EO 12866, are located.

Required RIR Elements	Corresponding Sections
Description of management objectives	Sections 1.3 and 1.4
Description of the fishery[5/]	Chapters 3 and 4
Statement of the problem	Section 1.3
Description of each alternative considered in the analysis	Sections 2.1 through 2.4
An economic analysis of the expected effects of each selected alternative relative to the *No Action Alternative*	Sections 3.3 and 4.3

The RIR is designed to determine whether the proposed actions could be considered "significant regulatory actions" according to EO 12866. The test requirements in EO 12866 used to assess whether or not an action would be a "significant regulatory action" and identify the expected outcomes of the proposed management alternatives are as follows: 1) have a annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or

1/ In addition to the information in this document, basic economic information is provided annually in the Council's SAFE document.

communities; 2) create a serious inconsistency or otherwise interfere with action taken or planned by another agency; 3) materially alter the budgetary impact of entitlement, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or 4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this EO. A regulatory program is "economically significant" if it is likely to result in the effects described in item 1 above. For the purposes of the EO, none of the alternatives could potentially meet the significance criteria. None of the alternatives are expected to have an effect on the economy of over $100 million and none of the alternatives are expected to adversely affect the economy or any sector of the economy. All of the alternatives, except status quo, would provide some economic benefit to the economy by providing additional areas of the ocean open to fishing for groundfish. Depending on which area along the coast of southern California opens to fishing, the fishing communities in that area may be expected to benefit economically from increased business and draw of fishing activity into the area. Among the alternatives, the "36° to Mexico" alternative would create the greatest economic benefit by opening up the largest area to fishing, followed by the "34°27' to Mexico" alternative, the "36° to 34°27' " alternative, and, finally, the status quo alternative would provide the least economic benefit.

7.9 EO 12898 (Environmental Justice)

EO 12898 obligates federal agencies to identify and address "disproportionately high adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations in the United States" as part of any overall environmental impact analysis associated with an action. NOAA guidance, NAO 216-6, at §7.02, states that "consideration of EO 12898 should be specifically included in the NEPA documentation for decision making purposes." Agencies should also encourage public participation—especially by affected communities—during scoping as part of a broader strategy to address environmental justice issues.

The environmental justice analysis must first identify minority and low-income groups that live in the project area and may be affected by the action. Typically, census data are used to document the occurrence and distribution of these groups. Agencies should be cognizant of distinct cultural, social, economic or occupational factor that could amplify the adverse effects of the proposed action. (For example, if a particular kind of fish is an important dietary component, fishery management actions affecting the availability or price of that fish could have a disproportionate effect.) In the case of Indian tribes, pertinent treaty or other special rights should be considered. Once communities have been identified and characterized and potential adverse impacts of the alternatives are identified, the analysis must determine whether these impacts are disproportionate. Because of the context in which environmental justice developed, health effects are usually considered and three factors may be used in an evaluation: whether the effects are deemed significant, as the term is employed by NEPA; whether the rate or risk of exposure to the effect appreciably exceeds the rate for the general population or some other comparison group; and whether the group in question may be affected by cumulative or multiple sources of exposure. If disproportionately high adverse effects are identified, mitigation measures should be proposed. Community input into appropriate mitigation is encouraged.

Sections 3.3.6 of the 2003 Specs EIS describes coastal communities. In general, available demographic data show that, coastal counties where these communities are located are variable in terms of social indicators like income, employment and race and ethnic composition. Equivalent data specific to the groups directly affected by the proposed action are not available. The effects of the proposed action in this EA will be concentrated on communities and user groups in southern California. However, no disproportionate effect is expected on minority and low income groups.

7.10 EO 13132 (Federalism)

EO 13132 enumerates eight "fundamental federalism principles." The first of these principles states "Federalism is rooted in the belief that issues that are not national in scope or significance are most appropriately addressed by the level of government closest to the people." In this spirit the EO directs agencies to consider the implications of policies that may limit the scope of or preempt states' legal authority. Preemptive action having such "federalism implications" is subject to a consultation process with the states; such actions should not create unfunded mandates for the states; and any final rule published in the *Federal Register* must be accompanied by a "federalism summary impact statement."

The Council process offers many opportunities for states (through their agencies and Council appointees) to participate in the formulation of management measures. This process encourages states to institute complementary measures to manage fisheries under their jurisdiction that may affect federally-managed stocks. Further, §306 of the Magnuson-Stevens Act addresses state jurisdiction over fisheries. Generally, states may regulate fishing by vessels registered in that state if no federal FMP applies, or if a federal FMP delegates such authority to the states.

The proposed action does not have federalism implications.

7.11 EO 13175 (Consultation and Coordination With Indian Tribal Governments)

EO 13175 is intended to ensure regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications, to strengthen the United States government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates on Indian tribes.

Under the Magnuson-Stevens Act at 16 U.S.C. 1852(b)(5), one of the voting members of the Pacific Council must be a representative of an Indian tribe with Federally recognized fishing rights from the area of the Council's jurisdiction. While tribal representatives were present and given the opportunity to provide input while this action was developed by the Council, there were no additional tribal requests on this action. There are no treaty tribes in southern California.

7.12 Data Quality Act

Pursuant to Section 515 of Public Law 106-554 (the DQA), this information product has undergone a pre-dissemination review by the National Marine Fisheries Service, Northwest Region, completed on August 20, 2003. The signed Pre-dissemination Review and Documentation Form is on file in that office.

8 LIST OF PREPARERS

This Environmental Assessment (EA) was prepared by the National Marine Fisheries Service, Northwest Region, 7600 Sand Point Way NE, Bldg. 1, Seattle, Washington 98115. A list of the people who prepared the assessment, background data, or assisted in preparing this EA are presented below.

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TABLE 1. Management alternatives for 2003 West Coast non-tribal commercial groundfish fisheries. (Table 2.1-2. in the 2003 Specs EIS)

Fishery Sector by Area	Status Quo 2002 Management Measures	2003 Management Measures		2003 Management Measures for Allocation Committee-preferred OYs		2003 Management Measures for Council-preferred OYs
		Low OYs	High OYs	No depth restrictions	With depth restrictions	
Limited Entry Fixed Gear South of 40°10' N. lat.	seasonal landing limits; no retention of canary, cowcod, or yelloweye	No fishing inside 150 fm; no retention of bocaccio, canary, cowcod, or yelloweye	No fishing in depths 20-150 fm; no retention of bocaccio, canary, cowcod, or yelloweye	No fishing outside 20 fm; no retention of bocaccio, canary, cowcod, or yelloweye; nearshore OYs and allocations	No fishing in depths 20-150 fm; nearshore OYs and allocations; no retention of bocaccio, canary, cowcod, or yelloweye	No fishing in depths 20-150 fm except line gear with no more than 5 hooks (#2 or smaller) and up to 5 lbs of wt. may be used if closely attended; seasonal landing limits and depth restrictions; nearshore OYs and allocations; no retention of bocaccio, canary, cowcod, or yelloweye
Directed Open Access South of 40°10' N. lat.	seasonal landing limits; no retention of canary, cowcod, or yelloweye	No fishing inside 150 fm; no retention of bocaccio, canary, cowcod, or yelloweye	No fishing in depths 20-150 fm; no retention of bocaccio, canary, cowcod, or yelloweye	No fishing outside 20 fm; nearshore OYs and allocations; no retention of bocaccio, canary, cowcod, or yelloweye	No fishing in depths 20-150 fm; nearshore OYs and allocations; no retention of bocaccio, canary, cowcod, or yelloweye	No fishing in depths 20-150 fm except line gear with no more than 12 hooks (#2 or smaller) and up to 5 lbs of wt. may be used if closely attended; nearshore OYs and allocations; seasonal landing limits and depth restrictions; no retention of bocaccio, canary, cowcod, or yelloweye

TABLE 2. Management alternatives for 2003 West Coast recreational groundfish fisheries. (Table 2.1-3. in the 2003 Specs EIS)

Management Area	Status Quo 2002 Management Measures	2003 Management Measures			
		Low OYs	High OYs	Alloc. Cm. OYs [1/]	Council OYs
Recreational California S. of 36° N. lat.	Open Mar-Oct with a 10 rockfish bag limit and a 2 bocaccio, 1 canary, 1 yelloweye (2 per vessel) sublimit; 2 lingcod bag limit with a 24" min. size limit; open only inside 20 fm in Cowcod Conservation Areas during season	No fishing inside 150 fm; year round season with a 10 rockfish bag limit; no retention of bocaccio, canary, cowcod, and yelloweye; 2 lingcod bag limit with a 24" min. size limit	No fishing in depths 20-150 fm; year round season with a 10 rockfish bag limit; no retention of bocaccio, canary, cowcod, and yelloweye; 2 lingcod bag limit with a 24" min. size limit	Same as area S. of 40°10' N. lat. to 36° N. lat. under this alternative	Same as area S. of 40°10' N. lat. to 36° N. lat. under this alternative

1/ Suboptions that include and exclude depth restrictions not analyzed for the recreational fishery since only the routine inshore lines are used in management. See Section 2.1.4 in the 2003 Specs EIS for an explanation.

TABLE 3. Results of the bocaccio sustainability analysis (MacCall and He 2002b). (Table 4.2-2. in the 2003 Specs EIS)

Probability (%) of No Decline by 2102	Catch in 2003	Fishing Mortality Rate	Percent of Cases Rebuilt by 2109	Median Rebuilding Year	Risk (five percentile of abundance)			
					after 25 years		*after 100 years*	
					Spawning Output (billion eggs)	2027 Abundance Relative to 2002	Spawning Output (billion eggs)	2102 Abundance Relative to 2002
50%	79	0.094	7%	14% by 2602	73.1	10%	2.5	0%
60%	61	0.071	12%	31% by 2602	85.8	12%	5.5	1%
70%	42	0.049	21%	50% by 2367	102.6	14%	13.3	2%
80%	22	0.026	33%	50% by 2172	126.1	18%	30.7	4%
85%	11	0.012	41%	50% by 2135	145.2	20%	52.7	7%
90%	0	0.000	49%	50% by 2111	157.5	22%	86.3	12%

TABLE 4. Current rebuilding parameter/target estimates specified for overfished West Coast groundfish: shelf species. (Table 3.2-2 in the 2003 Specs EIS)

Rebuilding Parameter/Target	Shelf rockfish & lingcod				
	Cowcod [1/]	Bocaccio [2/]	Canary	Yelloweye [3/]	Lingcod [4/]
T_0 (year declared overfished)	2000	1999	2000	2002	1999
T_{MIN} (minimum time to achieve B_{MSY}; F = 0)	2062	2097	2057	2027	2004 N 2005 S
Mean generation time	37 years	12 years	19 years	44 years	*5* years N 4 years S
T_{MAX} (maximum time to achieve B_{MSY})	2099	2109	2076	2071	2009
P_{MAX} (P to achieve B_{MSY} by T_{MAX}) [5/]	55%	*X*%	60%	92%	60%
Most recent stock assessment	Butler et al. 1999	MacCall 2002	Methot and Piner	Methot et al. 2002	Jagielo et al. 2000
Most recent rebuilding analysis	Butler and Barnes 2000	MacCall and He 2002	Methot and Piner 2002	Methot and Piner 2002	Jagielo and Hastie 2001
B_0 (estimated unfished biomass)	3,367 mt	19,849 B eggs in 2002	31,550 mt	3,875 mt	22,882 mt N 20,971 mt S
$B_{CURRENT}$ (current estimated biomass)	238 mt in 1998	720 B eggs in 2002	2,524 mt in 2002	934 mt in 2002	3,527 mt N 3,220 mt S in 2000
$B_{CURRENT}$ % Unfished Biomass	7% in 1998	3.6% in 2002	8% in 2002	24% in 2002	17% N 15% S in 2000
MSST (minimum stock size threshold = 25% of B_0)	842 mt	4,962 B eggs	7,888 mt	969 mt	5,720 mt N 5,243 mt S
B_{MSY} (rebuilding biomass target = 40% of B_0)	1,350 mt	7,940 B eggs	12,620 mt	1,550 mt	9,153 mt N 8,389 mt S
MFMT (maximum fishing mortality threshold = F_{MSY})	$F_{50\%}$	$F_{50\%}$	$F_{73\%}$	$F_{57\%}$	$F_{45\%}$: F = 0.12 N F = 0.14 S
Harvest control rule [5/]	F = 0.0136	*F = 0.0X*	F = 0.0220	*F = 0.0139*	F = 0.053 N F = 0.061 S
T_{TARGET} [5/]	2095	2*XXX*	2074	2052	2009

1/ Cowcod were assessed in the Conception area. All parameters/targets are for the Conception area, although cowcod retention is prohibited throughout its range.
2/ Bocaccio were assessed by MacCall (2002) in the Conception and Monterey INPFC areas combined. Biomass estimates are spawning output in billions of eggs. A revised rebuilding analysis indicates rebuilding cannot occur within TMAX with at least a 50% probability, even under no harvest. Therefore,
3/ Yelloweye rockfish were assessed as two stocks: northern California (N CA; Monterey INPFC area north to the California/Oregon border) and Oregon (OR; waters off Oregon) (Wallace 2001). Biomass estimates are in spawning output units (s.o.) calculated as the weighted age × the net maturity function. A new stock assessment and rebuilding analysis that may supersede these data are in development but will be available for Council consideration in September 2002. All parameters still considered preliminary.
4/ West Coast lingcod were assessed as two stocks north (Columbia and U.S. Vancouver INPFC areas) and south (Eureka, Monterey, and Conception INPFC areas).
5/ Under Council interim or *Council OY* alternative rebuilding strategies except bocaccio (see footnote 2/).

TABLE 5. Current rebuilding parameter/target estimates specified for overfished West Coast groundfish: slope and midwater species. (Table 3.2-3 in the 2003 Specs EIS)

Rebuilding Parameter/Target	Slope rockfish		Midwater species	
	Darkblotched	POP	Widow	Pacific whiting [1/]
T_0 (year declared overfished)	2000	1999	2001	2002
T_{MIN} (minimum time to achieve B_{MSY} @ F=0)	2014	2011	2023	2004
Mean generation time	33 years	30 years	16 years	8 years
T_{MAX} (maximum time to achieve B_{MSY})	2047	2041	2039	2012
P_{MAX} (P to achieve B_{MSY} by T_{MAX}) [2/]	80%	70%	60%	*X*%
Most recent stock assessment	Rogers et al. 2000	Ianelli et al. 2000	Williams et al. 2000	Helser et al. 2002
Most recent rebuilding analysis	Methot and Rogers 2001	Punt and Ianelli 2001	Punt and MacCall 2002	*Helser 2002*
B_0 (estimated unfished biomass)	29,044 mt	60,212 units of spawning output	34,900 mt in 2000	5.25 M mt
$B_{CURRENT}$ (current estimated biomass)	4,067 mt in 2002	13,066 units of spawning output in 1998	8,223 mt in 2000	1.26 M mt in 2002
% Unfished Biomass	14% in 2002	21.7% in 1998	23.6% in 2000	20% in 2001; 24% in 2002
MSST (minimum stock size threshold = 25% of B_0)	7,261 mt	15,053 units of spawning output	8,725 mt	1.31 M mt
B_{MSY} (rebuilding biomass target = 40% of B_0)	11,618 mt	24,084 units of spawning output	13,960 mt	2.1 M mt
MFMT (maximum fishing mortality threshold = F_{MSY})	$F_{50\%}$	$F_{50\%}$	$F_{50\%}$	$F_{40\%}$
Harvest control rule [2/]	F = 0.027	F = 0.0082	F = 0.0271	*F = 0.0X*
T_{TARGET} [2/]	2030	2027	2039	20*XX*

1/ The Pacific whiting stock was assessed in 2002. Biomass estimates are in millions of mt of age 3+ fish. Highlighted and italicized data denote unspecified rebuilding parameters since the Helser (2002) rebuilding analysis was not endorsed by the SSC.
2/ Under Council interim rebuilding strategies except Pacific whiting.

TABLE 6. Number of marine anglers in West Coast states, 2000. (Table 3.3-19 in the 2003 Specs EIS)

	Number of Marine Anglers (Thousands)			
State	**Total**	**Resident**	**Non-Resident**	**Percent Non-Resident**
Washington	**497**	**450**	**47**	**9%**
Oregon	**365**	**285**	**80**	**22%**
California	**1,705**	**1,485**	**220**	**13%**

Source: Derived from PacFIN monthly vessel summary files.

TABLE 7. Trends in effort for recreational ocean fisheries in thousands of angler trips. (Table 3.3-20 in the 2003 Specs EIS)

	Charter						Private					
Area	1996	1997	1998	1999	2000	2001[a/]	1996	1997	1998	1999	2000	2001[a/]
						Total Angler Trips						
Washington	51	50	44	49	49	59	52	55	37	52	52	88
Oregon	54	65	57	60	87	70	57	87	213	173	330	140
Northern California	90	139	158	162	206	221	253	312	528	549	523	901
Southern California	982	812	674	609	876	577	1,099	1,073	1,167	879	1,314	1,757
Total	**1,177**	**1,066**	**933**	**880**	**1,218**	**927**	**1,461**	**1,527**	**1,945**	**1,653**	**2,219**	**2,886**
						Groundfish Target and Incidental						
Washington	24	19	23	21	25	12	24	21	54	25	30	10
Oregon	43	47	47	44	69	47	33	57	119	88	153	22
Northern California	63	159	58	95	101	141	110	113	160	188	120	164
Southern California	59	23	33	45	57	204	35	11	15	30	28	252
Total	**189**	**248**	**161**	**205**	**252**	**404**	**202**	**202**	**348**	**331**	**331**	**448**

a/ 2001 estimates not directly comparable to previous years due to differences in estimation methodology.

TABLE 8. Coastwide annual and bi-monthly commercial landings of overfished species by fleet, metric tons 1999-2001. (Table 3.4-1 in the 2003 Specs EIS)

Species/Fleet	1999	2000	2001	1999						2000						2001					
	All	All	All	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
Bocaccio																					
LE Trawl	30.3	16.1	13.9	5.5	5.1	5.8	6.3	5.6	2.0	0.8	2.3	3.3	2.7	3.8	3.2	2.0	2.2	3.1	3.8	2.7	0.0
LE Fixed-gear	5.0	2.4	2.4	0.5	1.0	1.0	0.7	1.6	0.1	0.0	0.1	0.8	0.6	0.6	0.3	0.3	0.1	0.4	1.2	0.5	
LE Shrimp-trawl	0.3	0.1	0.0	0.3	0.0			0.0		0.0	0.1		0.0	0.0					0.0		
OA Non-shrimp	22.8	5.9	6.4	3.7	5.1	3.4	4.7	4.0	1.9	0.8	0.1	1.4	0.8	1.3	1.6	1.6	0.3	0.5	2.0	2.0	
OA Shrimp-trawl	0.2	0.0	0.1	0.0	0.0	0.1	0.1	0.0			0.0	0.0			0.0		0.0	0.1			
Total	58.5	24.6	22.8	10.0	11.2	10.2	11.8	11.4	4.0	1.6	2.6	5.4	4.1	5.8	5.2	3.9	2.7	4.1	6.9	5.2	0.0
Canary																					
LE Trawl	494.6	33.4	25.6	25.5	67.8	179.0	153.0	66.9	2.4	0.2	2.1	10.3	10.3	8.9	1.6	0.9	1.8	8.2	11.1	3.5	0.1
LE Fixed-gear	55.4	5.9	5.1	2.0	8.0	24.2	15.4	5.8	0.0	0.2	0.5	2.2	1.3	1.2	0.4	0.6	0.7	1.5	1.3	1.0	
LE Shrimp-trawl	14.2	4.3	0.7		0.9	5.3	4.8	3.3			0.0	0.9	2.7	0.7		0.0	0.0	0.5	0.2	0.0	
OA Non-shrimp	56.6	5.0	2.8	0.4	11.1	19.8	19.0	5.8	0.4	0.3	0.4	1.8	1.2	1.0	0.3	0.2	0.5	1.1	0.7	0.3	
OA Shrimp-trawl	21.3	7.2	2.0		1.2	9.2	7.0	4.0	0.0		0.0	1.6	3.9	1.6			0.1	0.8	1.0	0.0	
Total	642.2	55.8	36.2	28.0	88.9	237.5	199.2	85.8	2.8	0.6	3.0	16.9	19.5	13.5	2.3	1.7	3.1	12.2	14.3	4.8	0.1
Cowcod																					
LE Trawl	3.8	1.4	0.8	0.5	1.2	0.1	0.8	1.2	0.0	0.1	0.2	0.1	0.3	0.3	0.3	0.4	0.2	0.0	0.1	0.1	0.1
LE Fixed-gear	0.3	0.5		0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.3	0.1	0.0						
LE Shrimp-trawl		0.0									0.0	0.0	0.0	0.0							
OA Non-shrimp	2.2	0.4	0.0	0.4	0.8	0.3	0.4	0.0	0.2	0.0	0.0	0.1	0.1	0.1	0.1			0.0			
OA Shrimp-trawl	0.2	0.1		0.0	0.0	0.0	0.1	0.0			0.0	0.0	0.0								
Total	6.5	2.4	0.8	1.0	2.1	0.5	1.4	1.2	0.2	0.2	0.3	0.2	0.8	0.6	0.4	0.4	0.2	0.0	0.1	0.1	0.1
Darkblotched																					
LE Trawl	280.2	216.5	141.0	34.1	56.8	96.1	64.1	26.8	2.3	28.7	25.3	52.5	42.7	41.7	25.7	22.2	24.9	33.8	31.5	26.4	2.4
LE Fixed-gear		1.7	1.8							0.0	0.7	0.3	0.4	0.3	0.0	0.0	0.1	0.0	0.6	1.0	
LE Shrimp-trawl	2.0		0.0		0.0	0.0	1.5	0.4										0.0	0.0		
OA Non-shrimp	0.1	0.5	0.2		0.0		0.0	0.1		0.0	0.1	0.1	0.2	0.0	0.0	0.0	0.1	0.0	0.0		0.1
OA Shrimp-trawl	2.0	0.0	0.0		0.0	0.3	1.3	0.4				0.0						0.0	0.0	0.0	
Total	284.3	218.8	143.1	34.1	56.8	96.5	67.0	27.6	2.3	28.7	26.2	52.9	43.3	42.0	25.8	22.2	25.1	33.8	32.1	27.4	2.4
Lingcod																					
LE Trawl	204.3	61.8	58.5	12.1	30.9	59.2	59.8	32.4	9.9	0.0	0.1	18.3	24.8	18.1	0.5	0.2	0.0	21.1	18.8	18.3	0.1
LE Fixed-gear	33.1	17.2	18.8	2.1	4.4	7.3	12.2	6.6	0.5			4.8	6.4	5.8	0.1		0.0	5.1	7.8	5.8	0.1
LE Shrimp-trawl	14.9	6.4	1.6		1.0	5.8	5.9	2.2				3.6	2.5	0.3				0.9	0.4	0.2	
OA Non-shrimp	84.7	49.0	63.5	0.6	11.7	25.3	34.0	12.7	0.4	0.1	1.1	26.9	20.2	0.6	0.1	0.0	0.0	19.3	25.0	19.0	0.1
OA Shrimp-trawl	17.5	9.1	5.5		0.5	6.1	7.2	3.8				4.8	4.4				0.0	3.2	2.2	0.0	
Total	354.5	143.5	147.8	14.9	48.5	103.6	119.1	57.7	10.8	0.1	1.2	58.3	58.4	24.8	0.7	0.2	0.1	49.6	54.2	43.5	0.2
Pacific Ocean Perch																					
LE Trawl	481.4	139.7	187.5	28.3	75.9	122.6	138.6	88.0	28.0	6.9	6.5	38.8	40.1	35.5	11.9	24.3	22.7	45.5	54.5	40.6	
LE Fixed-gear	0.1	0.7	0.0			0.1						0.5	0.1	0.0				0.0	0.0	0.0	0.0
LE Shrimp-trawl	0.0	0.2	0.0			0.0	0.0	0.0				0.2	0.0	0.0				0.0			
OA Non-shrimp	0.2	0.0	0.0		0.0	0.1	0.0	0.1			0.0		0.0	0.0					0.0		0.0
OA Shrimp-trawl	0.1	0.1	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0			0.0	0.0			
Total	481.8	140.6	187.6	28.3	75.9	122.8	138.6	88.2	28.0	6.9	6.6	39.5	40.3	35.5	11.9	24.3	22.7	45.5	54.5	40.6	0.0
Widow																					
LE Trawl	3,836.3	3,761.8	1,750.4	882.0	843.6	309.0	345.6	694.7	761.5	374.0	487.1	404.6	601.1	1,069.0	826.1	387.9	456.1	189.6	53.6	15.5	647.7
LE Fixed-gear	16.1	5.3	0.5	1.7	1.9	2.4	3.9	5.7	0.4	0.1	0.7	1.8	0.9	1.5	0.3	0.1	0.1	0.0	0.1	0.2	
LE Shrimp-trawl	5.2	1.0	0.5		0.7	1.6	2.3	0.5			0.0	0.2	0.5	0.2			0.0	0.4	0.0	0.0	
OA Non-shrimp	41.4	17.7	13.0	4.5	4.9	2.8	8.4	14.9	5.8	2.0	0.1	1.6	2.7	6.4	4.9	5.1	1.2	1.9	3.1	1.6	0.1
OA Shrimp-trawl	4.6	1.7	0.6		0.5	1.6	1.5	0.9	0.0		0.1	0.7	0.7	0.2			0.2	0.3	0.0		
Total	3,903.5	3,787.5	1,765.0	888.2	851.6	317.6	361.6	716.7	767.7	376.2	487.9	408.9	605.9	1,077.4	831.3	393.2	457.7	192.2	56.8	17.3	647.8
Yelloweye																					
LE Trawl	20.5	1.0	2.2	0.4	1.6	4.3	9.7	4.5	0.0	0.0	0.0	0.2	0.5	0.2	0.0	0.0	0.1	0.5	1.2	0.5	
LE Fixed-gear	47.7	5.0	6.9	0.5	2.5	5.1	34.5	5.1		0.0	0.4	1.3	1.5	1.6	0.1	0.7	1.0	2.0	1.7	1.4	
OA Non-shrimp	15.4	2.9	2.9	0.1	0.6	1.8	10.1	2.6	0.1	0.2	0.1	0.6	1.1	0.6	0.2	0.2	0.5	0.7	1.1	0.5	0.0
Total	83.5	8.9	12.0	1.0	4.7	11.3	54.3	12.2	0.1	0.3	0.6	2.1	3.1	2.5	0.4	0.9	1.6	3.2	4.0	2.3	0.0

TABLE 9. Annual and bi-monthly commercial landings of overfished species by area and fleet, metric tons, 1999-2001. (Table 3.4-2 in the 2003 Specs EIS)

Species/Fleet	1999 All	2000 All	2001 All	1999 1	1999 2	1999 3	1999 4	1999 5	1999 6	2000 1	2000 2	2000 3	2000 4	2000 5	2000 6	2001 1	2001 2	2001 3	2001 4	2001 5	2001 6
Bocaccio																					
CA: Ft. Bragg-Avila																					
LE Trawl	30.3	16.1	13.9	5.5	5.1	5.8	6.3	5.6	2.0	0.8	2.3	3.3	2.7	3.8	3.2	2.0	2.2	3.1	3.8	2.7	0.0
LE Fixed-gear	3.6	1.6	1.5	0.3	0.8	0.5	0.6	1.4	0.1	0.0	0.0	0.5	0.5	0.5	0.1	0.3			0.9	0.4	
LE Shrimp-trawl	0.1	0.1	0.0	0.1	0.0			0.0		0.0	0.1		0.0	0.0					0.0		
OA Non-shrimp	19.4	4.9	4.2	2.8	3.9	2.6	4.6	3.7	1.8	0.7	0.0	1.1	0.7	1.2	1.1	1.6	0.0	0.0	1.6	1.0	
OA Shrimp-trawl	0.2	0.0		0.0	0.0	0.1	0.1	0.0				0.0									
Total	53.6	22.8	19.7	8.6	9.8	8.9	11.6	10.8	3.9	1.6	2.4	4.9	3.9	5.6	4.4	3.9	2.2	3.1	6.3	4.1	0.0
CA: S. of Avila																					
LE Fixed-gear	1.3	0.8	0.8	0.3	0.2	0.5	0.1	0.3	0.0		0.1	0.3	0.1	0.1	0.2	0.0	0.1	0.4	0.3	0.1	
LE Shrimp-trawl	0.1			0.1																	
OA Non-shrimp	3.4	1.0	2.2	0.9	1.2	0.8	0.1	0.3	0.1	0.0	0.1	0.2	0.1	0.1	0.5		0.3	0.5	0.3	1.0	
OA Shrimp-trawl	0.0	0.0	0.1	0.0	0.0			0.0			0.0	0.0			0.0		0.0	0.1			
Total	4.9	1.9	3.1	1.3	1.4	1.3	0.2	0.6	0.1	0.0	0.1	0.5	0.2	0.2	0.8	0.0	0.5	0.9	0.7	1.1	
Canary																					
Washington																					
LE Trawl	116.2	6.5	6.1	1.3	6.6	49.0	42.3	16.8	0.2		0.3	1.4	2.0	2.2	0.5	0.3	0.3	1.4	3.1	1.1	
LE Fixed-gear	3.0	1.6	1.2		0.0	0.6	1.4	1.0		0.1	0.2	0.9	0.3	0.1	0.1	0.0	0.1	0.6	0.5	0.1	
LE Shrimp-trawl	0.4	0.4			0.0	0.2	0.2	0.1				0.2	0.1	0.2							
OA Non-shrimp	2.6	0.9	0.3	0.0	0.5	1.6	0.3	0.2			0.0	0.6	0.1	0.1	0.0		0.0	0.3	0.0	0.0	
OA Shrimp-trawl	0.8	0.9	0.3		0.1	0.2	0.4	0.2				0.1	0.2	0.6			0.0	0.2	0.1		
Total	123.1	10.2	7.9	1.3	7.2	51.7	44.5	18.2	0.2	0.1	0.5	3.1	2.7	3.2	0.6	0.3	0.4	2.4	3.6	1.2	
OR: N. of Yachats																					
LE Trawl	218.5	14.2	8.1	6.7	48.9	75.5	55.3	32.0	0.1	0.0	0.2	6.5	3.5	3.5	0.4	0.2	0.6	2.8	3.5	1.0	0.0
LE Fixed-gear	13.2	0.7	0.3		2.0	7.5	3.0	0.7		0.0	0.0	0.4	0.1	0.1			0.0	0.0	0.0	0.2	
LE Shrimp-trawl	5.1	2.1	0.3		0.0	2.2	2.0	0.8				0.6	1.2	0.3			0.0	0.2	0.1		
OA Non-shrimp	18.4	0.9	0.4	0.0	6.7	10.3	1.1	0.3	0.0	0.0	0.1	0.5	0.2	0.1	0.0	0.0	0.0	0.2	0.1	0.0	
OA Shrimp-trawl	17.8	4.8	1.5		0.4	8.5	5.8	3.0	0.0		0.0	1.4	2.5	0.8			0.1	0.6	0.7	0.0	
Total	272.9	22.6	10.5	6.7	58.0	104.1	67.2	36.8	0.1	0.0	0.3	9.5	7.6	4.9	0.4	0.3	0.7	3.8	4.5	1.2	0.0
OR: S. of Yachats																					
LE Trawl	73.9	2.2	3.3	5.5	4.3	38.0	16.5	9.2	0.3	0.0	0.2	0.7	0.4	0.7	0.2	0.1	0.3	1.2	1.2	0.4	
LE Fixed-gear	35.6	3.1	3.5	2.0	5.0	15.2	11.0	2.4	0.0	0.1	0.3	0.7	0.8	0.9	0.2	0.6	0.5	0.9	0.9	0.7	
LE Shrimp-trawl	7.0	1.7	0.3		0.3	2.5	1.9	2.3				0.1	1.5	0.1				0.3	0.0		
OA Non-shrimp	32.9	1.7	1.6	0.2	3.7	7.6	16.2	5.0	0.3	0.0	0.2	0.6	0.5	0.3	0.0	0.1	0.4	0.7	0.3	0.1	
OA Shrimp-trawl	2.1	1.2	0.1		0.6	0.4	0.6	0.6				0.1	0.9	0.2			0.0	0.0	0.0	0.0	
Total	151.6	9.9	8.8	7.7	13.9	63.8	46.1	19.5	0.6	0.1	0.7	2.2	4.1	2.3	0.4	0.8	1.2	3.1	2.5	1.2	
CA: N. of Ft. Bragg																					
LE Trawl	58.3	8.1	5.6	4.8	3.3	9.8	33.6	6.0	0.8	0.0	0.8	1.0	3.9	2.1	0.3	0.1	0.5	2.0	2.4	0.7	
LE Fixed-gear	0.0	0.1	0.1			0.0				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0			
LE Shrimp-trawl	1.4	0.0	0.1		0.2	0.4	0.6	0.1				0.0	0.0	0.0		0.0		0.0	0.0	0.0	
OA Non-shrimp	0.5	0.4	0.2		0.0		0.5	0.0		0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.1	0.1	0.0	0.0	
OA Shrimp-trawl	0.5	0.4	0.2		0.1	0.1	0.2	0.2				0.0	0.3						0.2		
Total	60.8	9.0	6.2	4.8	3.6	10.3	34.9	6.4	0.8	0.0	0.8	1.1	4.4	2.3	0.4	0.1	0.6	2.1	2.6	0.7	

TABLE 9. Annual and bi-monthly commercial landings of overfished species by area and fleet, metric tons, 1999-2001. (Table 3.4-2 in the 2003 Specs EIS)

Species/Fleet	1999	2000	2001	1999						2000						2001					
	All	All	All	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
CA: Ft. Bragg-Avila																					
LE Trawl	27.7	2.4	2.4	7.3	4.7	6.7	5.2	2.9	0.9	0.1	0.5	0.6	0.5	0.5	0.2	0.2	0.2	0.8	0.8	0.4	0.0
LE Fixed-gear	3.6	0.5			1.0	0.8	0.1	1.7		0.0	0.0	0.1	0.1	0.1	0.1						
LE Shrimp-trawl	0.4	0.0			0.4		0.0	0.0			0.0										
OA Non-shrimp	2.1	1.1	0.4	0.2	0.2	0.2	1.0	0.4	0.2	0.3	0.0	0.2	0.2	0.3	0.2	0.1			0.2	0.1	
OA Shrimp-trawl	0.1	0.0					0.1					0.0		0.0							
Total	33.8	4.1	2.8	7.5	6.2	7.7	6.3	4.9	1.1	0.4	0.6	0.9	0.9	0.9	0.5	0.2	0.2	0.8	1.0	0.5	0.0
Cowcod																					
CA: Ft. Bragg-Avila																					
LE Trawl	3.8	1.4	0.8	0.5	1.2	0.1	0.8	1.2	0.0	0.1	0.2	0.1	0.3	0.3	0.3	0.4	0.2	0.0	0.1	0.1	0.1
LE Fixed-gear	0.0	0.5					0.0			0.0	0.0	0.0	0.3	0.1	0.0						
LE Shrimp-trawl		0.0									0.0	0.0	0.0	0.0							
OA Non-shrimp	0.4	0.2	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1			0.0			
OA Shrimp-trawl	0.1	0.1		0.0	0.0	0.0	0.1	0.0			0.0	0.0	0.0								
Total	4.3	2.1	0.8	0.5	1.2	0.3	1.0	1.2	0.1	0.2	0.3	0.2	0.7	0.5	0.4	0.4	0.2	0.0	0.1	0.1	0.1
CA: S. of Avila																					
LE Fixed-gear	0.3	0.0		0.1	0.0	0.1	0.1	0.0	0.0		0.0	0.0	0.0	0.0							
OA Non-shrimp	1.8	0.3		0.4	0.8	0.2	0.3	0.0	0.2		0.0	0.1	0.1	0.1	0.0						
OA Shrimp-trawl	0.1						0.1														
Total	2.2	0.3		0.4	0.9	0.2	0.5	0.1	0.2		0.0	0.1	0.1	0.1	0.0						
Darkblotched																					
Washington																					
LE Trawl	10.3	8.6	8.2	1.5	2.6	2.9	2.2	1.0	0.1	0.5	0.7	1.0	3.1	1.8	1.5	0.8	1.2	1.2	1.6	3.3	
LE Fixed-gear			0.0																0.0	0.0	
OA Non-shrimp	0.0	0.0	0.0					0.0					0.0						0.0		
Total	10.3	8.7	8.2	1.5	2.6	2.9	2.2	1.1	0.1	0.5	0.7	1.0	3.2	1.8	1.5	0.8	1.2	1.2	1.6	3.3	
OR: N. of Yachats																					
LE Trawl	68.5	57.1	32.7	1.0	10.0	22.7	28.3	6.3	0.3	6.4	6.7	13.0	9.9	13.5	7.5	5.9	3.9	7.6	8.7	6.7	
LE Fixed-gear		0.1	0.0										0.1	0.0						0.0	
LE Shrimp-trawl	0.2					0.0		0.1													
OA Non-shrimp	0.0						0.0														
OA Shrimp-trawl	1.1		0.0			0.3	0.5	0.3										0.0	0.0	0.0	
Total	69.8	57.2	32.7	1.0	10.0	23.1	28.8	6.6	0.3	6.4	6.7	13.0	9.9	13.6	7.5	5.9	3.9	7.6	8.7	6.7	
OR: S. of Yachats																					
LE Trawl	120.7	53.6	31.0	28.2	27.1	40.9	14.8	8.3	1.4	13.0	7.5	15.8	4.5	8.3	4.5	6.1	6.0	7.0	7.8	3.9	0.1
LE Fixed-gear		0.0	0.2										0.0	0.0		0.0		0.0		0.2	
LE Shrimp-trawl	1.8		0.0		0.0	0.0	1.5	0.3										0.0			
OA Non-shrimp	0.0	0.0	0.1		0.0									0.0			0.1	0.0			
OA Shrimp-trawl	0.9	0.0	0.0		0.0	0.0	0.8	0.1				0.0						0.0			
Total	123.4	53.7	31.3	28.2	27.2	40.9	17.1	8.7	1.4	13.0	7.5	15.8	4.5	8.4	4.5	6.1	6.1	7.1	7.8	4.1	0.1
CA: N. of Ft. Bragg																					
LE Trawl	75.8	59.9	24.9	2.3	17.0	27.4	18.5	10.1	0.4	5.3	6.6	18.6	19.8	8.4	1.0	3.3	6.0	11.2	3.0	1.5	0.0
LE Fixed-gear		0.0	0.1								0.0						0.1	0.0	0.0	0.0	
LE Shrimp-trawl			0.0																0.0		
OA Non-shrimp	0.1	0.2	0.0				0.0	0.0		0.0			0.2						0.0		
OA Shrimp-trawl			0.0															0.0			
Total	75.8	60.1	25.1	2.3	17.0	27.4	18.5	10.1	0.4	5.3	6.7	18.6	20.0	8.4	1.0	3.3	6.1	11.2	3.0	1.5	0.0

TABLE 9. Annual and bi-monthly commercial landings of overfished species by area and fleet, metric tons, 1999-2001. (Table 3.4-2 in the 2003 Specs EIS)

Species/Fleet	1999	2000	2001	1999						2000						2001					
	All	All	All	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
CA: Ft. Bragg-Avila																					
LE Trawl	4.9	37.3	44.2	1.1	0.1	2.2	0.3	1.1	0.1	3.5	3.7	4.1	5.3	9.5	11.2	6.1	7.8	6.7	10.4	11.0	2.2
LE Fixed-gear		1.6	1.4							0.0	0.7	0.3	0.3	0.3	0.0				0.6	0.8	
OA Non-shrimp	0.0	0.3	0.1					0.0		0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0		0.0		0.1
Total	5.0	39.2	45.7	1.1	0.1	2.2	0.3	1.1	0.1	3.5	4.5	4.4	5.7	9.9	11.2	6.1	7.8	6.7	11.0	11.8	2.3
Lingcod																					
Washington																					
LE Trawl	21.9	9.1	8.9	1.0	2.7	7.5	8.3	1.6	0.9			3.2	3.2	2.7				3.2	3.1	2.6	
LE Fixed-gear	8.2	4.5	6.1		0.1	2.1	4.8	1.2				1.5	2.1	0.8	0.1			1.6	3.1	1.4	
LE Shrimp-trawl	0.5	0.5	0.0			0.3	0.2	0.0				0.4	0.1					0.0	0.0		
OA Non-shrimp	9.2	10.0	5.0		2.9	3.5	2.0	0.8			1.1	5.9	2.6	0.4	0.0			2.5	1.7	0.8	
OA Shrimp-trawl	1.8	1.8	1.0		0.1	0.3	1.1	0.4				0.9	0.9					0.6	0.5		
Total	41.7	25.9	21.2	1.0	5.8	13.7	16.3	4.1	0.9		1.1	11.8	9.0	3.9	0.1			7.9	8.4	4.8	
OR: N. of Yachats																					
LE Trawl	64.3	16.9	13.4	2.9	14.1	18.9	17.5	9.8	1.1		0.1	3.6	9.5	3.6	0.1	0.0		4.8	5.0	3.6	
LE Fixed-gear	1.6	1.7	3.3		0.0	0.2	1.0	0.5				0.6	1.0	0.1				0.3	1.6	1.4	
LE Shrimp-trawl	3.6	3.9	0.8		0.0	1.7	1.3	0.6				2.1	1.5	0.3				0.5	0.3	0.1	
OA Non-shrimp	9.1	8.0	8.0		1.4	3.2	3.7	0.8				5.6	2.5	0.0				3.9	3.1	1.0	0.0
OA Shrimp-trawl	11.5	6.1	3.9		0.2	4.2	4.6	2.5				3.2	2.9				0.0	2.3	1.6	0.0	
Total	90.1	36.7	29.5	2.9	15.7	28.2	28.0	14.2	1.1		0.1	15.2	17.3	3.9	0.1	0.0	0.0	11.8	11.4	6.2	0.0
OR: S. of Yachats																					
LE Trawl	32.7	8.0	9.2	1.9	4.1	10.5	8.3	5.9	1.9			3.5	1.8	2.5	0.2			3.4	2.6	3.2	
LE Fixed-gear	13.4	6.1	5.8	1.5	3.2	3.3	3.9	1.3	0.1			1.5	1.8	2.7	0.0			2.3	1.7	1.8	
LE Shrimp-trawl	9.8	1.6	0.3		0.9	3.6	3.9	1.4				0.9	0.7					0.0	0.2	0.1	
OA Non-shrimp	24.9	10.9	21.5		3.3	6.7	12.1	2.8	0.0			6.5	4.4	0.0	0.0			10.0	6.0	5.5	
OA Shrimp-trawl	3.0	1.0	0.5		0.2	1.2	1.1	0.6				0.6	0.4					0.3	0.2	0.0	
Total	83.8	27.6	37.3	3.4	11.7	25.3	29.3	12.0	2.1			13.0	9.1	5.3	0.2			16.0	10.6	10.6	
CA: N. of Ft. Bragg																					
LE Trawl	42.2	17.0	16.9	1.6	4.3	13.8	14.0	6.8	1.8			5.1	6.3	5.4	0.1			6.3	5.0	5.6	
LE Fixed-gear	4.4	2.3	1.8	0.0	0.3	1.3	1.3	1.5				0.8	0.6	0.9			0.0	0.8	0.8	0.2	
LE Shrimp-trawl	0.9	0.0	0.3		0.1	0.1	0.6	0.1				0.0		0.0				0.3		0.0	
OA Non-shrimp	10.8	6.9	9.7	0.0	0.5	2.6	5.4	2.3		0.1		3.4	3.4					2.8	3.7	3.2	
OA Shrimp-trawl	0.9	0.2	0.0		0.0	0.4	0.2	0.3				0.1	0.1							0.0	
Total	59.2	26.4	28.6	1.6	5.2	18.1	21.5	11.0	1.8	0.1		9.4	10.5	6.4	0.1		0.0	10.2	9.5	8.9	
CA: Ft. Bragg-Avila																					
LE Trawl	43.3	10.8	10.0	4.8	5.7	8.6	11.7	8.3	4.2	0.0	0.0	2.9	4.0	3.9	0.1	0.2	0.0	3.3	3.0	3.4	0.1
LE Fixed-gear	5.5	2.6	1.8	0.6	0.7	0.4	1.2	2.2	0.3			0.5	0.8	1.3	0.0				0.7	1.0	0.1
LE Shrimp-trawl	0.1	0.3	0.1			0.0	0.0					0.1	0.2					0.1		0.0	
OA Non-shrimp	30.8	13.1	19.3	0.6	3.6	9.4	10.8	5.9	0.4	0.0	0.0	5.5	7.4	0.1	0.1	0.0	0.0	0.2	10.5	8.5	0.0
OA Shrimp-trawl	0.3	0.0	0.0			0.0	0.3					0.0	0.0							0.0	
Total	79.9	26.8	31.2	6.0	10.0	18.4	24.1	16.3	4.9	0.0	0.0	8.9	12.4	5.2	0.2	0.2	0.1	3.6	14.2	13.0	0.2

TABLE 9. Annual and bi-monthly commercial landings of overfished species by area and fleet, metric tons, 1999-2001. (Table 3.4-2 in the 2003 Specs EIS)

Species/Fleet	1999	2000	2001	1999						2000						2001					
	All	All	All	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
Pacific Ocean Perch																					
Washington																					
LE Trawl	144.8	34.9	50.6	9.1	17.4	40.5	33.5	33.6	10.7	1.3	1.9	11.3	10.7	7.6	2.2	6.4	5.2	10.0	16.2	12.7	
LE Fixed-gear		0.5	0.0									0.5						0.0		0.0	
LE Shrimp-trawl		0.0										0.0									
OA Non-shrimp	0.1	0.0	0.0					0.1					0.0						0.0		
OA Shrimp-trawl	0.0	0.0	0.0				0.0					0.0	0.0				0.0				
Total	144.9	35.5	50.6	9.1	17.4	40.5	33.6	33.7	10.7	1.3	1.9	11.8	10.7	7.6	2.2	6.4	5.2	10.0	16.2	12.7	
OR: N. of Yachats																					
LE Trawl	303.9	95.7	129.8	15.7	48.7	73.1	98.5	52.6	15.1	4.7	3.9	24.0	27.6	26.5	8.9	16.0	15.2	34.1	37.2	27.4	
LE Fixed-gear		0.0	0.0										0.0						0.0	0.0	
LE Shrimp-trawl	0.0	0.0	0.0			0.0	0.0	0.0				0.0	0.0	0.0				0.0			
OA Non-shrimp	0.0						0.0														
OA Shrimp-trawl	0.1	0.1	0.0		0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0				0.0			
Total	304.0	95.8	129.9	15.7	48.8	73.2	98.5	52.7	15.1	4.7	3.9	24.1	27.7	26.5	8.9	16.0	15.2	34.1	37.2	27.4	
OR: S. of Yachats																					
LE Trawl	21.1	6.0	6.5	3.1	4.2	4.9	5.0	1.7	2.3	0.8	0.2	2.8	0.5	0.8	0.9	1.8	2.1	1.1	1.0	0.4	
LE Fixed-gear	0.1	0.0	0.0			0.1							0.0	0.0							0.0
LE Shrimp-trawl		0.1										0.1									
OA Non-shrimp	0.1	0.0			0.0	0.1					0.0			0.0							
OA Shrimp-trawl		0.0										0.0									
Total	21.3	6.1	6.5	3.1	4.2	5.1	5.0	1.7	2.3	0.8	0.2	2.9	0.5	0.8	0.9	1.8	2.1	1.1	1.0	0.4	0.0
CA: N. of Ft. Bragg																					
LE Trawl	10.6	3.1	0.3	0.4	4.6	4.0	1.5	0.1		0.1	0.5	0.7	1.2	0.6			0.0	0.2	0.1	0.0	
OA Non-shrimp			0.0																0.0		
Total	10.6	3.1	0.4	0.4	4.6	4.0	1.5	0.1		0.1	0.5	0.7	1.2	0.6			0.0	0.2	0.1	0.0	
CA: Ft. Bragg-Avila																					
LE Trawl	1.0		0.3		1.0											0.1	0.2	0.0			
LE Fixed-gear		0.1											0.1								
OA Non-shrimp			0.0																		0.0
Total	1.0	0.1	0.3		1.0								0.1			0.1	0.2	0.0			0.0
Widow																					
Washington																					
LE Trawl	513.4	373.0	289.8	146.0	137.9	29.2	43.1	93.9	63.3	30.6	26.6	13.7	36.6	143.0	122.4	67.7	75.6	17.5	16.5	9.1	103.4
LE Fixed-gear	0.0		0.0				0.0	0.0											0.0		
LE Shrimp-trawl		0.0	0.0										0.0							0.0	
OA Non-shrimp	0.5	0.9	0.0			0.0	0.0	0.2	0.3		0.0	0.4	0.4	0.1				0.0	0.0		
OA Shrimp-trawl	0.0		0.1					0.0									0.1	0.1			
Total	514.0	373.9	289.9	146.0	137.9	29.2	43.2	94.1	63.6	30.6	26.6	14.1	37.1	143.1	122.4	67.7	75.6	17.6	16.5	9.2	103.4
OR: N. of Yachats																					
LE Trawl	2,156.7	2,008.0	846.5	452.6	387.2	137.3	193.9	432.6	553.2	244.9	215.5	230.0	340.1	533.8	443.8	210.2	212.9	85.1	29.1	1.1	308.2
LE Fixed-gear	0.1	0.0	0.0		0.0	0.0	0.1	0.0				0.0	0.0						0.0	0.0	
LE Shrimp-trawl	0.4	0.3	0.1			0.1	0.1	0.2				0.1	0.1	0.2			0.0	0.0	0.0		
OA Non-shrimp	1.4	0.3	0.0		1.2	0.0	0.0	0.2				0.0	0.2	0.0			0.0				
OA Shrimp-trawl	2.3	1.0	0.4		0.4	0.5	0.6	0.8			0.0	0.6	0.3	0.1			0.2	0.2	0.0		
Total	2,161.0	2,009.6	847.1	452.6	388.7	137.9	194.8	433.8	553.2	244.9	215.5	230.7	340.8	534.0	443.8	210.2	213.0	85.3	29.2	1.1	308.2

TABLE 9. Annual and bi-monthly commercial landings of overfished species by area and fleet, metric tons, 1999-2001. (Table 3.4-2 in the 2003 Specs EIS)

Species/Fleet	1999	2000	2001	1999						2000						2001					
	All	All	All	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
OR: S. of Yachats																					
LE Trawl	583.8	698.1	296.1	146.0	171.8	78.1	47.7	82.5	57.7	43.5	121.7	87.3	108.5	172.7	164.4	55.0	88.3	28.8	3.4	0.5	120.1
LE Fixed-gear	9.0	1.0	0.3	1.1	0.7	2.1	3.3	1.9		0.1	0.7	0.2		0.0	0.0	0.1	0.1	0.0	0.0	0.0	
LE Shrimp-trawl	1.9	0.5	0.1		0.3	0.7	0.6	0.3				0.1	0.3	0.1				0.1			
OA Non-shrimp	4.2	1.2	0.5		1.4	0.9	1.2	0.7			0.1	0.5	0.0	0.6	0.0	0.2	0.2	0.0	0.0	0.0	
OA Shrimp-trawl	0.9	0.4	0.0		0.1	0.1	0.5	0.1				0.0	0.2	0.2			0.0	0.0	0.0		
Total	599.8	701.1	296.9	147.1	174.3	81.8	53.4	85.5	57.7	43.6	122.4	88.1	109.0	173.6	164.4	55.3	88.5	29.0	3.4	0.5	120.1
CA: N. of Ft. Bragg																					
LE Trawl	221.5	413.3	255.9	57.2	53.3	42.4	34.0	20.5	14.1	13.6	64.8	26.8	81.5	165.4	61.3	38.3	77.9	44.7	1.7	0.4	92.8
LE Fixed-gear	0.7	2.7		0.1		0.1	0.5	0.1				1.3	0.1	1.2	0.0						
LE Shrimp-trawl	2.8	0.1	0.3		0.4	0.9	1.5	0.0				0.0	0.1					0.3			
OA Non-shrimp	2.0	2.4	1.1	0.0	0.2	0.2	0.7	0.9	0.0	0.0	0.0	0.2	1.0	1.2	0.1	0.0	0.1	0.9	0.1	0.1	0.0
OA Shrimp-trawl	1.4	0.2	0.0		0.0	1.0	0.3	0.0				0.1	0.1					0.0			
Total	228.4	418.7	257.3	57.3	53.9	44.6	37.0	21.6	14.2	13.7	64.8	28.4	82.8	167.7	61.3	38.3	78.0	45.9	1.8	0.5	92.8
CA: Ft. Bragg-Avila																					
LE Trawl	360.8	269.5	62.2	80.2	93.5	22.1	26.8	65.1	73.1	41.4	58.6	46.6	34.5	54.1	34.3	16.8	1.5	13.5	2.8	4.4	23.1
LE Fixed-gear	6.2	1.7	0.2	0.6	1.2	0.3	0.1	3.7	0.4	0.0		0.3	0.7	0.3	0.3	0.0			0.1	0.2	
LE Shrimp-trawl	0.0	0.0			0.0			0.0			0.0			0.0							
OA Non-shrimp	33.2	12.8	11.4	4.5	2.1	1.7	6.5	13.0	5.5	2.0		0.5	1.0	4.5	4.8	4.9	1.0	0.9	3.0	1.5	0.1
OA Shrimp-trawl	0.0	0.1					0.0		0.0		0.0	0.0	0.1								
Total	400.3	284.1	73.8	85.3	96.8	24.0	33.3	81.8	79.0	43.4	58.7	47.5	36.3	58.9	39.4	21.7	2.5	14.4	5.9	6.0	23.2
Yelloweye																					
Washington																					
LE Trawl	9.9	0.2	0.8	0.3	0.3	0.9	4.7	3.8			0.0	0.1	0.0	0.0			0.0	0.0	0.5	0.3	
OA Non-shrimp	0.0	0.0						0.0					0.0								
Total	9.9	0.2	0.8	0.3	0.3	0.9	4.7	3.8			0.0	0.1	0.0	0.0			0.0	0.0	0.5	0.3	
OR: N. of Yachats																					
LE Trawl	1.2		0.2	0.0	0.2	0.4	0.4	0.2	0.0								0.0	0.0	0.1	0.0	
LE Fixed-gear	17.2				0.3	0.9	14.2	1.8													
OA Non-shrimp	1.1				0.3	0.5	0.1	0.1	0.0												
Total	19.5		0.2	0.0	0.8	1.8	14.7	2.1	0.0								0.0	0.0	0.1	0.0	
OR: S. of Yachats																					
LE Trawl	1.5	0.1	0.4	0.0	0.2	1.1	0.1	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.1	0.2	0.1	0.1	
LE Fixed-gear	26.4	3.3	5.2	0.2	1.9	3.8	19.3	1.2			0.3	0.9	1.2	0.9		0.6	0.7	1.4	1.2	1.3	
OA Non-shrimp	9.0	0.9	1.1		0.1	0.6	6.7	1.5	0.0		0.0	0.2	0.4	0.2		0.1	0.2	0.2	0.3	0.2	
Total	36.9	4.3	6.6	0.2	2.3	5.6	26.0	2.8	0.1		0.4	1.2	1.7	1.1	0.0	0.8	0.9	1.7	1.7	1.6	
CA: N. of Ft. Bragg																					
LE Trawl	6.7	0.7	0.8	0.0	0.0	1.7	4.5	0.5			0.0	0.0	0.4	0.2	0.0	0.0		0.3	0.4	0.1	
LE Fixed-gear	1.7	1.0	1.5		0.2	0.4	0.6	0.6		0.0	0.1	0.3	0.1	0.5		0.1	0.3	0.6	0.5	0.1	
OA Non-shrimp	3.7	1.3	1.7		0.0	0.5	2.3	0.8	0.0	0.1	0.1	0.3	0.5	0.3	0.1	0.0	0.3	0.5	0.6	0.2	
Total	12.1	3.0	4.0	0.0	0.2	2.6	7.4	1.9	0.0	0.1	0.1	0.7	1.0	1.0	0.1	0.1	0.6	1.4	1.5	0.3	
CA: Ft. Bragg-Avila																					
LE Trawl	1.2	0.1	0.1	0.0	0.9	0.2	0.1	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0		
LE Fixed-gear	2.3	0.6	0.2	0.4	0.1	0.0	0.4	1.5		0.0	0.0	0.0	0.1	0.3	0.1	0.0	0.1		0.0	0.0	
OA Non-shrimp	1.6	0.7	0.2	0.1	0.2	0.2	1.0	0.1	0.0	0.2	0.0	0.1	0.2	0.1	0.1	0.0			0.1	0.1	0.0
Total	5.1	1.4	0.4	0.5	1.1	0.4	1.5	1.6	0.0	0.2	0.0	0.1	0.3	0.5	0.3	0.1	0.1	0.0	0.2	0.1	0.0

TABLE 10. Landings (mt) of target species and estimated discard mortality (mt) of overfished West Coast groundfish species in incidental open access fisheries in 2001. (Table 3.4-5 in the 2003 Specs EIS)

Fishery	Total Target Species	Total GF	Total RF [1/]	Bocaccio	Canary	Cowcod	Dark-blotched	Lingcod	POP	Whiting	Widow	Yellow-eye
North of 40°10' N. lat.												
Dungeness Crab	10,090			NA		NA						
Pacific Halibut	149			NA		NA						
Pink Shrimp	17,482			NA		NA						
Salmon Troll	1,788			NA	0.79	NA	UR	UR	UR	UR	0.11	0.10
Spot Prawn (trawl)	TR	UR	UR	NA	UR	NA	UR	UR	UR	UR	UR	UR
Spot Prawn (trap)	TR	UR	UR	NA	UR	NA	UR	UR	UR	UR	UR	UR
South of 40°10' N. lat.												
CA Halibut	241	293.42	40.97	1.84	0.22	UR	0.70	UR	UR	UR	0.35	UR
CPS- squid	85,929											
CPS- wetfish	81,549											
Dungeness Crab	842											
Gillnet Complex	264											
HMS	6,072											
Pink shrimp	113	1.65	1.19	0.03	0.02	UR	0.02	UR	UR	UR	TR	UR
Ridgeback prawn	161	2.71	0.21	0.07	UR	UR	UR	UR	UR	UR	UR	UR
Salmon troll	1,192			0.01	0.05	UR	UR	0.25	UR	UR	0.01	0.01
Sea Cucumber	323	0.60	0.10	0.00	0.00	0.00	0.00	UR	UR	UR	UR	UR
Spot Prawn (trawl)	91	50.84	7.97	4.58	TR	1.07	0.68	14.86	UR	214.68	2.27	0.03
Spot Prawn (trap)	95			0.26	UR	0.17	TR	11.30	UR	UR	TR	TR

TR- Trace amount (<0.01 mt); NA- Not applicable, UR- Unreported

TABLE 11. Recreational catch of overfished groundfish, 1999-2001(landed catch in mt). (Table 3.4-3 in the 2003 Specs EIS)

Year/Species	S. California	N. California	Oregon	Washington	Total
1999					
Bocaccio	71	53	N/A	N/A	124
Canary	2	63	43	4	112
Cowcod	4	2	-	-	6
Widow	<0.1	30	2	-	32
Yelloweye	2	11	27	18	58
Lingcod	30	306	112	34	482
2000					
Bocaccio	52	59	N/A	N/A	111
Canary	<0.1	77	31	3	111
Cowcod	4	2	-	-	6
Widow	<0.1	12	15	-	27
Yelloweye	-	8	10	9	27
Lingcod	5	175	124	31	335
2001					
Bocaccio	60	49	N/A	N/A	109
Canary	-	33	16	3	52
Cowcod	N/A	N/A	N/A	N/A	N/A
Widow	<0.1	9	1	-	10
Yelloweye	-	5	3	20	28
Lingcod	23	130	111	32	296

TABLE 12. Bycatch Scorecard (June 2003 Council meeting)

STATEMENT OF THE GROUNDFISH MANAGEMENT TEAM ON INSEASON ADJUSTMENTS

Updated Bycatch Scorecard Based on Council Inseason Action (6/19/03)

Estimated mortality (mt) of overfished West Coast groundfish species by fishery in 2003.

Fishery	Bocaccio *1/*	Canary	Cowcod	Dkbl	Lingcod *7/*	POP	Whiting	Widow	Yelloweye
Limited Entry Groundfish									
Trawl- Non-whiting *2/*	9.8	11.0		88.0	77.0	65.5	1,800	1.4	0.6
Trawl- at-sea whiting 2a/		4.1		5.0	0.3	9.0	95,300	182.0	0.0
Trawl- shoreside whiting		0.5		1.5	0.2	0.2	50,900	30.0	
Fixed Gear	1.05	0.66	0.1		20.0				1.0
Recreational Groundfish									
WA		1.5			35.0				3.5
OR		9.6			105.0			4.0	3.7
CA (N)		0.5			195.0			1.0	0.1
CA (S)	6.27	2.77			20.0			0.0	0.4
Tribal									
Midwater Trawl		1.1		0.0	0.0	0.0	0	45.0	0.0
Bottom Trawl				0.0	4.5	0.0			
Troll		0.5		0.0	0.9	0.0			0.1
Fixed gear		0.7		0.0	5.5	0.0		0.0	3.0
Open Access									
Groundfish directed	0.2	0.3	0.0		50.0				0.5
CA Halibut	0.5	0.1	0.1	0.0	0.0	0.0	0	0.0	0.1
CA Gillnet *3/*	0.5								
CA Sheepshead *3/*									
CPS- wetfish *3/*	0.5								
CPS- squid *4/ 5/*									
Dungeness crab *3/*				0.0					
HMS *3/*		0.0	0.0	0.0					
Pacific Halibut *3/*	0.0	0.0		0.0	UR	0.0	0	0.0	0.5
Pink shrimp	0.1	0.5		0.0	0.5	0.0	1	0.1	0.1
Ridgeback prawn	0.1	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0
Salmon troll	0.2	1.6			0.3			0.0	0.2
Sea Cucumber	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0
Spot Prawn (trawl)									
Spot Prawn (trap)									
Research: Based on 2 most recent NMFS trawl shelf and slope surveys, the IPHC halibut survey, and LOAs with expanded estimates for south of Pt. Conception.									
	2.0	1.0		1.6	3.0	3.0	200	1.5	0.8
EFPs: *6/*									
CA: NS FF trawl	0.5	0.5	0.2		20.0				0.5
OR: selective FF trawl		4.0		3.1	13.0			1.0	1.2
WA: AT trawl		3.0		3.0	2.0	10.0		3.0	0.4
WA: dogfish LL		0.0		0.0	0.0	0.0	0	0.0	0.0
WA: pollock		0.0		0.0	0.0	0.0	0	0.0	0.0
EFP Subtotal		7.5		6.1	35.0	10.0	0.0	4.0	2.1
TOTAL	21.72	43.93	0.4	102.2	552.2	87.7	148,200	269.0	16.7
2003 OY	< 20	44.0	2.4	172.0	651.0	377.0	148,200	832.0	22.0

Shaded cells represent either NA- Not applicable; TR- Trace amount (<0.01 mt); UR- Not reported in available data sources.

1/ South of 40°10' N. lat.

2/ Using observer data, all landings are results of modeling GMT Option 1

2a/ Calculated using five-year average (1998-2002); includes tribal at-sea whiting

3/ Mortality estimates are not hard numbers, based on their GMT's best professional judgement.

4/ Bycatch amounts by species unavailable, but bocaccio occurred in 0.1% of all port samples and other rockfish in another 0.1% of all port samples (and squid fisheries usually land their whole catch). In 2001, out of 84,000 mt total landings 1 mt was groundfish. This suggests that total bocaccio was caught in trace amounts.

5/ Expected landed catch only. Discard/total mortality estimates not available.

6/ The Council capped the 2003 canary rockfish set-aside for all the EFPs in combination at 7.5 mt to derive an expected total catch of 44 mt of canary rockfish in 2003.

7/ Lingcod total reflects total catch, not mortality

TABLE 13. Impacts to Bocaccio and Canary Rockfish (June 2003 Council meeting)

Exhibit B.8.b
Supplemental GMT Report 4
June 2003

STATEMENT OF THE GROUNDFISH MANAGEMENT TEAM ON INSEASON ADJUSTMENTS

Summary of Impacts for Bocaccio and Canary Rockfish
Resulting from Council Inseason Action (6/19/03)

Bocaccio	
Move shallow line for trawl to 60 fms south of 40o10' in Period 4	0.8
Move shallow line for recreational to 30 fms south of 34o27' (Sep-Dec)*	1.27
Move shallow line for commercial FG & OA to 30 fms south of 34o27' (Sep-Dec)*	0.95
Subtotal	3.02
Previous Balance	18.7
Total	**21.72**

Canary	
Move shallow line for trawl to 75 fms north of 40o10' in Period 4	2.85
Move shallow line for trawl to 60 fms south of 40o10' in Period 4	0.05
Move shallow line for recreational to 30 fms south of 34o27' (Sep-Dec)	0.07
Move shallow line for commercial FG & OA to 30 fms south of 34o27' (Sep-Dec)	0.16
Subtotal	3.13
Previous Balance	40.8
Total	**43.93**

* NOTE: The GMT reviewed the methodology for the analysis that produced these results and believes these results to be reasonable. CDFG staff expressed that these should be considered maximum values as there have been many regulatory changes to the CA recreational and commercial fixed gear and open access fisheries since the base periods that were used (1993-99 for recreational and 1995-99 for commercial). These changes include additional closed areas to protect rockfish (e.g., Cowcod Conservation Area); reduction in rockfish bag limit from 15 to 10; number of hooks allowed reduced from 5 (or higher) to 2; and significantly reduced commercial fishing opportunity for shelf rockfish species.

TABLE 14. Number of vessels by vessel primary port and species group for the base period (November 2000 through October 2001). (Table 3.3-40 in the 2003 Specs EIS)

	Vessels with Limited Entry Trawl Permits						Vessels with Fixed Gear Limited Entry Permits (No Trawl Permit)					Open Access Vessels with More than 5% Revenue from Groundfish					Open Access Vessels with Less than 5% Revenue from Groundfish					Total for All Groundfish	Vessels Participating in Other Fisheries							
	Whiting	Sablefish	Nearshore SPP	Shelf Spp	Slope Spp	Total	Sablefish	Nearshore Spp	Shelf Spp	Slope Spp	Total	Sablefish	Nearshore Spp	Shelf Spp	Slope Spp	Total	Sablefish	Nearshore Spp	Shelf Spp	Slope Spp	Total		Halibut (Pac & CA)	Shrimp/Prawns	Crabs	Salmon	HMS	CPS	Other	Total
Blaine	2	4	4	4	4	4	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	5	-	-	11	-	-	-	117	119
Bellingham	1	5	5	5	5	5	19	2	14	17	19	-	-	1	-	1	-	-	-	-	-	25	13	-	14	-	5	2	203	210
Point Roberts	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	6	6
Friday Harbor	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3
Anacortes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	74	74
LaConner	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	1	-	1	1	1	2	2	-	3	-	-	-	25	25
Everett	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	51	51
Seattle	-	-	-	-	-	-	2	-	-	2	2	-	-	-	-	-	-	-	1	-	1	3	3	-	12	1	7	1	75	93
Tacoma	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	2	-	26	27
Shelton	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4
Centralia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	14
Puget Sound Total	**3**	**9**	**9**	**9**	**9**	**9**	**21**	**2**	**14**	**19**	**21**	**1**	**0**	**1**	**0**	**2**	**3**	**1**	**3**	**2**	**4**	**36**	**19**	**1**	**42**	**3**	**14**	**3**	**598**	**626**
Port Townsend	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	23	23
Quilcene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2
Sequim	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	10
Port Angeles	-	3	3	3	3	3	14	1	13	14	15	12	6	17	8	20	-	-	4	1	4	42	19	-	1	11	2	-	25	58
Neah Bay	-	3	3	3	3	3	-	-	-	-	-	-	-	2	-	2	-	-	-	-	-	5	2	-	-	-	-	-	3	5
La Push	-	-	-	-	-	-	2	1	2	2	2	3	1	2	2	3	-	-	-	-	-	5	1	-	6	-	2	-	4	10
NW Olympic Peninsula Total	**0**	**6**	**6**	**6**	**6**	**6**	**16**	**2**	**15**	**16**	**17**	**15**	**7**	**21**	**10**	**25**	**0**	**0**	**4**	**1**	**4**	**52**	**22**	**0**	**7**	**11**	**5**	**0**	**67**	**108**
Copalis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	10
Aberdeen	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	2
Westport (WA)	5	11	5	12	11	12	11	-	9	11	11	6	-	4	4	6	7	1	21	3	22	51	16	13	100	40	58	9	44	178
Central WA Coast	**5**	**11**	**5**	**12**	**11**	**12**	**11**	**0**	**9**	**11**	**11**	**6**	**0**	**4**	**4**	**6**	**7**	**1**	**21**	**3**	**22**	**51**	**16**	**13**	**101**	**41**	**58**	**9**	**54**	**190**

TABLE 14. Number of vessels by vessel primary port and species group for the base period (November 2000 through October 2001). (Table 3.3-40 in the 2003 Specs EIS)

	Vessels with Limited Entry Trawl Permits						Vessels with Fixed Gear Limited Entry Permits (No Trawl Permit)					Open Access Vessels with More than 5% Revenue from Groundfish					Open Access Vessels with Less than 5% Revenue from Groundfish					Total for All Groundfish	Vessels Participating in Other Fisheries						
	Whiting	Sablefish	Nearshore SPP	Shelf Spp	Slope Spp	Total	Sablefish	Nearshore Spp	Shelf Spp	Slope Spp	Total	Sablefish	Nearshore Spp	Shelf Spp	Slope Spp	Total	Sablefish	Nearshore Spp	Shelf Spp	Slope Spp	Total		Halibut (Pac & CA)	Shrimp/Prawns	Crabs	Salmon	HMS	CPS	Other	Total
Total																													
Tokeland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	4	2	4	4	-	4	20	-	2	-	35	57
Ilwaco	1	4	2	4	4	4	3	3	4	3	4	5	-	2	2	5	15	2	22	8	29	42	25	7	51	35	96	7	61	163
Pacific County	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	46	47
Columbia River	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	173	173
South WA Coast Total	**1**	**4**	**2**	**4**	**4**	**4**	**3**	**3**	**4**	**3**	**4**	**5**	**0**	**2**	**2**	**5**	**18**	**2**	**26**	**10**	**33**	**46**	**25**	**11**	**72**	**36**	**98**	**8**	**315**	**440**
Astoria	4	31	18	31	30	31	11	-	9	7	11	11	3	9	7	12	17	4	16	9	19	73	21	23	66	27	68	19	43	164
Gearhart-Seaside	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	2
Cannon Beach	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	2
Nehalem Bay	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	2
Garibaldi (Tillamook)	-	3	3	3	3	3	-	-	-	-	-	-	7	5	-	7	2	12	21	2	27	37	18	-	18	47	26	1	14	71
Pacific City	-	-	-	-	-	-	-	-	-	-	-	-	17	13	-	17	-	-	-	-	-	17	-	-	2	8	5	-	2	21
Astoria-Tillamook Total	**4**	**34**	**21**	**34**	**33**	**34**	**11**	**0**	**9**	**7**	**11**	**11**	**27**	**27**	**7**	**36**	**19**	**16**	**37**	**11**	**46**	**127**	**39**	**23**	**88**	**86**	**99**	**20**	**59**	**262**
Depoe Bay	-	-	-	-	-	-	-	-	-	-	-	-	3	3	-	3	1	1	1	1	2	5	2	-	5	4	3	-	8	12
Newport	15	26	12	25	25	26	13	3	11	10	14	7	5	8	2	9	24	10	87	24	90	139	94	21	89	157	157	13	50	267
Waldport	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-	6
Newport Total	**15**	**26**	**12**	**25**	**25**	**26**	**13**	**3**	**11**	**10**	**14**	**7**	**8**	**11**	**2**	**12**	**25**	**11**	**88**	**25**	**92**	**144**	**96**	**21**	**100**	**161**	**160**	**13**	**58**	**285**
Florence	-	-	-	-	-	-	3	-	1	1	3	-	1	1	1	1	1	1	8	-	8	12	7	-	10	27	15	1	3	30
Winchester	-	-	-	-	-	-	3	-	3	-	3	1	-	-	-	1	-	3	9	-	10	14	6	1	12	25	14	-	4	35
Charleston (Coos Bay)	4	26	17	29	27	29	8	-	7	3	9	12	15	16	7	21	5	14	30	3	34	93	18	25	59	84	77	3	47	146
Bandon	-	-	-	-	-	-	-	-	-	-	-	-	2	1	-	2	-	1	2	-	2	4	-	-	2	4	2	-	-	8
Coos Bay Total	**4**	**26**	**17**	**29**	**27**	**29**	**14**	**0**	**11**	**4**	**15**	**13**	**18**	**18**	**8**	**25**	**6**	**19**	**49**	**3**	**54**	**123**	**31**	**26**	**83**	**140**	**108**	**4**	**54**	**219**

TABLE 14. Number of vessels by vessel primary port and species group for the base period (November 2000 through October 2001). (Table 3.3-40 in the 2003 Specs EIS)

	Vessels with Limited Entry Trawl Permits						Vessels with Fixed Gear Limited Entry Permits (No Trawl Permit)					Open Access Vessels with More than 5% Revenue from Groundfish					Open Access Vessels with Less than 5% Revenue from Groundfish					Total for All Groundfish	Vessels Participating in Other Fisheries						
	Whiting	Sablefish	Nearshore SPP	Shelf Spp	Slope Spp	Total	Sablefish	Nearshore Spp	Shelf Spp	Slope Spp	Total	Sablefish	Nearshore Spp	Shelf Spp	Slope Spp	Total	Sablefish	Nearshore Spp	Shelf Spp	Slope Spp	Total		Halibut (Pac & CA)	Shrimp/Prawns	Crabs	Salmon	HMS	CPS	Other	Total
Port Orford	-	-	-	-	-	-	11	14	14	14	14	8	35	36	33	37	-	7	5	2	7	58	12	-	30	27	11	-	53	67
Gold Beach	-	-	-	-	-	-	-	-	-	-	-	-	20	19	17	20	-	2	2	2	2	22	-	-	1	3	1	-	23	23
Brookings	-	4	3	4	4	4	3	1	2	1	3	1	25	25	9	28	1	9	9	-	12	47	3	3	33	28	20	-	34	71
Brookings Total	**0**	**4**	**3**	**4**	**4**	**4**	**14**	**15**	**16**	**15**	**17**	**9**	**80**	**80**	**59**	**85**	**1**	**18**	**16**	**4**	**21**	**127**	**15**	**3**	**64**	**58**	**32**	**0**	**110**	**161**
Crescent City	**2**	**20**	**14**	**20**	**20**	**20**	**8**	**4**	**5**	**2**	**9**	**7**	**35**	**35**	**7**	**37**	**4**	**8**	**15**	**3**	**19**	**85**	**11**	**21**	**118**	**31**	**45**	**4**	**44**	**141**
Orick	-	-	-	-	-	-	-	-	-	-	-	1	8	8	1	8	-	-	1	-	1	9	1	-	4	7	2	-	-	12
Trinidad	-	-	-	-	-	-	-	-	-	-	-	-	5	6	-	6	-	1	1	-	1	7	-	-	23	2	1	-	3	27
Eureka Area	1	16	15	16	16	16	4	2	4	4	4	13	13	12	8	17	2	1	1	-	2	39	7	5	51	33	17	1	36	78
Fields Landing	3	10	7	10	10	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	2	1	7	2	-	1	8	14
Eureka Total	**4**	**26**	**22**	**26**	**26**	**26**	**4**	**2**	**4**	**4**	**4**	**14**	**26**	**26**	**9**	**31**	**2**	**2**	**3**	**0**	**4**	**65**	**10**	**6**	**85**	**44**	**20**	**2**	**47**	**131**
Fort Bragg	-	12	5	12	12	12	3	1	3	3	4	27	36	34	6	57	4	5	3	1	8	81	3	3	26	49	19	1	56	130
Albion	-	-	-	-	-	-	-	-	-	-	-	2	6	5	-	7	-	1	1	-	2	9	-	-	2	2	1	-	12	17
Point Arena	-	-	-	-	-	-	-	-	-	-	-	-	4	3	1	4	-	3	2	1	4	8	-	-	5	3	1	-	11	19
Fort Bragg Total	**0**	**12**	**5**	**12**	**12**	**12**	**3**	**1**	**3**	**3**	**4**	**29**	**46**	**42**	**7**	**68**	**4**	**9**	**6**	**2**	**14**	**98**	**3**	**3**	**33**	**54**	**21**	**1**	**79**	**166**
Bodega Bay	-	-	-	-	-	-	2	2	2	1	2	1	21	23	7	26	1	1	11	1	11	39	14	-	44	125	28	1	24	171
Cloverdale	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	2	-	3	3	4	-	6	4	1	-	17	24
Yountville	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	1	1	-	-	-	1	2	1	-	10	2	-	-	9	15
Tomales Bay	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	1
Point Reyes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	-	6	8	1	-	-	10
Sausilito	-	-	-	-	-	-	-	-	-	-	-	1	-	1	1	1	-	4	5	-	5	6	7	-	4	21	6	1	39	53
Oakland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Alameda	-	-	-	-	-	-	-	-	-	-	-	-	2	1	1	2	-	-	-	-	-	2	-	-	-	1	-	-	2	3
Berkeley	-	-	-	-	-	-	-	-	-	-	-	1	8	9	3	10	-	-	-	-	-	10	5	-	-	4	2	-	8	15
Richmond	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	-	-	1	-	1	3	3	1	-	5	-	-	1	10

TABLE 14. Number of vessels by vessel primary port and species group for the base period (November 2000 through October 2001). (Table 3.3-40 in the 2003 Specs EIS)

	Vessels with Limited Entry Trawl Permits						Vessels with Fixed Gear Limited Entry Permits (No Trawl Permit)					Open Access Vessels with More than 5% Revenue from Groundfish					Open Access Vessels with Less than 5% Revenue from Groundfish					Total for All Groundfish	Vessels Participating in Other Fisheries							
	Whiting	Sablefish	Nearshore SPP	Shelf Spp	Slope Spp	Total	Sablefish	Nearshore Spp	Shelf Spp	Slope Spp	Total	Sablefish	Nearshore Spp	Shelf Spp	Slope Spp	Total	Sablefish	Nearshore Spp	Shelf Spp	Slope Spp	Total		Halibut (Pac & CA)	Shrimp/Prawns	Crabs	Salmon	HMS	CPS	Other	Total
San Francisco	-	6	6	6	6	6	6	6	8	7	9	9	22	21	12	27	1	5	7	1	9	51	33	3	29	59	17	2	86	155
Princeton	1	6	8	8	7	8	3	2	2	3	3	8	39	36	8	44	1	6	6	3	11	66	34	2	56	74	30	10	43	135
SanFrancisco Total	**1**	**12**	**14**	**14**	**13**	**14**	**11**	**10**	**12**	**11**	**14**	**20**	**93**	**93**	**33**	**113**	**4**	**19**	**32**	**5**	**41**	**182**	**108**	**6**	**155**	**304**	**85**	**14**	**230**	**593**
Gilroy	-	-	-	-	-	-	-	-	-	-	-	-	10	8	2	10	-	-	-	-	-	10	-	-	1	-	1	-	8	10
Santa Cruz	-	2	2	2	2	2	-	-	-	-	-	9	11	11	10	18	1	5	4	1	6	26	18	-	7	31	19	3	19	46
Moss Landing	-	8	6	8	8	8	11	2	6	11	11	19	24	23	13	38	1	2	2	1	6	63	27	2	6	71	42	7	38	132
Monterey	-	2	2	2	2	2	-	1	-	1	1	1	25	23	6	26	2	3	1	3	6	35	23	5	1	50	10	5	42	81
Monterey Total	**0**	**12**	**10**	**12**	**12**	**12**	**11**	**3**	**6**	**12**	**12**	**29**	**70**	**65**	**31**	**92**	**4**	**10**	**7**	**5**	**18**	**134**	**68**	**7**	**15**	**152**	**72**	**15**	**107**	**269**
San Simeon	-	-	-	-	-	-	-	-	-	-	-	-	6	6	-	6	-	-	-	-	-	6	-	-	-	-	-	-	3	6
Morro Bay	-	2	2	2	2	2	-	1	2	-	2	2	56	49	10	57	2	16	13	7	20	81	26	9	19	36	68	6	55	122
Avila	1	5	2	5	5	5	-	-	1	1	1	-	50	47	2	50	-	10	8	1	10	66	32	5	17	9	31	3	46	78
San Luis Obispo Total	**1**	**7**	**4**	**7**	**7**	**7**	**0**	**1**	**3**	**1**	**3**	**2**	**112**	**102**	**12**	**113**	**2**	**26**	**21**	**8**	**30**	**153**	**58**	**14**	**36**	**45**	**99**	**9**	**104**	**206**
Santa Barbara	-	-	-	-	-	-	-	-	-	-	-	-	31	16	11	31	-	25	13	10	29	60	32	15	46	4	20	10	111	136
Santa Cruz Island	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	1
Ventura	-	-	-	-	-	-	1	-	1	1	1	2	9	8	9	12	1	9	8	7	10	23	15	8	17	1	16	8	29	43
Oxnard	-	-	-	-	-	-	6	4	6	6	6	2	14	8	9	14	-	14	5	10	17	37	13	8	19	-	14	3	58	64
Port Hueneme	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	2	3	31	9	31
Santa Barbara Total	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**4**	**8**	**7**	**8**	**4**	**54**	**32**	**29**	**57**	**1**	**48**	**26**	**27**	**56**	**121**	**61**	**31**	**82**	**7**	**54**	**52**	**207**	**275**
Terminal Island	-	-	-	-	-	-	1	1	1	1	1	2	19	9	10	19	1	9	6	2	12	32	35	7	28	2	47	26	100	126
San Pedro	-	-	-	-	-	-	-	-	-	-	-	-	7	8	3	10	-	17	12	5	18	28	16	2	18	1	51	53	59	112
Willmington	-	-	-	-	-	-	1	1	1	1	1	-	-	-	-	-	-	-	-	-	-	1	1	-	1	-	1	1	1	2
Catalina Island	-	-	-	-	-	-	-	-	-	-	-	2	6	2	4	8	-	3	2	1	4	12	10	3	15	-	12	9	26	41
Long Beach	-	-	-	-	-	-	-	-	-	-	-	-	2	3	1	3	-	-	-	-	-	3	4	-	1	-	4	1	4	6

TABLE 14. Number of vessels by vessel primary port and species group for the base period (November 2000 through October 2001). (Table 3.3-40 in the 2003 Specs EIS)

	Vessels with Limited Entry Trawl Permits						Vessels with Fixed Gear Limited Entry Permits (No Trawl Permit)					Open Access Vessels with More than 5% Revenue from Groundfish					Open Access Vessels with Less than 5% Revenue from Groundfish					Total for All Groundfish	Vessels Participating in Other Fisheries							
	Whiting	Sablefish	Nearshore SPP	Shelf Spp	Slope Spp	Total	Sablefish	Nearshore Spp	Shelf Spp	Slope Spp	Total	Sablefish	Nearshore Spp	Shelf Spp	Slope Spp	Total	Sablefish	Nearshore Spp	Shelf Spp	Slope Spp	Total		Halibut (Pac & CA)	Shrimp/Prawns	Crabs	Salmon	HMS	CPS	Other	Total
Newport Beach	-	-	-	-	-	-	4	2	3	4	5	1	1	2	2	2	1	1	-	-	2	9	3	3	8	-	4	5	11	18
Dana Point	-	-	-	-	-	-	-	1	-	-	1	-	1	1	-	1	-	2	-	-	2	4	-	3	26	-	4	-	18	33
Los Angeles Total	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**5**	**5**	**6**	**8**	**5**	**36**	**25**	**20**	**43**	**2**	**32**	**20**	**8**	**38**	**89**	**69**	**18**	**97**	**3**	**123**	**95**	**219**	**338**
North Shore	-	-	-	-	-	-	-	-	-	-	-	1	3	8	5	8	1	6	9	6	10	18	5	5	26	-	18	7	30	49
San Diego	-	-	-	-	-	-	-	1	1	-	1	1	7	6	5	10	1	5	4	1	7	18	6	2	30	-	37	11	41	65
Oceanside	-	-	-	-	-	-	5	1	2	5	5	-	1	3	2	3	-	4	2	2	4	12	2	3	9	-	15	2	14	26
San Diego Total	**0**	**0**	**0**	**0**	**0**	**0**	**5**	**2**	**3**	**5**	**6**	**2**	**11**	**17**	**12**	**21**	**2**	**15**	**15**	**9**	**21**	**48**	**13**	**10**	**65**	**0**	**70**	**20**	**85**	**140**
Other California	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	8	10
At-Sea Only	**28**	**20**	**2**	**28**	**23**	**28**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**28**	**11**	**-**	**2**	**26**	**9**	**28**	**25**	**28**
Grand Total	**68**	**229**	**146**	**242**	**232**	**243**	**158**	**57**	**138**	**136**	**178**	**179**	**623**	**601**	**252**	**771**	**104**	**237**	**389**	**126**	**517**	**1,709**	**675**	**214**	**1,247**	**1,202**	**1,172**	**297**	**2,470**	**4,588**

NOTE: The Primary port is the port at which the vessel made more landings than any other port, as measured in terms of exvessel value. Vessels in the "at-sea only" row are those that made no shoreside landings. Vessels delivering at-sea that had some shoreside landings were assigned to a primary port based on their shoreside landings. Source: Derived from PacFIN monthly vessel summary files.

TABLE 17. Estimated take of Canary rockfish and Bocaccio by Commercial Non-trawl and Recreational Fisheries in Southern California, as presented at the June 16-20, 2003 Pacific Council meeting.

Estimated take (MT) of Canary and Bocaccio by commecial fixed gear and recreational fisheries
From the Morro Bay area between 21-30 fms, July thru December 2003.

Canary Rockfish

Recreational		**Commercial**			
Average annual estimated take from San Luis Obispo County during 1993-99	3.8	Average annual estimated landings from 1995-1999	2.52		
Percentage taken from 21-30 fm (based on J. Curtis)	19.9%	Percentage taken from 21-30 fm based on recreational data	19.9%		
July thru Dec	52%	July thru Dec	50%		
Sep thru Dec	(32% Sep-Dec)	Sep thru Dec	(33% Sep-Dec)		
				Combined Recreational and	
Total Jul-Dec MT =	**0.4**		**0.25**	Commercial	**0.65**
Total Sep-Dec MT=	**0.24**		**0.17**		**0.41**

Bocaccio

Recreational		**Commercial**			
Average annual estimated take from San Luis Obispo County during 1993-99	3.3	Average annual landings estimated from 1995-1999	8.52		
Percentage taken from 21-30 fm (based on J. Curtis)	4.3%	Percentage taken from 21-30 fm based on recreational data	4.3%		
July thru Dec	31.0%	July thru Dec	50%		
Sep thru Dec	25%	Sep thru Dec	33%		
				Combined Recreational and	
Total Jul-Dec MT =	**0.09**		**0.37**	Commercial	**0.46**
Total Sep-Dec MT=	**0.07**		**0.24**		**0.31**

Estimated take (MT) of Canary and Bocaccio by commecial fixed gear and recreational fisheries
From the Southern California Bight between 21-30 fms, July thru December 2003.

Canary Rockfish

Recreational		**Commercial**			
Average annual estimated take from southern California during 1993-99	1.4	Average annual estimated landings from 1995-1999	3.14		
Percentage taken from 21-30 fm (based on J. Curtis)	15.6%	Percentage taken from 21-30 fm based on recreational data	15.6%		
July thru Dec	50.0%	July thru Dec	50%		
Sep thru Dec	32%	Sep thru Dec	32%		
				Combined Recreational and	
Total Jul-Dec MT =	**0.11**		**0.24**	Commercial	**0.35**
Total Sep-Dec MT=	**0.07**		**0.16**		**0.23**

Bocaccio

Recreational		**Commercial**			
Average annual estimated take from southern California during 1993-99	79.5	Average annual landings estimated from 1995-1999	22.6		
Percentage taken from 21-30 fm (based on J. Curtis)	6.4%	Percentage taken from 21-30 fm based on recreational data	6.4%		
July thru Dec	31.1%	July thru Dec	50%		
Sep thru Dec	25%	Sep thru Dec	33%		
				Combined Recreational and	
Total Jul-Dec MT =	**3.16**		**1.45**	Commercial	**4.61**
Total Sep-Dec MT=	**1.27**		**0.95**		**2.22**

(Bocaccio includes 99 yc effect)

TABLE 18. Estimated Take (MT) of Overfished Groundfish Species by Commercial Non-trawl and Recreational Fisheries between 21-30 fms, September thru December 2003.

Estimated Take (MT) of Overfished Groundfish Species by Commecial Non-trawl and Recreational Fisheries between 21-30 fms, September thru December 2003.

	Region		
Species	**"36° to Mexico" Alternative**	**"36° to 34°27' " Alternative**	**"34°27' to Mexico" Alternative**
Bocaccio			
commercial	1.19	0.24	0.95
recreational	1.34	0.07	1.27
total	***2.53***	***0.31***	***2.22***
Canary Rockfish			
commercial	0.33	0.17	0.16
recreational	0.31	0.24	0.07
total	***0.64***	***0.41***	***0.23***
Lingcod *			
commercial	1.2	1.1	0.1
recreational	8.9	5.6	3.3
total	***10.1***	***6.7***	***3.4***
Cowcod *			
commercial	0.2	0.1	0.1
recreational	0.1	0.1	0
total	***0.3***	***0.2***	***0.1***
Widow Rockfish *			
commercial	1.6	1.6	trace
recreational	3.2	3.2	0
total	***4.8***	***4.8***	***0***
Yelloweye Rockfish *			
commercial	0.1	0.1	trace
recreational	1	1	0
total	***1.1***	***1.1***	***0***

note: trace = < 0.1 mt.

* Recreational catch by depth data not available for these species between 36° N. lat. and 34°27' N. lat.. Recreational estimates for these species are estimated total catch during September through December for all depths. Therefore, the estimated mortality for these species for the "36° to Mexico" and "36° to 34°27' " Alternatives is high.

FIGURE 1. GIS Map of the 20 fm and 30 fm Depth Contours from Pt. Conception (34°27' N. lat) to Santa Monica Bay.

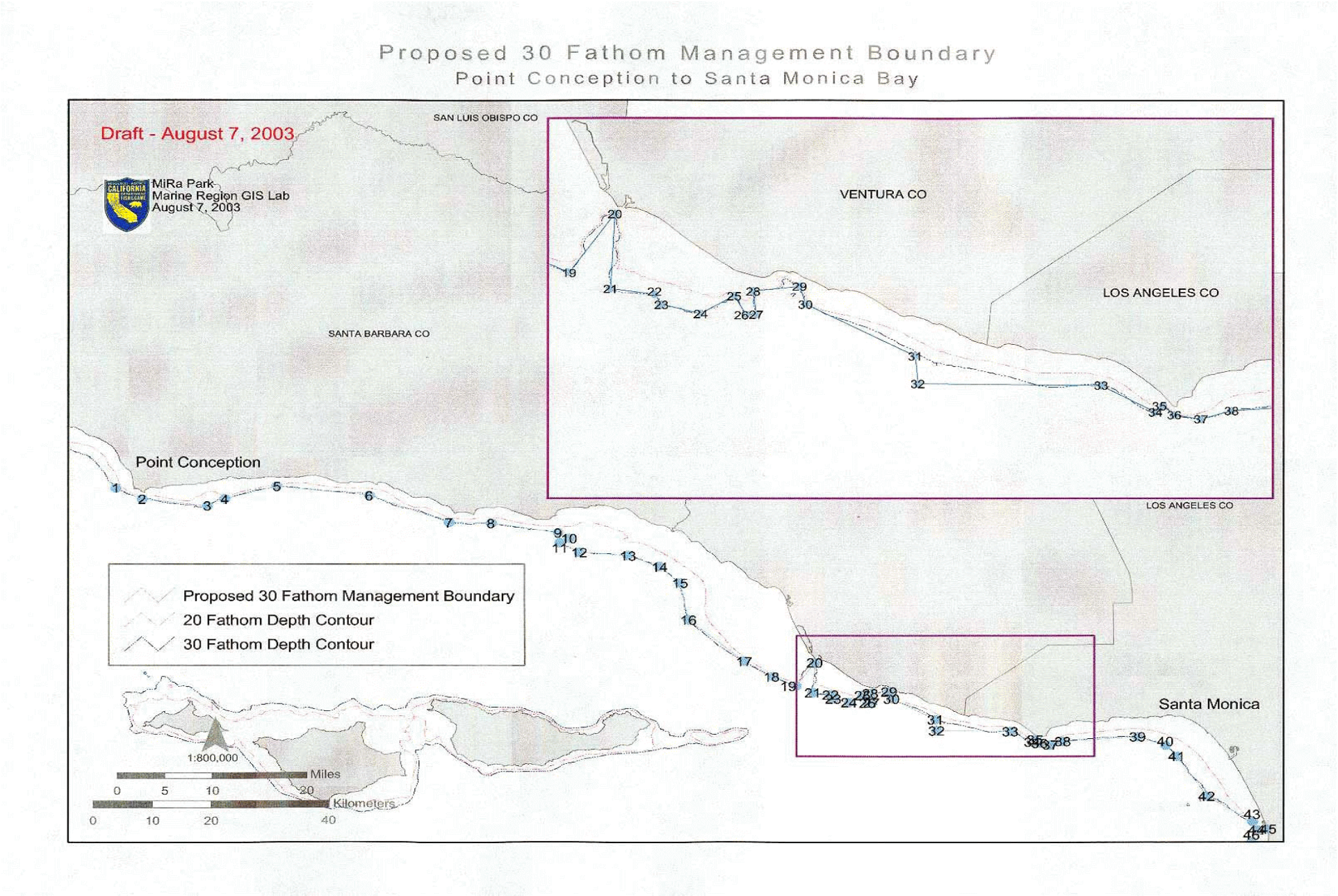

FIGURE 2. GIS Map of the 20 fm and 30 fm Depth Contours from Santa Monica Bay to the US/Mexico border.

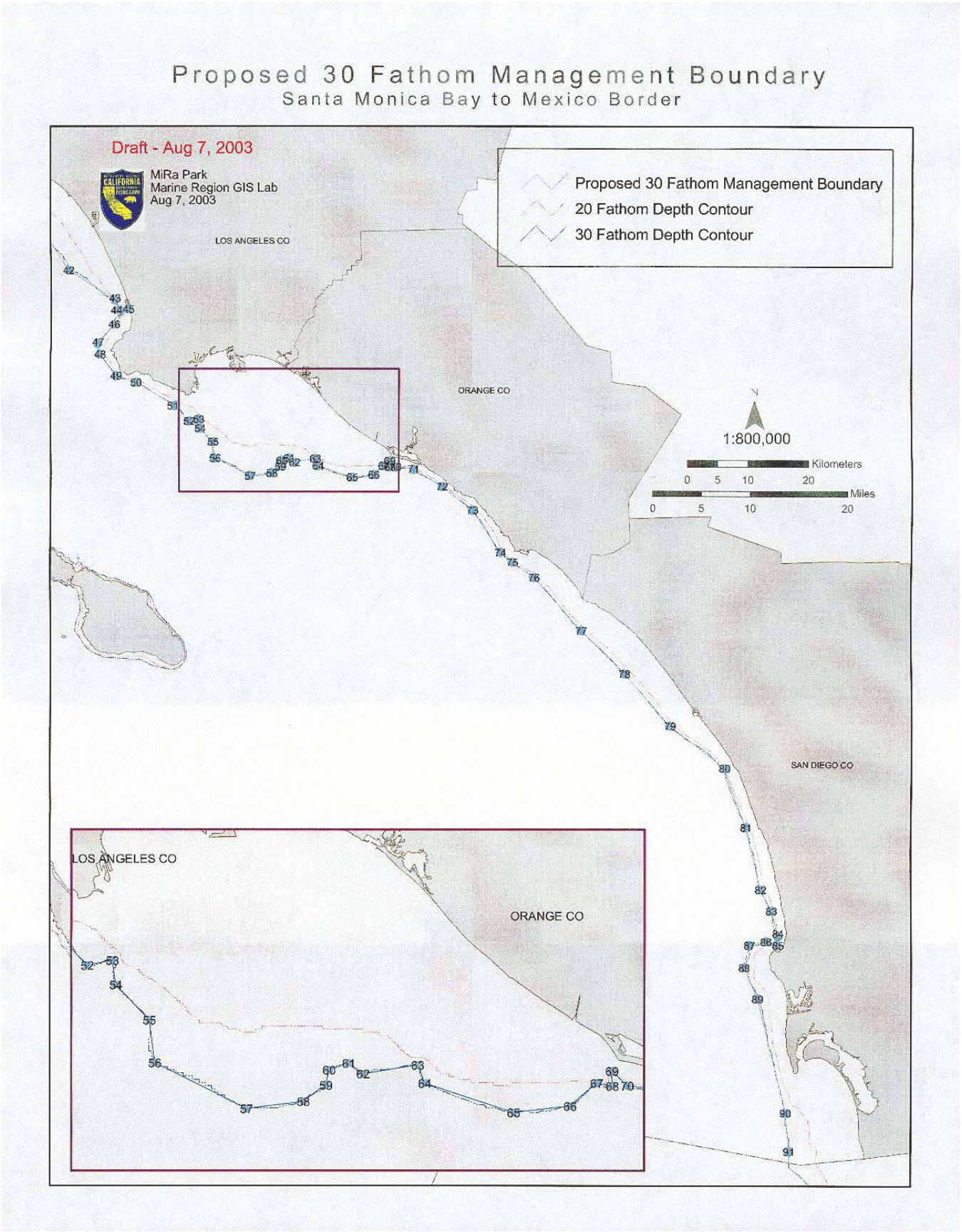

FIGURE 3. GIS Map of the 20 fm and 30 fm Depth Contours around the Northern Channel Islands and MPAs.

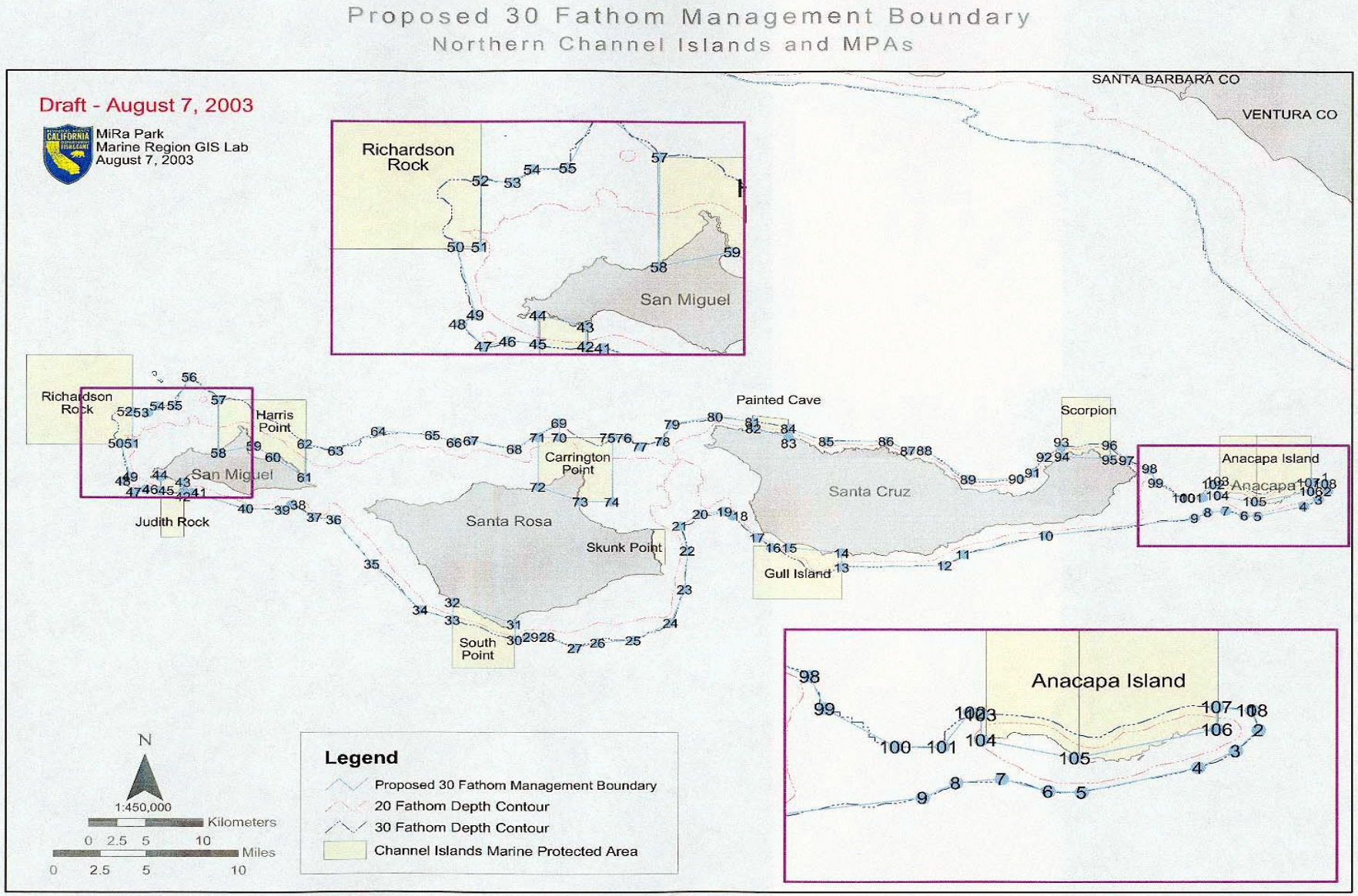

FIGURE 4. GIS Map of the 20 fm and 30 fm Depth Contours around Santa Catalina and San Clemente Islands.