

Expanded Coverage of the Program to Monitor Time-Area Closures in the Pacific Coast Groundfish Fishery

(Tiered from "The Program to Monitor Time-Area Closures in the
Pacific Coast Groundfish Fishery" - July 2003)

Draft Environmental Assessment, Regulatory Impact Review & Regulatory Flexibility Analysis

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Abstract: This environmental assessment examines alternative Vessel Monitoring System (VMS) coverage levels for vessels that fish pursuant to the harvest guidelines, quotas, and other management measures governing the open access groundfish fishery in federal waters. To ensure the integrity of groundfish conservation areas, a pilot VMS program was implemented on January 1, 2004. The pilot program requires vessels registered to Pacific Coast groundfish fishery limited entry permits to carry and use NMFS type-approved VMS transceiver units while fishing off the coasts of Washington, Oregon and California.

Large-scale depth-based management areas, referred to as groundfish conservation areas, are used to prohibit or restrict commercial groundfish fishing. These areas were specifically designed to protect overfished species while allowing healthy fisheries to continue in areas and with gears where little incidental catch of overfished species occurs. Groundfish conservation areas are defined by points of latitude and longitude. The rockfish conservation areas, a sub-group of groundfish conservation areas, are defined by points that approximate fathom curves for depth ranges where overfished rockfish species are commonly found. It is difficult and costly to effectively enforce these large scale area closures using traditional methods, particularly when the boundaries are defined by numerous points of latitude and longitude and when management measures allow some gear types and target fishing in all or a portion of the conservation area. Scarce state and Federal resources also limit the use of traditional enforcement methods. Expanding coverage of the current VMS monitoring program to the open access fisheries is expected to enhance state and federal enforcement's ability to monitor vessel compliance with depth-based conservation areas.

March 2005

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1.0 INTRODUCTION

The groundfish fishery in the Exclusive Economic Zone (EEZ), 3 to 200 nautical miles (nm) off of the Washington-Oregon-California (WOC) coast is managed under the Pacific Coast Groundfish Fishery Management Plan (FMP). The Pacific Coast Groundfish FMP was prepared by the Pacific Fishery Management Council (Council) under the authority of the Magnuson Fishery Conservation and Management Act (subsequently amended and renamed the Magnuson-Stevens Fishery Conservation and Management Act). The Pacific Coast Groundfish FMP was approved by the Assistant Administrator for Fisheries, National Oceanic and Atmospheric Administration, on January 4, 1982 and became effective on September 30, 1982.

Actions taken to amend FMPs or to implement regulations to govern the groundfish fishery must meet the requirements of various federal laws, regulations, and executive orders. In addition to the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), these federal laws, regulations, and executive orders include: National Environmental Policy Act (NEPA), Regulatory Flexibility Act (RFA), Endangered Species Act (ESA), Marine Mammal Protection Act (MMPA), Coastal Zone Management Act (CZMA), Paperwork Reduction Act (PRA), Executive Orders (E.O.) 12866, 12898, 13132, and 13175, and the Migratory Bird Treaty Act (MBTA).

The regulations that implement NEPA requirements permit NEPA documents to be combined with other agency documents to reduce duplication (40 CFR§1506.4). NEPA, E.O. 12866 and the RFA require a description of the purpose and need for the proposed action as well as a description of alternative actions that may address the identified issue. The purpose and need for this action and general background materials are included in Section 1 of this document. Section 2 describes a reasonable range of alternative management actions that may be taken to address the identified issue. In accordance with NEPA requirements, Section 3 contains a description of the physical, biological and socio-economic characteristics of the affected environment. Section 4 examines the physical, biological and socio-economic impacts of the management options as required by NEPA, E.O. 12866 and the RFA. Section 5 addresses the consistency of the proposed actions with the FMP, Magnuson-Stevens Act, ESA, MMPA, CZMA, PRA, E.O. 12866, E.O. 13175 and the MBTA. Section 6 provides a Regulatory Impact Review, which is required by E.O. 12866 to address the economic significance of the action, and; a Regulatory Flexibility Analysis, which is required by the RFA to addresses the impacts of the proposed actions on small businesses. Section 7 presents a list of individuals who assisted in preparing the Environmental Assessment (EA) and Section 8 is the list of references. The NEPA conclusions are addressed in a memorandum that accompanies this document.

1.1 Proposed Action

The proposed action is to expand the existing Vessel Monitoring System (VMS) program into the open access sectors of the groundfish fishery. This EA examines alternative VMS coverage levels for vessels that are used to fish pursuant to the harvest guidelines, quotas, and other management measures governing the open access fishery in federal waters. With VMS coverage, vessels would be required to carry and use a mobile VMS transceiver unit, and to identify their intent to fish within a conservation area, in a manner that is consistent with federal conservation area requirements.



1.2 Background

VMS is a tool that is commonly used to monitor vessel activity in relationship to geographically defined areas. VMS transceivers are installed aboard vessels and use Global Positioning System (GPS) satellites to determine the vessel's position and to transmit that position to a communications satellite. From the communications satellite, the vessel's position is transmitted to a land-earth station operated by a communications service company. From the land-earth station, the position is transmitted to the NMFS Office for Law Enforcement (OLE) processing center. At the OLE processing center, the information is validated and analyzed before being disseminated for surveillance, enforcement purposes, and fisheries management. Figure 1.1 illustrates the flow of information through a VMS system.

Figure 1.1. Example VMS Scenario

VMS transceivers document a vessel's position at a specific period in time. The frequency at which position reports are sent depends on the defined need. Position transmissions can be made on a predetermined schedule, such as hourly, or upon request from the processing center. The vessel operator is unable to alter the VMS transmission signal or the time of transmission. In most cases, the vessel operator is unaware of exactly when the VMS unit is transmitting. VMS transceivers are designed to be tamper resistant.

To assure compatibility with the national monitoring center, NMFS requires that VMS systems meet defined standards (September 23, 1993, 58 FR 49285, March 31, 1994, 59 FR 151180), while recognizing the need to promulgate regulations and approve systems on a fishery-by-fishery basis. VMS transceiver units approved by NMFS are referred to as type-approved models. All type-approved models must have basic features identified and endorsed by NMFS; however, additional features may be added to better meet the needs of a particular fishery. On November 17, 2003 (68 FR 64860,) NMFS published an additional notice identifying VMS transceiver units and communication service providers that qualified as type-approved for the Pacific Coast groundfish fishery.

Amendment 13 to the Pacific Coast Groundfish FMP recognized the value of VMS as a tool for enforcing closed areas that are established to reduce bycatch of overfished species. Amendment 13 also identified VMS as a technological tool that could be used to improve bycatch management by providing fishing location data that can be used in conjunction with observer data collections.

At its November 2002 meeting, the Council recommended that NMFS, in consultation with the ad hoc VMS Committee, prepare a rule to implement a pilot VMS program for monitoring compliance with large-scale depth-based management areas. The Council's preferred alternative was for a pilot program that required all vessels registered to Pacific Coast groundfish fishery limited entry permits to carry and use a basic VMS system (a system capable of one-way communications) and to provide declaration reports prior to fishing in specific depth-based management areas with gears that would otherwise be prohibited for groundfish fishing. Based on the Council's recommendation, NMFS prepared a proposed rule for a VMS program that was published on May 22, 2003 (68 FR 27972). The proposed rule was followed by a final rule that was published on November 4, 2003 (68 FR 62374). In addition to the requirement that all

limited entry vessels carry and use VMS transceivers, any vessel registered to a limited entry permit and any other commercial or tribal vessel using trawl gear, (including exempted gear used to take pink shrimp, spot and ridgeback prawns, California halibut and sea cucumber) is required to declare their intent to fish within a conservation area specific to their gear type, in a manner consistent with conservation area requirements.

1.3 Purpose and need for action

Large-scale depth-based management areas, referred to as groundfish conservation areas (GCAs), are used to prohibit or restrict commercial and recreational groundfish fishing. The boundaries used to define the GCAs can be complex, involving hundreds of points of latitude and longitude. The Rockfish Conservation Areas (RCAs) are a sub-group of the GCAs that were specifically designed to protect overfished rockfish species in times and where they are most abundant. RCAs are defined by points of latitude and longitude that approximate fathom curves for depth ranges where overfished rockfish species are commonly found. Each RCA is gear specific, so that groundfish fishing (either directed or incidental) with gears that tend to catch particular overfished species is restricted or prohibited for being used in areas where those species are vulnerable. The RCAs are vast, cover much of the continental shelf, and extend along the entire West Coast from Canada to Mexico.

Deep-water fisheries on the slope and nearshore fisheries have been permitted in areas seaward or shoreward of the RCAs. Vessels intending to fish in the deep-water slope fisheries seaward of the westernmost boundary of an RCA are allowed to transit through the areas, providing their gear is properly stowed. Target fisheries with relatively low catch rates of overfished species, such as midwater trawling for pelagic species, and shrimp trawling with finfish excluders, have been allowed to occur in the RCAs. Various state-managed fisheries where groundfish are incidentally taken also occur in the RCA.

To ensure the integrity of the RCAs and other conservation areas, a pilot VMS program was implemented on January 1, 2004. The pilot program requires vessels registered to Pacific Coast groundfish fishery limited entry permits to carry and use VMS transceiver units while fishing off the coasts of Washington, Oregon and California. Using traditional enforcement methods (such as aerial surveillance, boarding at sea via patrol boats, landing inspections and documentary investigation) are especially difficult when the closed areas are large-scale and the lines defining the areas are irregular. Furthermore, when management measures allow some gear types and target fishing in all or a portion of the conservation area, while other fishing activities are prohibited, it is difficult and costly to effectively enforce closures using traditional methods. Scarce state and Federal resources also limit the use of traditional enforcement methods.

Expanding coverage of the current VMS monitoring program to the open access fisheries will enhance state and federal enforcement's ability to monitor vessel compliance with depth-based conservation areas. Depth-based management areas were established so that healthy fisheries could continue in areas and with gears where little incidental catch of overfished species occurs. Therefore, maintaining the integrity of conservation areas is consistent with the conservation goals and objectives of the Pacific Coast Groundfish FMP. The purpose of this Environmental Assessment (EA) is to analyze a reasonable range of VMS program coverage levels for vessels that fish pursuant to the harvest guidelines, quotas, and other management measures governing the open access fishery.

1.4 Scoping Process

The scoping process, where stakeholder input on the issue is provided, aids in determining the range of issues that the NEPA document (in this case the EA) needs to address. Scoping is intended to ensure that problems are identified early and properly reviewed, that issues of little significance do not consume time and effort, and that the draft NEPA document is thorough and balanced. The scoping process should: identify the public and agency concerns; clearly define the environmental issues and alternatives to be examined in the NEPA document, including the elimination of nonsignificant issues; identify related issues, and; identify state and local agency requirements that must be addressed. An effective scoping process can help reduce unnecessary paperwork and time delays in preparing and processing the NEPA document. This EA tiers off the original VMS EA, titled The Program to Monitor Time-Area Closures in the Pacific Coast Groundfish Fishery and therefore presents scoping activities that have occurred since September 2003.

In October 2003, the ad hoc VMS committee, which is comprised of state, federal and industry representatives, held a public meeting to consider expanding the VMS program beyond the limited entry fisheries. During this meeting, the committee discussed criteria that would be used to prioritize the expansion of the VMS program. These criteria included: the impacts on overfished species if illegal groundfish fishing occurred in an GCA; the ability of enforcement to identify fishery participants that are targeting groundfish; and the ability of enforcement to distinguish between LE vessels and other fishing vessels that look like LE vessels. Using this criteria, the committee determined that commercial vessels operating in the EEZ at any time during the year and that land groundfish should be considered for the next phase of the VMS program. The ad hoc VMS committee also recommended priorities for coverage of the different OA gear groups. Longline was given the highest priority, followed by groundfish pot, exempted trawl (excluding pink shrimp), and line (excluding salmon). The committee also considered expansion to the charter and private sectors of the recreational fishery, but determined that an area-by-area evaluation of the groundfish impacts by these participants was necessary before a final committee recommendation could be made.

At the Council's November 2003 meeting, the ad hoc VMS committee presented its report to the Council: (Exhibit D. 10b, Supplemental Attachment 2, November 2003). Following public testimony and consideration of the committee report, the Council indicated that further information on the success of the pilot phase of the program was needed before they would consider expansion into other fisheries. VMS reports were provided to the Council by OLE at its subsequent meetings.

At the Council's September 2004 meeting, NMFS presented a draft EA that contained a range of five VMS coverage alternatives for the open access fishery. These alternatives were based on the ad hoc VMS committee's October 2003 recommendation to the Council. The Council reviewed the alternatives, considered the input of its advisory bodies, and listened to public testimony, before adopting a revised range of eight alternatives for further analysis. The Council also recommended an October 1, 2005 implementation date for the expanded VMS program. To allow time for the affected public to review the alternatives, the Council delayed action on expanding the VMS program until its April 2005 Council meeting in Tacoma, Washington.

NMFS and the states held Eight public meetings, between January 10, 2005 and March 5, 2005, to provide the interested public with information regarding the current VMS systems, the expansion of the VMS program into the open access groundfish fisheries, and to provide information about how and when to provide comments to NMFS and the Council. These meetings occurred in communities with relatively high open access groundfish landings: Westport, WA; Astoria, OR; Newport, OR; Port Orford, OR; Fort Bragg, CA; Morrow Bay, CA; San Francisco, CA; and Los Alamitos, CA.

1.5 Other NEPA documents this EA relies on

This is a tiered EA that expands on information presented in the July 2003 EA, titled The Program to Monitor Time-Area Closures in the Pacific Coast Groundfish Fishery. This EA expands on the VMS program considered in the original VMS EA by considering alternative coverage levels for the open access fisheries.

This EA relies on three environmental impact statements (EIS) that have been prepared for the groundfish fishery since November 2003. Two of the EIS documents pertain to the harvest specifications and management measures and are titled: 1) Acceptable Biological Catch and Optimum Yield Specifications and Management Measures for 2004, and 2) Acceptable Biological Catch and Optimum Yield Specifications and Management Measures for 2005-2006. The third EIS, which was available as a draft EIS in February 2005, concerns Essential Fish Habitat (EFH) and is titled: The Pacific Coast Groundfish Fishery Management Plan, Essential Fish Habitat Designation and Minimization of Adverse Impacts. These three EISs have detailed descriptions of the affected environment, including: the geographical location in which the groundfish fisheries occur; various species that groundfish vessels harvest and interact with; the fish buyers and processors that are dependent on the fishery; the suppliers and services; and, ultimately the fishing-dependent communities where vessels dock and fishing families live who are dependent on these fisheries. Relevant information on the environment was summarized from these EISs for this document. In the sections where this information was summarized, readers who are interested in more detailed descriptions are encouraged to read these earlier NEPA documents.

2.0 ALTERNATIVE MANAGEMENT ACTIONS

2.1 Alternatives Previously Considered for Monitoring Time Area Closures

The July 2003 VMS EA ("A Program to Monitor Time-Area Closures in the Pacific Coast Groundfish Fishery") was prepared prior to implementing the pilot VMS program in the limited entry fisheries. The original VMS EA examined three primary issues relevant to the development of a program for monitoring the time-area closures: 1) the monitoring system, 2) appropriate coverage levels, and 3) the payment structure. The Council considered the alternative management actions for each of these issues before making a recommendation to NMFS.

The monitoring system alternatives considered by the Council included: 1) declaration reports; 2) a basic VMS system with 1-way communications and declaration reports; 3) an upgraded VMS system with 2-way communications and declaration reports; and 4) fishery observers (1 per vessel) with declaration reports. Declaration reports allow vessels to declare their intent to fish within a GCA specific to their gear type, providing the activity is consistent with the GCA restrictions. The primary difference between the two VMS alternatives was that the upgraded two-way system could allow messages to be sent to and from the vessels, including fully compressed data messages. The basic 1-way VMS system primarily transmits positions to a shore station.

At its November 2002 meeting, the Council recommended that NMFS move forward with a rulemaking to require a basic VMS system and declaration reports. The Council indicated that it considered a basic VMS system to be adequate for maintaining the integrity of the closed areas. A basic VMS system is more costly than declaration reports, but less costly than either the upgraded VMS system or observers.

The coverage alternatives considered by the Council defined sectors of the commercial and recreational groundfish fleets that would be required to carry the recommended monitoring system (either VMS or an observer). The coverage alternatives included: 1) all vessels registered to limited entry permits; 2) all limited entry vessels that fish in the EEZ at any time during the year; 3) all active limited entry, open access, and recreational charter vessels that fish in conservation areas; and 4) all limited entry, open access, and recreational charter vessels regardless of where fishing occurs. The Council recommended that vessels registered to limited entry permits fishing in the EEZ off the Washington, Oregon, and

California coasts be required to have and use VMS transceiver units whenever they fish. In addition, the Council recommended declaration reporting requirements for any vessel registered to a limited entry permit, and any commercial or tribal vessel using trawl gear, including exempted gear used to take pink shrimp, spot and ridgeback prawns, California halibut, and sea cucumber. This level of VMS coverage would allow enforcement to effectively monitor limited entry trawl vessels for unlawful incursions into RCAs while allowing legal incursions, such as midwater trawling, for Pacific whiting, yellowtail and widow rockfish and non-groundfish target fisheries, to occur. A notable number of limited entry vessels also participate in non-groundfish fisheries, such as shrimp and prawn trawl fisheries, troll albacore and troll salmon fisheries, and the pot fisheries for crab. These fisheries would continue to be allowed to occur in the RCAs. However, vessels registered to limited entry permits would be required to have an operable VMS unit on board whenever the vessel was fishing in state or federal waters off the states of Washington, Oregon or California. This level of coverage was intended to be a pilot program that began with the sector of the fishery that is allocated the majority of the groundfish resources.

The payment structure alternatives considered by the Council defined the cost responsibilities for purchasing, installing, and maintaining the VMS transceiver units, as well as the responsibilities for transmitting reports and data. The payment structure alternatives included: 1) the vessel pays all costs associated with purchasing, installing and maintaining the VMS transceiver unit, as well as the costs associated with the transmission of reports and data; 2) the vessel pays only for the VMS transceiver and NMFS pays all other costs; 3) NMFS pays for the initial transceiver, but all other associated expenses including installation, maintenance and replacement would be paid for by the vessel; 4) and NMFS pays for everything related to VMS. Although the Council recommended that NMFS fully fund a VMS monitoring program, to date, it has not been possible because neither state nor federal funding is available for purchasing, installing, or maintaining VMS transceiver units, nor is funding available for data transmission. Because of the critical need to monitor the integrity of conservation areas that protect overfished stocks while allowing for the harvest of healthy stocks, NMFS moved forward with the rulemaking. Should funds become available in the future, NMFS is not precluded from reimbursing participants for all or a portion of the costs associated with the VMS monitoring program.

2.2 Alternatives being considered

As stated in the previous detection, this EA tiers off of the original VMS EA, titled The Program to Monitor Time-Area Closures in the Pacific Coast Groundfish Fishery. The intent of the EA is to analyze expanding the coverage of the initial VMS monitoring program to the open access fisheries to promote compliance with regulations that prohibit some fishing activities in the RCAs and other GCAs, while allowing legal fishing activity occurring within the GCAs to be effectively monitored. The purpose of this EA is to analyze a range of VMS program coverage levels for vessels fishing pursuant to the harvest guidelines, quotas, and other management measures governing the OA fishery.

The monitoring mechanism and payment structure that was implemented through the final rule published on November 4, 2003 (68 FR 62374) will not be affected by the proposed action. However, it must be noted that moving this rulemaking forward at this time will require open access fishery participants to bear the cost of purchasing, installing, and maintaining VMS transceiver units, VMS data transmissions, and reporting costs associated with declaration requirements. Neither state nor Federal funding are available at this time. If money becomes available in the future, fishery participants may be reimbursed for all or a portion of their VMS expenses.

Open access coverage alternatives

At the Council's September 2004 meeting, NMFS presented a draft EA that contained a range of five VMS coverage alternatives for the open access fishery. These alternatives were based on the ad hoc VMS committee's October 2003 recommendation to the Council. The coverage levels identified in Alternatives 2-5A are based on different combinations of the open access gear groups. In order of priority, the VMS ad hoc committee identified the need for VMS coverage for the following open access gear groups:: longline, groundfish pot, trawl (excluding shrimp), and line (excluding salmon). Alternative 2 requires all

vessels using longline gear to have and use a VMS transceiver. Each of the following Alternatives 3-5A build on the previous alternative by adding the next open access gear group in order of priority. Each of these alternatives is described in detail below.

The Council reviewed the five alternatives, considered input from its advisory bodies, and listened to public testimony, before recommending a range of eight alternatives for further analysis and an October 1, 2005 implementation date for the expanded VMS program. Alternative 5B is based on the Enforcement Consultants recommendations to the Council. This alternative is the same as 5A except that it excludes vessels in fisheries where incidental catch of overfished species is very low, however it includes salmon troll vessels. Alternative 6A, though modified by the Council, was based on the Groundfish Advisory Panel's (GAP) majority view. Under Alternative 6A, VMS would be required on any commercial fishing vessel for which an RCA restriction applied. This alternative was viewed by the GAP as a simple and straight forward way to maintain the integrity of the RCAs. Alternative 7, is the GAP minority alternative, and is basically the same as Alternative 6 except that vessels under 12 feet (ft) in length are excluded. Though this alternative specifically excluded vessels that fish only in state waters, those vessels are already excluded because there is no link to Federal authority at this time (Federal nexus).

In October 2004, the VMS ad hoc committee met and reviewed the alternatives recommended by the Council for further analysis in the EA. At this same meeting, a variation of Alternative 6A was recommended by the VMS ad hoc committee. Alternative 6B is the alternative that the VMS ad hoc Committee requested to be added to the EA for analysis. Alternative 6B is the same as alternative 6A, except that only salmon troll vessels north of 40 10 N. lat. that fish pursuant to the harvest guidelines, quotas, and other management measures governing the OA fishery for groundfish species other than yellowtail rockfish would be required to carry and use a VMS transceiver and provide declaration reports under Alternative 6B. Table 2.0.1 is a Summary of the Alternative Management Actions for Expanding Coverage of the Monitoring System for Time-area Closures in the Pacific Coast Groundfish Fishery for the Open Access Fisheries and is followed by a more detailed description of each alternative.

2.0 ALTERNATIVE MANAGEMENT ACTIONS

2.1 Alternatives Previously Considered for Monitoring Time Area Closures

The July 2003 VMS EA ("A Program to Monitor Time-Area Closures in the Pacific Coast Groundfish Fishery") was prepared prior to implementing the pilot VMS program in the limited entry fisheries. The original VMS EA examined three primary issues relevant to the development of a program for monitoring the time-area closures: 1) the monitoring system, 2) appropriate coverage levels, and 3) the payment structure. The Council considered the alternative management actions for each of these issues before making a recommendation to NMFS.

The monitoring system alternatives considered by the Council included: 1) declaration reports; 2) a basic VMS system with 1-way communications and declaration reports; 3) an upgraded VMS system with 2-way communications and declaration reports; and 4) fishery observers (1 per vessel) with declaration reports. Declaration reports allow vessels to declare their intent to fish within a GCA specific to their gear type, providing the activity is consistent with the GCA restrictions. The primary difference between the two VMS alternatives was that the upgraded two-way system could allow messages to be sent to and from the vessels, including fully compressed data messages. The basic 1-way VMS system primarily transmits positions to a shore station.

At its November 2002 meeting, the Council recommended that NMFS move forward with a rulemaking to require a basic VMS system and declaration reports. The Council indicated that it considered a basic VMS system to be adequate for maintaining the integrity of the closed areas. A basic VMS system is more costly than declaration reports, but less costly than either the upgraded VMS system or observers.

The coverage alternatives considered by the Council defined sectors of the commercial and recreational

groundfish fleets that would be required to carry the recommended monitoring system (either VMS or an observer). The coverage alternatives included: 1) all vessels registered to limited entry permits; 2) all limited entry vessels that fish in the EEZ at any time during the year; 3) all active limited entry, open access, and recreational charter vessels that fish in conservation areas; and 4) all limited entry, open access, and recreational charter vessels regardless of where fishing occurs. The Council recommended that vessels registered to limited entry permits fishing in the EEZ off the Washington, Oregon, and California coasts be required to have and use VMS transceiver units whenever they fish. In addition, the Council recommended declaration reporting requirements for any vessel registered to a limited entry permit, and any commercial or tribal vessel using trawl gear, including exempted gear used to take pink shrimp, spot and ridgeback prawns, California halibut, and sea cucumber. This level of VMS coverage would allow enforcement to effectively monitor limited entry trawl vessels for unlawful incursions into RCAs while allowing legal incursions, such as midwater trawling, for Pacific whiting, yellowtail and widow rockfish and non-groundfish target fisheries, to occur. A notable number of limited entry vessels also participate in non-groundfish fisheries, such as shrimp and prawn trawl fisheries, troll albacore and troll salmon fisheries, and the pot fisheries for crab. These fisheries would continue to be allowed to occur in the RCAs. However, vessels registered to limited entry permits would be required to have an operable VMS unit on board whenever the vessel was fishing in state or federal waters off the states of Washington, Oregon or California. This level of coverage was intended to be a pilot program that began with the sector of the fishery that is allocated the majority of the groundfish resources.

The payment structure alternatives considered by the Council defined the cost responsibilities for purchasing, installing, and maintaining the VMS transceiver units, as well as the responsibilities for transmitting reports and data. The payment structure alternatives included: 1) the vessel pays all costs associated with purchasing, installing and maintaining the VMS transceiver unit, as well as the costs associated with the transmission of reports and data; 2) the vessel pays only for the VMS transceiver and NMFS pays all other costs; 3) NMFS pays for the initial transceiver, but all other associated expenses including installation, maintenance and replacement would be paid for by the vessel; 4) and NMFS pays for everything related to VMS. Although the Council recommended that NMFS fully fund a VMS monitoring program, to date, it has not been possible because neither state nor federal funding is available for purchasing, installing, or maintaining VMS transceiver units, nor is funding available for data transmission. Because of the critical need to monitor the integrity of conservation areas that protect overfished stocks while allowing for the harvest of healthy stocks, NMFS moved forward with the rulemaking. Should funds become available in the future, NMFS is not precluded from reimbursing participants for all or a portion of the costs associated with the VMS monitoring program.

2.2 Alternatives being considered

As stated in the previous detection, this EA tiers off of the original VMS EA, titled The Program to Monitor Time-Area Closures in the Pacific Coast Groundfish Fishery. The intent of the EA is to analyze expanding the coverage of the initial VMS monitoring program to the open access fisheries to promote compliance with regulations that prohibit some fishing activities in the RCAs and other GCAs, while allowing legal fishing activity occurring within the GCAs to be effectively monitored. The purpose of this EA is to analyze a range of VMS program coverage levels for vessels fishing pursuant to the harvest guidelines, quotas, and other management measures governing the OA fishery.

The monitoring mechanism and payment structure that was implemented through the final rule published on November 4, 2003 (68 FR 62374) will not be affected by the proposed action. However, it must be noted that moving this rulemaking forward at this time will require open access fishery participants to bear the cost of purchasing, installing, and maintaining VMS transceiver units, VMS data transmissions, and reporting costs associated with declaration requirements. Neither state nor Federal funding are available at this time. If money becomes available in the future, fishery participants may be reimbursed for all or a portion of their VMS expenses.

Open access coverage alternatives

At the Council's September 2004 meeting, NMFS presented a draft EA that contained a range of five VMS coverage alternatives for the open access fishery. These alternatives were based on the ad hoc VMS committee's October 2003 recommendation to the Council. The coverage levels identified in Alternatives 2-5A are based on different combinations of the open access gear groups. In order of priority, the VMS ad hoc committee identified the need for VMS coverage for the following open access gear groups:: longline, groundfish pot, trawl (excluding shrimp), and line (excluding salmon). Alternative 2 requires all vessels using longline gear to have and use a VMS transceiver. Each of the following Alternatives 3-5A build on the previous alternative by adding the next open access gear group in order of priority. Each of these alternatives is described in detail below.

The Council reviewed the five alternatives, considered input from its advisory bodies, and listened to public testimony, before recommending a range of eight alternatives for further analysis and an October 1, 2005 implementation date for the expanded VMS program. Alternative 5B is based on the Enforcement Consultants recommendations to the Council. This alternative is the same as 5A except that it excludes vessels in fisheries where incidental catch of overfished species is very low, however it includes salmon troll vessels. Alternative 6A, though modified by the Council, was based on the Groundfish Advisory Panel's (GAP) majority view. Under Alternative 6A, VMS would be required on any commercial fishing vessel for which an RCA restriction applied. This alternative was viewed by the GAP as a simple and straight forward way to maintain the integrity of the RCAs. Alternative 7, is the GAP minority alternative, and is basically the same as Alternative 6 except that vessels under 12 feet (ft) in length are excluded. Though this alternative specifically excluded vessels that fish only in state waters, those vessels are already excluded because there is no link to Federal authority at this time (Federal nexus).

In October 2004, the VMS ad hoc committee met and reviewed the alternatives recommended by the Council for further analysis in the EA. At this same meeting, a variation of Alternative 6A was recommended by the VMS ad hoc committee. Alternative 6B is the alternative that the VMS ad hoc Committee requested to be added to the EA for analysis. Alternative 6B is the same as alternative 6A, except that only salmon troll vessels north of 40 10 N. lat. that fish pursuant to the harvest guidelines, quotas, and other management measures governing the OA fishery for groundfish species other than yellowtail rockfish would be required to carry and use a VMS transceiver and provide declaration reports under Alternative 6B. Table 2.0.1 is a Summary of the Alternative Management Actions for Expanding Coverage of the Monitoring System for Time-area Closures in the Pacific Coast Groundfish Fishery for the Open Access Fisheries and is followed by a more detailed description of each alternative.

Table 2.0.1: Summary of the Alternative Management Actions for Expanding Coverage of the Monitoring System for Time-area Closures in the Pacific Coast Groundfish Fishery for the Open Access Fisheries

VMS Coverage Alternatives	Number of Affected OA Vessels by Gear & Target Species: a/ b/	RCA Restrictions by Gear & Target Species	Overfished Species Estimated Total Mortality by Gear & Target Species
Alternative 1 – Status quo. Require declaration reports from OA exempted trawl vessels that are using allowed trawl gear to fish within a trawl RCA	Ridgeback prawn 32 vessels/yr Sea cucumber - 14 vessels/yr, 6 vessels/yr landed OA groundfish California halibut - 34 trawl vessels/yr, 17 vessels/yr landed OA groundfish: Pink shrimp - 98 vessels/yr	Pink shrimp - not subject to RCAs	Pink shrimp vessels use finfish excluders to minimize overfished species bycatch
Alternative 2 -- longline vessels. Require all vessels using longline gear in Federal waters fishing pursuant to the harvest guidelines, quotas, and other management measures governing the OA fishery to provide declaration reports and to activate and use a VMS transceiver.	c/ Groundfish directed - 131 vessels/yr used longline gear Pacific halibut - 49 vessels/yr 31 landed OA groundfish HMS - 47 vessels/yr in 2000 & 2001, 2 vessels/yr landed groundfish. HMS longline gear currently prohibited in EEZ.	Groundfish directed - non-trawl gear RCA applies to groundfish longline gear Pacific halibut - non-trawl RCA restrictions adopted under halibut regulations. HMS - Longline gear currently prohibited for HMS fishing in EEZ	Groundfish directed - bocaccio, canary, cowcod, darkblotched, lingcod, pop and yelloweye. Longline specific projections are not available. Pacific halibut - 0.5 mt of yelloweye projected for 2005. HMS- Longline gear currently prohibited in EEZ
Alternative 3 -- longline or pot vessels Require all vessels using longline or pot gear in Federal waters fishing pursuant to the harvest guidelines, quotas, and other management measures governing the OA fishery to provide declaration reports and to activate and use a VMS transceiver.	Longline - Same as Alt. 2 d/ Groundfish directed - 30 vessels/yr used pot gear Dungeness crab - 733 vessels/yr, 45 vessels/yr landed OA groundfish Prawn - 40 vessels/yr, 8 vessels/yr landed OA groundfish California sheephead (CA nearshore.) - 8 vessels/yr landed OA groundfish	Longline - Same as Alt. 2 Groundfish directed - non-trawl RCA applies to groundfish pot gear Dungeness crab, prawn, & California sheephead - non-trawl RCA restrictions apply when vessel takes and retains or possesses federally managed groundfish	Longline - Same as Alt. 2 Groundfish directed - bocaccio, canary, cowcod, darkblotched, lingcod, pop and yelloweye. Pot specific projections are not available. Dungeness crab, spot prawn & California sheephead - no overfished species catch projected for 2005 Ridgeback prawn vessels - 0.1 mt of bocaccio projected for 2005, all gear
Alternative 4 -- longline, pot, or trawl vessels, excluding pink shrimp trawl vessels. Require all vessels using longline, pot or trawl gear in Federal waters fishing pursuant to the harvest guidelines, quotas, and other management measures governing the OA fishery to provide declaration reports and to activate and use a VMS transceiver. Pink shrimp vessels are excluded.	Longline - Same as Alt. 2 Pot - Same as Alt. 3 Spot prawn- 26 vessels - gear currently prohibited Ridgeback prawn 32 vessels/yr 18 vessels/yr landed groundfish Sea cucumber - 14 vessels/yr, 67 vessels/yr landed OA groundfish California halibut - 34 trawl vessels/yr, 17 vessels/yr landed OA groundfish	Longline - Same as Alt. 2 Pot - Same as Alt. 3 Ridgeback Prawn - exempted trawl RCAs south of Cape Mendocino (40°10' N. lat.) Sea cucumber, and California halibut - exempted trawl RCA south of 40°10' N. lat. Pink shrimp - not subject to RCAs	Longline gear - Same as Alt. 2 Pot gear- Same as Alt. 3 Ridgeback prawn vessels - 0.1 mt of bocaccio projected for 2005, all gear Spot prawn - gear currently prohibited Sea cucumber - no overfished species catch projected for 2005 California halibut - 0.1 mt of bocaccio, and 2.0 mt of lingcod projected for 2005, all gears

VMS COVERAGE ALTERNATIVES	Number of Affected OA Vessels by Gear & Target Species: a/ b/	RCA Restrictions by Gear & Target Species	Overfished Species Estimated Total Mortality by Gear & Target Species
<p>Alternative 5A -- longline, pot, trawl and line gear vessels, excluding pink shrimp trawl and salmon troll vessels. Require all vessels using longline, pot, trawl, or line gear in Federal waters fishing pursuant to the harvest guidelines, quotas, and other management measures governing the OA fishery to provide declaration reports and to activate and use a VMS transceiver. Vessels using pink shrimp trawl gear are excluded. Vessels using salmon troll gear are excluded.</p>	<p>Longline - Same as Alt. 2</p> <p>Pot - Same as Alt. 3</p> <p>Trawl - Same as Alt. 4</p> <p>Groundfish directed - 738 vessels/yr used line gear</p> <p>California halibut - 105 vessels/yr landed groundfish</p> <p>HMS - 221 line gear vessels/yr, 12 vessels/yr landed groundfish</p>	<p>Longline - Same as Alt. 2</p> <p>Pot - Same as Alt. 3</p> <p>Trawl - Same as Alt. 4</p> <p>Groundfish directed - non-trawl RCA applies</p> <p>California halibut & HMS non-trawl RCA restrictions apply south of 40°10' N. lat. when vessel takes and retains or possesses federally managed groundfish</p>	<p>Longline - Same as Alt. 2</p> <p>Pot - Same as Alt. 3</p> <p>Trawl - Same as Alt. 4</p> <p>Groundfish directed - bocaccio, canary, cowcod, darkblotched, lingcod, POP and yelloweye. Line gear specific projections are not available.</p> <p>California halibut - 0.1 mt of bocaccio, and 2.0 mt of lingcod projected for 2005, all gears</p> <p>HMS - no overfished species catch projected for 2005.</p>
<p>Alternative 5B – (Enforcement Consultants) longline, pot, trawl and line gear vessels; excluding pink shrimp trawl, HMS longline and line gear and Dungeness crab pot gear. Require all vessels using longline, pot, trawl, or line gear in Federal waters fishing pursuant to the harvest guidelines, quotas, and other management measures governing the OA fishery to provide declaration reports and to activate and use a VMS transceiver. Vessels using pink shrimp trawl gear are excluded. Vessels using gears where the incidental catch of overfished species is projected to be minimal (HMS longline and line gear and Dungeness crab pot gear) are excluded.</p>	<p>Longline - Same as Alt. 2, except that HMS is not included - gear is currently prohibited</p> <p>Pot - Same as Alt. 3, except that Dungeness crab vessels are excluded</p> <p>Trawl - Same as Alt. 4</p> <p>Line gear - Same as Alt.5A, except 12 HMS line vessels and 2 HMS longline vessels are excluded, and 177 salmon troll vessels are included - 1,020 line vessels landed groundfish</p>	<p>Longline - Same as Alt. 2</p> <p>Pot - Groundfish directed, prawn, & California sheephead, same as Alt. 3</p> <p>Trawl - Same as Alt. 4</p> <p>Line - Groundfish directed & California halibut are the same as Alt. 5A. Salmon troll - south of 40°10' the non-trawl RCA restrictions apply when vessel takes and retains or possesses federally managed groundfish; north of 40°10' , the non-trawl RCA restrictions apply when vessel takes and retains or possesses federally managed groundfish other than yellowtail rockfish</p>	<p>Longline - Same as Alt. 2 because no overfished species catch was projected for HMS vessels in 2005.</p> <p>Pot - Same as Alt. 3 because no overfished species catch was projected for Dungeness crab vessels in 2005.</p> <p>Trawl - Same as Alt. 4</p> <p>Line gear - Same as Alt.5A, plus salmon troll vessels - 0.2 mt of bocaccio, 1.6 mt canary, 0.3 mt lingcod, 0.2 mt yelloweye was projected for HMS vessels in 2005. No overfished species catch was projected for HMS vessels in 2005</p>
<p>Alternative 6A – (GAP Majority with Council modifications) Any vessel engaged in commercial fishing to which a RCA restriction applies. Require all vessels engaged in a commercial fishery to which an RCA restriction applies to carry and use VMS transceivers. Vessels using salmon, Dungeness crab, CPS or HMS gear that do not take and retain groundfish are excluded. Pink shrimp vessels are excluded.</p>	<p>Longline - Same as Alt. 2, except that all Pacific halibut vessels are included</p> <p>Pot - Same as Alt. 3</p> <p>Trawl - Includes all ridgeback prawn trawl 32 vessels/yr, Sea cucumber - 14 vessels, California halibut - 34 trawl vessels/yr, 23 vessels/yr landed OA groundfish</p> <p>Line gear -Same as Alt.5B</p> <p>Net gear (trammel, gillnet, setnet) - CPS - 250 vessels/yr, 3 vessels/yr landed OA groundfish.</p> <p>Other gears - other gears such as spear, dredge.. 4 vessels per year</p>	<p>Longline - Same as Alt. 2</p> <p>Pot - Same as Alt. 3</p> <p>Trawl - Same as Alt. 4.</p> <p>Line - Groundfish directed, HMS & California halibut are the same as Alt. 5A. Salmon troll - south of 40°10'; the non-trawl RCA restrictions apply when vessel takes and retains or possesses federally managed groundfish; north of 40°10' , the non-trawl RCA restrictions apply when vessel takes and retains or possesses federally managed groundfish other than yellowtail rockfish.</p>	<p>Longline - Same as Alt. 2</p> <p>Pot - Same as Alt. 3</p> <p>Trawl - Same as Alt. 4</p> <p>Line gear - Same as Alt.5A, plus salmon troll vessels - 0.2 mt of bocaccio, 1.6 mt canary, 0.3 mt lingcod, 0.2 mt yelloweye was projected for HMS vessels in 2005. No overfished species catch was projected for HMS vessels in 2005</p> <p>CPS - 0.3 mt of bocaccio</p>

VMS COVERAGE ALTERNATIVES	Number of Affected OA Vessels by Gear & Target Species: a/ b/	RCA Restrictions by Gear & Target Species	Overfished Species Estimated Total Mortality by Gear & Target Species
<p>Alternative 6B – (VMS committee) Any vessel engaged in commercial fishing to which a RCA restriction applies, except salmon troll vessels operating in waters north of 40°10' N. lat. that only retain yellowtail rockfish. Require all vessels engaged in a commercial fishery to which an RCA restriction applies to carry and use VMS transceivers. Vessels using salmon, Dungeness crab, CPS or HMS gear that do not take and retain groundfish are excluded. Salmon troll vessels operating in waters north of 40°10' N. lat. that only retain yellowtail rockfish are excluded. Pink shrimp vessels are excluded. If an RCA requirement is discontinued during the year, mandatory VMS coverage would be discontinued for the affected vessels.</p>	<p>Longline - Same as Alt. 2 Pot - Same as Alt. 3 Trawl - Same as Alt. 6A Line gear -Same as Alt.5B, except salmon troll vessels operating in waters north of 40°10' N. lat. that only retain yellowtail rockfish are not included. >43 but <134 vessels/yr would be excluded from coast wide value Net gear - Same as Alt. 6A Other gears -Same as Alt. 6A</p>	<p>Longline - Same as Alt. 2 Pot - Same as Alt. 3 Trawl - Same as Alt. 4. Line gear - Same as Alt. 6A</p>	<p>Longline - Same as Alt. 2 Pot - Same as Alt. 3 Trawl - Same as Alt. 4 Line gear - Same as Alt.6A, north and south specific total catch projections for salmon troll are not available.</p>
<p>Alternative 7 – (GAP minority with Council modifications) Any vessel engaged in commercial fishing to which a RCA restriction applies, except vessels less than 12 feet in overall length. Require all vessels >12 ft in length that fish in federal waters for which there is an RCA requirement to carry and use VMS transceivers and to provide declaration reports. Vessels using salmon, Dungeness crab, CPS, or HMS gear that do not take and retain groundfish are excluded. Pink shrimp vessels are excluded. Vessels that fish exclusively in state waters are excluded.</p>	<p>Same as Alt. 6A except that approximately 22 vessels/yr, each less than 12 feet in length, would be excluded. This is an average of 6 longline, 2 pot, and 14 line gear vessels/yr.</p>	<p>Longline - Same as Alt. 2 Pot - Same as Alt. 3 Trawl - Same as Alt. 4. Line gear - Same as Alt. 6A</p>	<p>Longline - Same as Alt. 2 Pot - Same as Alt. 3 Trawl - Same as Alt. 4 Line gear - Same as Alt.6A</p>
<p>a/ Unless other wise noted, the number of vessels is the average number of participants for the years 2000-2003. b/ The number vessels represents those that operated in both state and/or federal waters. The data does not allow vessels that only fished in federal waters to be identified. c/ For longline gear, directed was defined as a vessel with an exvessel value of groundfish greater than \$2,500 d/ Directed groundfish pot was defined as having an exvessel value greater than 20% of all other West Coast vessel revenue</p>			

Alternative 1: Status quo. Do not specify mandatory VMS program coverage requirements for vessels used to fish pursuant to the harvest guidelines, quotas, and other management measures governing the OA fishery.

Discussion: Vessels without limited entry permits that fish pursuant to the harvest guidelines, quotas, and other management measures governing the OA fishery would not be required to carry and use VMS transceiver units. However, vessels could elect to voluntarily carry a VMS transceiver unit and provide position reports to NMFS if they choose. Vessels registered to limited entry permits that land fish in the open access sector would continue to be required to carry and use a VMS transceiver and provide declaration reports. Declaration reports would continue to be required from vessels using exempted trawl gear.

Alternative 2: longline vessels. Beginning October 1, 2005, require all vessels using longline gear that fish pursuant to the harvest guidelines, quotas, and other management measures governing the open access fishery to carry and use VMS transceiver units and provide declaration reports. Prior to leaving port on a trip in which a vessel identified under this alternative is used to take and retain, possess, or land federally managed groundfish in federal waters, the vessel would be required to activate a VMS transceiver unit and to continuously operate the unit (24 hours a day) for the remainder of the calendar year. A declaration report would be required prior to leaving port on a trip in which the vessel was used to fish in a GCA in a manner that is consistent with the requirements of the conservation area. VMS requirements defined at 660.312 and prohibitions defined at 660.306 would apply to these vessels, as would the reporting requirements defined at 660.303 for vessels fishing in conservation areas.

Discussion: Between 2000 and 2003, an average of 131 vessels per year used longline gear for directed harvest of groundfish. These vessels targeted species such as sablefish, lingcod, and rockfish. For the purpose of this analysis, directed vessels were assumed to be those longline vessels with an annual exvessel landings value of groundfish that exceeded 30 percent. The average annual groundfish exvessel revenue for open access vessels that used longline gear for directed harvest of groundfish between 2000 and 2003 was \$6,331 per vessel. Between 2000 and 2003, an average of 1 vessels per year landed groundfish while using longline gear to target California halibut. The average annual groundfish longline revenue for each of these vessels was \$133. An average of 31 out of 49 directed Pacific halibut vessels that fished south of Point Chehalis, WA and landed groundfish between 2000 and 2003. Longline gear is no longer allowed in federal waters off the West Coast by vessels harvesting Highly Migratory Species (HMS) species. Unless a HMS vessel possessed groundfish taken with longline gear outside the EEZ, they would not be required to have VMS.

Overfished species interactions for all open access directed groundfish gears were projected to include bocaccio, canary rockfish, cowcod, darkblotched rockfish, lingcod, POP and yelloweye rockfish. Gear specific overfished species catch projections were not available for the directed open access gears. For the California halibut fishery, overfished species projections for 2005 were combined for trawl and longline gear. The California halibut overfished species catch projections for 2005 were 0.1 mt of bocaccio and 2.0 mt of lingcod. Overfished species from the Pacific halibut fishery were projected to be 0.5 mt of yelloweye rockfish for 2005. No overfished species catch was projected for the HMS longline fishery for 2005.

Vessels would be required to operate their VMS units continuously from the point at which a vessel leaves port on a trip in which the vessel uses longline gear to fish in the open access fishery in Federal waters. The use of the term "fish" or "fishing" includes possessing federally managed groundfish in federal waters, even if the groundfish were taken and retained seaward of the EEZ or in state waters. Under this alternative, data would be available to monitor vessels using longline gear in the open access fisheries for unlawful incursions into conservation areas. Vessels must continue to operate the VMS units once the requirement is triggered; therefore, position data would be available for the vessels when they participate in other state and federal fisheries. Because of the mobility of vessels within the open access fleet to fish with alternative open access gears, some vessels, particularly directed vessels or those in fisheries where alternative gears are allowed, may change gear (such as to pot or line gear) to avoid the VMS requirements.

Alternative 3: longline or pot vessels. In addition to those vessels identified under Alternative 2, beginning October 1, 2005, require all vessels using longline or pot gear to fishing pursuant to the harvest guidelines, quotas, and other management measures governing the open access fishery to carry and use VMS transceiver units and provide declaration reports. Prior to leaving port on a trip in which a vessel identified under this alternative is used to take and retain, possess, or land federally managed groundfish in Federal waters, the vessel would be required to activate a VMS transceiver unit and to continuously operate the unit (24 hours a day) throughout the remainder of the calendar year. A declaration report would be required prior to leaving port on a trip in which the vessel is used to fish in a GCA in a manner that is consistent with the requirements of the conservation area. VMS requirements defined at 660.312 and prohibitions defined at 660.306 would apply to these vessels, as would the reporting requirements defined at 660.303 for vessels fishing in conservation areas.

Discussion: The vessels identified under this alternative are in addition to those vessels identified under Alternative 2. Between 2000 and 2003, an average of 30 vessels per year used pot gear for directed harvest of groundfish in Federal waters. Target species included sablefish, lingcod, and rockfish. For the purpose of this analysis, directed vessels were assumed to be those with an annual exvessel value of groundfish that exceeded 20% of all West Coast fisheries revenue for the vessel. The average annual groundfish exvessel revenue for these vessels for the 2000-2003 period was \$8,809 per vessel. Other fisheries where pot gear is used and incidentally caught groundfish are landed are the Dungeness crab, prawn, and California sheephead (currently part of the California nearshore species management group) fisheries. On average between 2000 and 2003, 45 vessels landed open access groundfish while using pot gear to fish for Dungeness crab. The average annual exvessel revenue of groundfish landed by Dungeness crab vessels during the 2000-2003 period was \$2,555 per vessel. On average between 2000 and 2003, 8 vessels landed open access groundfish while using pot gear to fish for spot and ridgeback prawns. The average annual groundfish exvessel revenue for prawn vessels during the 2000-2003 period was \$1,674 per vessel. On average between 2000 and 2003, 8 vessels per year landed open access groundfish taken in pot gear by vessels also fishing for California sheephead. The average annual groundfish exvessel revenue for California sheephead vessels in the 2000-2003 period was \$1,584 per vessel.

Overfished species interactions in the directed groundfish fisheries are projected to include bocaccio, canary rockfish, cowcod, darkblotched rockfish, lingcod, POP and yelloweye rockfish. Gear specific overfished species catch projections were not available for the directed open access gears. No overfished species catch was projected for the Dungeness crab or ridgeback prawn pot gear fisheries in 2005. California sheephead are caught in the nearshore fishery in California. Overfished species bycatch projections for the California nearshore fisheries were included in the direct fisheries impact estimates for 2005.

Vessels would be required to operate their VMS units continuously from the point at which a vessel leaves port on a trip in which longline or pot gear to fish in the open access fishery in Federal waters. The use of the term "fish" or "fishing" includes possessing federally managed groundfish in Federal waters, even if the groundfish were taken and retained seaward of the EEZ or in state waters. Under this alternative, data would be available to monitor vessels using longline or pot gear in the open access fisheries for unlawful incursions into conservation areas. Vessels must continue to operate the VMS units once the requirement is triggered, therefore, position data would be available for the vessels when they participate in other state and federal fisheries. Because of the mobility of vessels within the fleet to fish with alternative open access gears, some vessels, particularly directed vessels or those in fisheries where alternative gears are allowed, may change gear (such as to line gear) to avoid the VMS requirements.

Alternative 4: longline, pot, or trawl vessels, excluding pink shrimp trawl vessels. In addition to those vessels identified under Alternatives 2 and 3, beginning on October 1, 2005, require all vessels that use longline gear, pot or trawl gear, excluding pink shrimp trawl gear fishing pursuant to the harvest guidelines, quotas, and other management measures governing the open access fishery, to carry and use VMS transceiver units and to provide declaration reports. Prior to leaving port on a trip in which a vessel identified under this alternative is used to take and retain, possess, or land federally managed groundfish in Federal waters, the vessel would be required to activate a VMS transceiver unit and to continuously operate the unit (24 hours a day) throughout the remainder of the calendar year. A declaration report

would be required prior to leaving port on a trip in which the vessel is used to fish in a GCA in a manner that is consistent with the requirements of the conservation area. VMS requirements defined at 660.312 and prohibitions defined at 660.306 would apply to these vessels, as would the reporting requirements defined at 660.303 for vessels fishing in conservation areas.

Discussion: The vessels identified under this alternative are in addition to those vessels identified under Alternative 2 and 3. The open access fisheries in which trawl gear is used are the exempted trawl fisheries for sea cucumber, California halibut, ridgeback prawns, and pink shrimp. This alternative applies to exempted trawl vessels that take and retain, possess or land groundfish taken with exempted trawl gear, except pink shrimp. On average between 2000 and 2003, 6 vessels landed open access groundfish while using trawl gear to fish for sea cucumbers. The average annual groundfish exvessel revenue of groundfish landed by sea cucumber vessels during the 2000-2003 period was \$153 per vessel. On average, between 2000 and 2003, 17 vessels landed open access groundfish while using trawl gear to fish for California halibut. The average annual exvessel revenue of groundfish landed by California halibut vessels during the 2000-2003 period was \$729 per vessel. On average between 2000 and 2003, 18 vessels landed open access groundfish while using trawl gear to fish for ridgeback prawns. The average annual groundfish exvessel revenue of groundfish landed by ridgeback prawn vessels during the 2000-2003 period was \$740 per vessel. After 2002, Washington State prohibited the use of trawl nets for harvesting spot prawns. On February 18, 2003, the California Fish and Game Commission adopted regulations prohibiting the use of trawl nets to take spot prawn. The regulations went into effect on April 1, 2003. After 2003, Oregon prohibited the use of trawl nets for harvesting spot prawns. Pink shrimp vessels are allowed to fish within the trawl RCA providing a declaration report is sent prior to leaving port on a trip in which the vessel is used to fish within the RCA with shrimp trawl gear. In addition, state requirements include the use of approved finfish excluders for pink shrimp vessels.

No overfished species catch was projected for the sea cucumber trawl fishery for 2005. The 2005 projected overfished species catch in the ridgeback prawn trawl fishery was 0.1 mt of bocaccio. Gear specific overfished species catch projections were not available for the California halibut trawl fishery. However, the 2005 projections for all gears targeting California halibut is 0.1 mt of bocaccio and 2.0 mt of lingcod.

Vessels would be required to operate their VMS units continuously from the point at which a vessel leaves port on a trip in longline or pot gear is used to fish in the open access fishery in Federal waters. The use of the term "fish" or "fishing" includes possessing federally managed groundfish in Federal waters, even if the groundfish were taken and retained seaward of the EEZ or in state waters. Under this alternative, data would be available to monitor vessels using longline, pot, or exempted trawl gear (except for pink shrimp trawl) in the open access fisheries for unlawful incursions into conservation areas. Vessels must continue to operate the VMS units once the requirement is triggered; therefore, position data would be available for the vessels when they participate in other state and federal fisheries. Mobility of vessels within the fleet to fish with alternative open access gears to avoid the VMS requirements is effectively the same as alternative 3, because it is unlikely that vessels exempted trawl gears would line gear to avoid the VMS requirements.

Alternative 5A: longline, pot, trawl and line gear vessels, excluding pink shrimp trawl and salmon troll vessels. In addition to those vessels identified under Alternatives 2-4, beginning on October 1, 2005, require all vessels that use longline, pot, trawl (excluding pink shrimp trawl) or line gear (excluding salmon troll gear) to fish pursuant to the harvest guidelines, quotas, and other management measures governing the open access fishery, to carry and use VMS transceiver units and provide declaration reports. Prior to leaving port on a trip in which a vessel identified under this alternative is used to take, retain, possess, or land federally managed groundfish in Federal waters, the vessel would be required to activate a VMS transceiver unit and to continuously operate the unit (24 hours a day) throughout the remainder of the calendar year. A declaration report would be required prior to leaving port on a trip in which the vessel is used to fish in a GCA in a manner that is consistent with the requirements of the conservation area. VMS requirements defined at 660.312 and prohibitions defined at 660.306 would apply to these vessels, as would the reporting requirements defined at 660.303 for vessels fishing in conservation areas.

Discussion: The vessels identified under this alternative are in addition to those vessels identified under

Alternative 2, 3 and 4. Between 2000 and 2003, an average of 738 vessels per year used line gear to target groundfish in the open access fishery. The average annual exvessel revenue of groundfish during this period was \$2,639 per vessel. Other fisheries in which line gear is used and where incidentally caught groundfish are landed are the California halibut, HMS and salmon troll vessels. On average between 2000 and 2003, less than 105 vessels landed open access groundfish while using open access line gear to fish for California halibut. The average annual groundfish exvessel revenue of groundfish landed by California Halibut vessels during the 2000-2003 period was \$225 per vessel. On average between 2000 and 2003, 12 vessels landed open access groundfish while using trawl gear to fish for HMS. The average annual groundfish exvessel revenue of groundfish landed by HMS vessels during the 2000-2003 period was \$969 per vessel. The salmon troll fisheries are allowed to fish within the nontrawl RCA and are allowed to retain some groundfish. Because VMS cannot be used to determine where a particular species was caught, VMS was originally considered to be an effective enforcement tool for monitoring open access trip limit compliance by salmon troll vessels.

Overfished species interactions in the directed groundfish fisheries were projected to include bocaccio, canary rockfish, cowcod, darkblotched rockfish, lingcod, POP and yelloweye rockfish. Gear specific overfished species catch projections were not available for the directed open access gears nor were gear specific overfished species catch projections available for the California halibut trawl fishery. The 2005 However, 0.1 mt of bocaccio and 2.0 mt of lingcod were projected to be taken by all gears targeting California halibut. No overfished species catch was projected for the HMS line gear fisheries for 2005.

Vessels would be required to operate their VMS units continuously from the point at which a vessel leaves port on a trip in which longline or pot gear is used to fish in the open access fishery in Federal waters. The use of the term "fish" or "fishing" includes possessing federally managed groundfish in Federal waters, even if the groundfish were taken and retained seaward of the EEZ or in state waters. Under this alternative, data would be available to monitor vessels using longline, pot, exempted trawl gear (except for pink shrimp trawl), and line gear (except salmon troll) in the open access fisheries for unlawful incursions into conservation areas. Vessels must continue to operate the VMS units once the requirement is triggered; therefore, position data would be available for the vessels when they participate in other state and federal fisheries.

Alternative 5B: longline, pot, trawl and line gear vessels; excluding pink shrimp trawl, HMS longline and line gear and Dungeness crab pot gear. Beginning on October 1, 2005, require all vessels that use longline, pot, trawl or line gear to fish pursuant to the harvest guidelines, quotas, and other management measures governing the open access fishery, to carry and use VMS transceiver units and provide declaration reports. Vessels using pink shrimp trawl gear are excluded under this alternative. In addition, vessels using HMS longline and line gear, and Dungeness crab pot gear, gears where the incidental catch of overfished species is projected to be minimal, are excluded. Prior to leaving port on a trip in which a vessel identified under this alternative is used to take and retain, possess, or land federally managed groundfish in Federal waters, the vessel would be required to activate a VMS transceiver unit and to continuously operate the unit (24 hours a day) throughout the remainder of the calendar year. A declaration report would be required prior to leaving port on a trip in which the vessel is used to fish in a GCA in a manner that is consistent with the requirements of the conservation area. VMS requirements defined at 660.312 and prohibitions defined at 660.306 would apply to these vessels, as would the reporting requirements defined at 660.303 for vessels fishing in conservation areas.

Discussion: The vessels identified under this alternative are the same vessels as those identified under Alternative 2, 3 and 4, except that vessels using gears where the incidental catch of overfished species is projected to be minimal, are excluded. Vessels using pink shrimp trawl gear are excluded under this alternative. The gears with low incidental catch of overfished species are HMS longline and line gear, and Dungeness crab pot gear. An average of 2 vessels per year between 2000 and 2003 landed groundfish taken with longline gear while targeting HMS (currently prohibited gear in the EEZ); approximately 12 vessels per year between 2000 and 2003 landed groundfish taken with line gear while targeting HMS; and approximately 45 vessels per year between 2000 and 2003 landed groundfish taken with pot gear while targeting Dungeness crab. Under this alternative, vessels using salmon troll gear to fish pursuant to the harvest guidelines, quotas, and other management measures governing the open access fishery would also be required to carry and use VMS transceivers and provide declaration reports. Between 2000 and

2003, an average of 177 vessels per year landed groundfish taken with salmon troll gear. The annual exvessel value of groundfish taken by salmon troll vessels during this period was \$173 per vessel.

Overfished species interactions in the directed groundfish fisheries were projected to include bocaccio, canary rockfish, cowcod, darkblotched rockfish, lingcod, POP and yelloweye rockfish. Gear specific overfished species catch projections were not available for the directed open access gears. Though gear specific overfished species catch projections were not available for the California halibut trawl fishery, 0.1 mt of bocaccio and 2.0 mt of lingcod were projected to be taken by all gears targeting California halibut. For 2005, salmon troll vessels were projected to take 0.2 mt of bocaccio, 1.6 mt of canary rockfish, 0.3 mt of lingcod, and 0.2 mt of yelloweye rockfish.

Vessels would be required to operate their VMS units continuously from the point at which a vessel leaves port on a trip in which the vessel uses longline or pot gear to fish in the open access fishery in Federal waters. The use of the term "fish" or "fishing" includes possessing federally managed groundfish in Federal waters, even if the groundfish were taken and retained seaward of the EEZ or in state waters. Under this alternative, the available data would be the similar to 5A. HMS vessels are currently prohibited from using longline gear in the EEZ, data from approximately 12 vessels landing groundfish taken with line gear while targeting HMS and approximately 45 vessels landing groundfish taken with pot gear while targeting Dungeness crab would be excluded. However, data from, an average of 177 salmon troll vessels per year would be available under this alternative.

Alternative 6A: Any vessel engaged in commercial fishing to which a RCA restriction applies.

Require all vessels engaged in a commercial fishery to which an RCA restriction applies to carry and use VMS transceivers and provide declaration reports. Vessels using salmon, Dungeness crab, coastal Pelagic Species (CPS) or HMS gear that do not take and retain groundfish are excluded. Pink shrimp vessels are excluded. Because there is no link to Federal authority at this time (Federal nexus), vessels that fish exclusively in state waters are excluded. Prior to leaving port on a trip in which a vessel identified under this alternative is used to take and retain, possess, or land federally managed groundfish in Federal waters, the vessel would be required to activate a VMS transceiver unit and to continuously operate the unit (24 hours a day) throughout the remainder of the calendar year. A declaration report would be required prior to leaving port on a trip in which the vessel is used to fish in a GCA in a manner that is consistent with the requirements of the conservation area. VMS requirements defined at 660.312 and prohibitions defined at 660.306 would apply to these vessels, as would the reporting requirements defined at 660.303 for vessels fishing in conservation areas.

Discussion: The vessels identified under this alternative are the same vessels as those identified under Alternative 5A, except that all vessels using longline gear to target Pacific halibut and all vessels using exempted trawl gear to target ridgeback prawns, sea cucumber, and California halibut would be included rather than only those exempted trawl vessels that take and retain, possess or land groundfish. In addition, vessels using salmon troll, net and other gears to fish pursuant to the harvest guidelines, quotas, and other management measures governing the open access fishery would be required to have and use VMS transceiver units and provide declaration reports. An average of 49 vessels per year between 2000 and 2003 fished in the directed commercial fishery for Pacific halibut south of Point Chehalis. All of these would be included under this alternative. This alternative also included all vessels using exempted trawl gear. On average between 2000 and 2003, 34 vessels per year used trawl gear to fish for California halibut, 14 vessels per year used trawl gear to fish for sea cucumbers, and 32 vessels per year used trawl gear to fish for ridgeback prawn. Like Alternative 5B, vessels using salmon troll gear to fish pursuant to the harvest guidelines, quotas, and other management measures governing the open access fishery would also be required to carry and use VMS transceivers and provide declaration reports. Between 2000 and 2003, an average of 177 vessels per year landed groundfish taken with salmon troll gear. The annual exvessel value of groundfish taken by salmon troll vessels during this period was \$ 173 per vessel. Vessels landing groundfish with CPS net gear would be included under this alternative and are projected to take 0.3 mt of bocaccio rockfish. Only 3 CPS vessels to landed groundfish with a per vessel exvessel revenue of \$358.

Overfished species interactions under this alternative are the same as those under alternative 5B, because overfished species were projected to be taken in the HMS longline or line gear fisheries or for the Dungeness crab pot gear fishery for 2005.

Vessels would be required to operate their VMS units continuously from the point at which a vessel leaves port on a trip in which the vessel is used to fish in the open access fishery in Federal waters with a gear for which there is an RCA restriction. The use of the term "fish" or "fishing" includes possessing federally managed groundfish in Federal waters, even if the groundfish were taken and retained seaward of the EEZ or in state waters.

Alternative 6B: Any vessel engaged in commercial fishing to which a RCA restriction applies, except salmon troll vessels operating in waters north of 40°10' N. lat. that only retain yellowtail rockfish. Require all vessels engaged in a commercial fishery to which an RCA restriction applies to carry and use VMS transceivers and provide declaration reports. Vessels using salmon, Dungeness crab, CPS or HMS gear that do not take and retain groundfish are excluded. Salmon troll vessels operating in waters north of 40°10' N. lat. that only retain yellowtail rockfish are excluded. Pink shrimp vessels are excluded. If an RCA requirement is discontinued during the year, mandatory VMS coverage would be discontinued for the affected vessels. Because there is no link to Federal authority at this time (Federal nexus), vessels that fish exclusively in state waters are excluded. Prior to leaving port on a trip in which a vessel identified under this alternative is used to take and retain, possess, or land federally managed groundfish in Federal waters, the vessel would be required to activate a VMS transceiver unit and to continuously operate the unit (24 hours a day) throughout the remainder of the calendar year. A declaration report would be required prior to leaving port on a trip in which the vessel is used to fish in a GCA in a manner that is consistent with the requirements of the conservation area. VMS requirements defined at 660.312 and prohibitions defined at 660.306 would apply to these vessels, as would the reporting requirements defined at 660.303 for vessels fishing in conservation areas.

Discussion: The vessels identified under this alternative are the same vessels as those identified under Alternative 6A except that salmon troll vessels operating in waters north of 40°10' N. lat. that only retain yellowtail rockfish are excluded (>43, but <134 vessels). In the long term, fewer vessels may be affected than under Alternative 6A. This is because Alternative 6B includes a provision to discontinued mandatory VMS coverage for open access gear groups when the RCA requirements are discontinued.

Overfished species interactions under this alternative are similar to those under alternative 5B and 6A. However data on the overfished species impacts for salmon troll vessel are not available for north and south of 40°10' N. lat. Vessels would be required to operate their VMS units continuously from the point at which a vessel leaves port on a trip in which the vessel is used to fish in the open access fishery in Federal waters with a gear for which there is an RCA restriction. The use of the term "fish" or "fishing" includes possessing federally managed groundfish in Federal waters, even if the groundfish were taken and retained seaward of the EEZ or in state waters. Less salmon troll data would be available for vessels fishing north 40°10' N. lat than would be available under alternatives 5B or 6A.

Alternative 7: Any vessel engaged in commercial fishing to which an RCA restriction applies, except vessels less than 12 feet in overall length. Require all vessels greater than 12 ft in length that are engaged in a commercial fishery to which an RCA restriction applies to carry and use VMS transceivers and provide declaration reports. Vessels using salmon, Dungeness crab, CPS or HMS gear that do not take and retain groundfish are excluded. Pink shrimp vessels are excluded. Vessels that fish exclusively in state waters are excluded. Prior to leaving port on a trip in which a vessel identified under this alternative is used to take and retain, possess, or land federally managed groundfish in Federal waters, the vessel would be required to activate a VMS transceiver unit and to continuously operate the unit (24 hours a day) throughout the remainder of the calendar year. A declaration report would be required prior to leaving port on a trip in which the vessel is used to fish in a GCA in a manner that is consistent with the requirements of the conservation area. VMS requirements defined at 660.312 and prohibitions defined at 660.306 would apply to these vessels, as would the reporting requirements defined at 660.303 for vessels fishing in conservation areas.

Discussion: The vessels identified under this alternative are the same vessels as those identified under Alternative 6A, except that vessels less than 12 feet in length are excluded. An average of 22 vessels per year between 2000 and 2003 landed groundfish and were less than 12 feet in length. These vessel included 6 vessels that used longline gear, 2 vessels that used pot gear, and 14 vessels that used line gear.

Overfished species interactions under this alternative are similar to those under alternative 5B and 6A. Data on the overfished species impacts for vessel under 12 feet in length are not available. Vessels would be required to operate their VMS units continuously from the point at which a vessel leaves port on a trip in which the vessel used longline or pot gear to fish in the open access fishery in Federal waters. The use of the term “fish” or “fishing” includes possessing federally managed groundfish in Federal waters, even if the groundfish were taken and retained seaward of the EEZ or in state waters. Less data would be available from approximately 6 vessels that use longline gear, 2 vessels that use pot gear, and 14 vessels that use line gear.

Vessels would be required to operate their VMS units continuously from the point at which a vessel leaves port on a trip in which the vessel is used to fish in the open access fishery in Federal waters with a gear for which there is an RCA restriction. The use of the term “fish” or “fishing” includes possessing federally managed groundfish in Federal waters, even if the groundfish were taken and retained seaward of the EEZ or in state waters.

2.3 Alternatives rejected from further analysis

VMS coverage of the recreational fisheries is not being considered at this time. At its October 2003 meeting, the ad hoc VMS Committee considered expansion of the VMS program, including expansion into the charter and private sectors of the recreational fishery. After considerable discussion, the committee recommended that an area-by-area evaluation of the groundfish impacts by these participants was necessary before a final recommendation could be made.

The pink shrimp fisheries have not been included in the alternatives for VMS coverage. Pink shrimp vessels are allowed to fish within the trawl RCA providing a declaration report has been sent prior to leaving port on a trip in which the vessel is used to fish within a GCA or RCA. Pink shrimp trawl vessels were excluded in the coverage alternatives, because they are required to use finfish excluders, which dramatically reduce their catch of overfished species, primarily canary rockfish. The salmon troll fisheries are allowed to fish within the nontrawl RCA and are allowed to retain some groundfish. Because VMS cannot be used to determine where a particular species was caught it is not considered to be an effective enforcement tool for monitoring open access trip limit compliance by salmon troll vessels.

State and federal fisheries in which groundfish are incidentally taken, but not landed were not included in the analysis because fisheries where groundfish catch is not landed are not considered to be open access fishery. These vessels include: the those targeting targeting HMS with purse seine gear, and those targeting the gillnet complex (California halibut, white sea bass, sharks, and white croaker) with driftnet.

3.0 AFFECTED ENVIRONMENT

The purpose of this EA is to analyze a range of alternatives for expanding the VMS program into the open access groundfish fisheries off the coasts of Washington, Oregon, and California. The affected environment includes: the geographical location in which these fisheries occur; the groundfish and other species these vessels harvest and interact with; the fish buyers and processors that are dependent on the fishery; the suppliers and services; and ultimately, and the fishing-dependent communities where vessels dock and fishing families live. The following section of this document, Section 3, describes the physical, biological, and socio-economic characteristics of the affected environment.

3.1 Physical Environment

Essential Fish Habitat (EFH) for Pacific 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. When these EFHs for all groundfish species are taken together, the groundfish fishery EFH includes all waters from the mean higher high water line, and the upriver extent of saltwater intrusion in river mouths seaward to the boundary of the U.S. EEZ.

This is a tiered EA that expands on information presented in the original July 2003 VMS EA titled, The Program to Monitor Time-Area Closures in the Pacific Coast Groundfish Fishery. Section 3.1, Physical Environment, of the original EA contained detailed information on the marine ecosystem. In addition, Section 3.2 of the February 2005 Draft EFH EIS titled: The Pacific Coast Groundfish Fishery Management Plan, Essential Fish Habitat Designation and Minimization of Adverse Impacts, contains further information on the physical environment. Readers who are interested in more detailed information on the physical environment are referred to the Draft EFH EIS.

3.1.1 Current Habitat Protection Areas

There are many areas off the West Coast where marine habitat is afforded some level of protection through existing regulations. These are areas that have been established by federal, state, and local agencies or other organizations. Areas may have been established to regulate navigation, restrict access (e.g., for security or fishing purposes), protect certain natural resources, regulate use, or for other purposes. These areas are known generally as marine managed areas, but are more specifically called such things as National Wildlife Refuges, National Marine Sanctuaries, fishery closure areas, State Parks, oil platform navigation safety zones, national security zones, marine protected areas, or marine reserves: There are about 321 distinct areas. Fifty nine of which may be considered marine reserves where all fishing is prohibited due either to specific fishing regulations or to access restrictions. That is, the majority of sites included in the table do not prohibit all fishing activities. Some sites may, for example, prohibit commercial fishing but allow recreational fishing; others allow fishing for some, but not all species of fish or invertebrates. Still others may only regulate fishing for one type of organism. A description of the areas is contained in Section 3.6 of the Pacific Coast Groundfish Fishery Management Plan, Essential Fish Habitat Designation and Minimization of Adverse Impacts, Draft EIS, prepared in February 2005.

3.2 Biological Environment

3.2.1 Groundfish Resources

The Pacific Coast groundfish FMP manages over 80 species, which are divided into the following groups: roundfish, flatfish, rockfish, sharks, skates, ratfish, morids, and grenadiers. These species occur throughout the EEZ and occupy diverse habitats at all stages in their life history. Information on the interactions between the various groundfish species and between groundfish and non-groundfish species varies in completeness. While a few species have been intensely studied, there is relatively little information on most groundfish species.

Each fishing year, the Council uses the best available stock assessment data to evaluate the biological condition of the Pacific Coast groundfish fishery and to develop estimates of allowable biological catch (ABC) levels for major groundfish stocks. The ABCs are biologically based estimates of the amount of

fish that may be harvested from the fishery each year without jeopardizing the stability of the resource. The ABC may be modified to incorporate biological safety factors and risk assessment due to uncertainty.

Harvest levels or optimum yields (OYs) are established for the species or species groups that the Council proposes to manage. In 2005, OYs are defined for the following groundfish species and species groups: bocaccio, black rockfish, cabezon, canary rockfish, chilipepper rockfish, cowcod, darkblotched rockfish, Dover sole, lingcod, longspine thornyhead, the minor rockfish complexes (the unassessed northern and southern nearshore, continental shelf, and continental slope rockfish species,) Pacific cod, POP, Pacific whiting, sablefish, shortbelly rockfish, shortspine thornyhead, splitnose rockfish, widow rockfish, yelloweye rockfish, and yellowtail rockfish. Numerical OYs are not set for every stock.

The Magnuson-Stevens Act requires an FMP to prevent overfishing. Overfishing is defined in the National Standards Guidelines (63 FR 24212, May 1, 1998) as exceeding the fishing mortality rate needed to produce maximum sustainable yield. The OY harvest levels are set at levels that are expected to prevent overfishing, equal to or less than the ABCs. The term "overfished" describes a stock whose abundance is below its overfished/rebuilding threshold. Overfished/rebuilding thresholds are generally linked to the same productivity assumptions that determine the ABC levels. The default value of this threshold for the groundfish FMP is 25% of the estimated unfished biomass level. In 2005, eight groundfish species continue to be designated as overfished: bocaccio (south of Monterey), canary rockfish, cowcod (south of Point Conception), darkblotched rockfish, lingcod, Pacific ocean perch, widow rockfish, and yelloweye rockfish.

This is a tiered EA that expands on information presented in the July 2003 EA titled, The Program to Monitor Time-Area Closures in the Pacific Coast Groundfish Fishery. Section 3.2, Biological Environment, of the original EA, contained detailed biological information on the groundfish resources. Readers who are interested in further information on the status of the groundfish resources are referred to Section 4.0 of the EIS, prepared by the Pacific Fishery Management Council, for the Proposed Acceptable Biological Catch and Optimum Yield Specifications and Management Measures for the 2005-2006 Pacific Coast Groundfish Fishery.

3.2.2 Endangered Species

West Coast marine species listed as endangered or threatened under the ESA include marine mammals, seabirds, sea turtles, and salmon. Under the ESA, a species is listed as "endangered" if it is in danger of extinction throughout a significant portion of its range and "threatened" if it is likely to become an endangered species within the foreseeable future throughout all, or a significant portion, of its range. Table 3.2.2.1 lists the species are subject to the conservation and management requirements of the ESA because they are listed as threatened or endangered.

Table 3.2.2.1. West Coast Endangered Species

Marine Mammals	Seabirds
<p>Threatened:</p> <ul style="list-style-type: none"> • Steller sea lion (<i>Eumetopias jubatus</i>) Eastern Stock • Guadalupe fur seal (<i>Arctocephalus townsendi</i>) • Southern sea otter (<i>Enhydra lutris</i>) California Stock 	<p>Endangered:</p> <ul style="list-style-type: none"> • Short-tail albatross (<i>Phoebastria (=Diomedea) albatrus</i>) • California brown pelican (<i>Pelecanus occidentalis</i>) • California least tern (<i>Sterna antillarum browni</i>) <p>Threatened:</p> <ul style="list-style-type: none"> • Marbled murrelet (<i>Brachyramphus marmoratus</i>)
Sea Turtles	Salmon
<p>Endangered:</p> <ul style="list-style-type: none"> • Green turtle (<i>Chelonia mydas</i>) • Leatherback turtle (<i>Dermochelys coriacea</i>) • Olive ridley turtle (<i>Lepidochelys olivacea</i>) <p>Threatened:</p> <ul style="list-style-type: none"> • Loggerhead turtle (<i>Caretta caretta</i>) 	<p>Endangered:</p> <ul style="list-style-type: none"> • Chinook salmon (<i>Oncorhynchus tshawytscha</i>) Sacramento River Winter; Upper Columbia Spring • Sockeye salmon (<i>Oncorhynchus nerka</i>) Snake River • Steelhead trout (<i>Oncorhynchus mykiss</i>) Southern California; Upper Columbia <p>Threatened:</p> <ul style="list-style-type: none"> • Coho salmon (<i>Oncorhynchus kisutch</i>) Central California, Southern Oregon, and Northern California Coasts • Chinook salmon (<i>Oncorhynchus tshawytscha</i>) Snake River Fall, Spring, and Summer; Puget Sound; Lower Columbia; Upper Willamette; Central Valley Spring; California Coastal • Chum salmon (<i>Oncorhynchus keta</i>) Hood Canal Summer; Columbia River • Sockeye salmon (<i>Oncorhynchus nerka</i>) Ozette Lake • Steelhead trout (<i>Oncorhynchus mykiss</i>) South-Central California, Central California Coast, Snake River Basin, Lower Columbia, California Central Valley, Upper Willamette, Middle Columbia, Northern California

Marine Mammals: Table 3.2.3.1 of the original VMS EA identified marine mammal communities by depth categories (nearshore, shelf and slope depth) that approximate those defined by the RCAs for three coastal regions, which included southern California, central to northern California, and Oregon to British Columbia.

Seabirds: Over sixty species of seabirds occur in waters off the West Coast within the EEZ, including: loons, grebes, albatross, fulmars, petrels, shearwaters, storm-petrels, pelicans, cormorants, frigate birds, phalaropes, skuas, jaegers, gulls, kittiwakes, skimmers, terns, guillemots, murrelets, auklets, and puffins. The migratory range of these species includes areas where open access commercial fishing occurs; commercial fishing also occurs near the breeding colonies of many of these species. Besides entanglement in fishing gear, seabirds may be indirectly affected by commercial fisheries in various ways. Change in prey availability may be linked to 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.

Sea Turtles: Sea turtles are highly migratory; four of the six species found in U.S. waters have been sighted off the West Coast. Little is known about the interactions between sea turtles and West Coast commercial fisheries. The directed fishing for sea turtles in West Coast groundfish fisheries is prohibited, because of their ESA listings, but the incidental take of sea turtles by longline or trawl gear may occur. Sea turtles are known to be taken incidentally by the California-based pelagic longline fleet and the California halibut gillnet fishery. Because of differences in gear and fishing strategies between those fisheries and the West Coast groundfish fisheries, the expected take of sea turtles by groundfish gear is minimal.

Salmon: salmon caught in the U.S. West Coast fishery have life cycle ranges that include coastal streams and river systems from central California to Alaska and oceanic waters along the U.S. and Canada seaward

into the north central Pacific Ocean, including Canadian territorial waters and the high seas. Some of the more critical portions of these ranges are the freshwater spawning grounds and migration routes. The open access groundfish fishery includes vessels that take and retain groundfish while using troll gear to target salmon.

This is a tiered EA that expands on information presented in the original July 2003 EA titled, "The Program to Monitor Time-Area Closures in the Pacific Coast Groundfish Fishery" Section 3.2.2 of the original EA, "Endangered Species" contains more detailed information on these resources.

3.2.3 Non-groundfish Species Interactions

Dungeness Crab: Dungeness crab (*Cancer magister*) are distributed from the Aleutian Islands, Alaska, to Monterey Bay, California. They live in bays, inlets, around estuaries, and on the continental shelf. Dungeness crab are found to a depth of about 180 m (98 fm). Although Dungeness crab are found on mud and gravel, it is most abundant on sandy bottoms and in eelgrass. Dungeness crab, are typically harvested using traps (crab pots), ring nets, by hand (scuba divers) or dip nets, and may be incidentally taken or harmed unintentionally by groundfish gears.

Highly Migratory Species: Highly migratory species (HMS) include tunas, billfish, dorado, and sharks. HMS species range great distances during their lifetime, extending beyond national boundaries into international waters and among the EEZs of many nations in the Pacific. In 2003, the Council adopted a Highly Migratory Species FMP (PFMC 2003) to federally regulate the take of HMS within and outside the U.S. West Coast EEZ. NMFS approved the FMP, allowing implementation, on January 30, 2004. The HMS FMP describes species proposed for active management in detail. These are five tuna species, five shark species, striped marlin, swordfish, and dorado or dolphinfish.

Pacific Pink Shrimp: Pacific pink shrimp (*Pandalus jordani*) are found from Unalaska in the Aleutian Islands to San Diego, California, at depths of 25 to 200 fm (46 to 366 m). Off the U.S. West Coast, these shrimp are harvested with trawl gear from northern Washington to central California between 60 and 100 fm (110 to 180 m). The majority of the catch is taken off the coast of Oregon. Concentrations of pink shrimp are associated with well-defined areas of green mud and muddy-sand bottom. Shrimp trawl nets are usually constructed with net mesh sizes smaller than the net mesh sizes for legal groundfish trawl gear.

Ridgeback prawn: Ridgeback prawns (*Sicyonia ingentis*) are found south of Monterey, California to Baja, California in depths of 145 feet (73 fm) to 525 feet (263 fm) (Sunada *et al.* 2001). They are more abundant south of Point Conception and are the most common invertebrate appearing in trawls. Their preferred habitat is sand, shell and green mud substrate, and they are relatively sessile. Although information about their feeding habits is limited, these prawns probably are detritus feeders. In turn, they are prey for sea robins, rockfish, and lingcod. Unlike other shrimp species, which carry their eggs during maturation, ridgeback prawns release their eggs into the water column. They spawn seasonally from June to October. Surveys recorded increasing abundance of ridgeback prawns from 1982, when surveys began, to 1985. The population then declined. More recent CPUE data suggest increased abundance in the 1990s. These changes may be due to climate phenomena, particularly El Niño events.

Pacific Halibut: Pacific halibut (*Hippoglossus stenolepis*), in the family Pleuronectidae, range along the continental shelf in the North Pacific and Bering Sea in waters of 22 to 366 fm (40 to 200 m). They have flat, diamond-shaped bodies and may migrate long distances. Juvenile halibut, mostly shorter than the legal size limit, tend to migrate from north to south until they reach maturity. Adult halibut migrate from shallow summer feeding grounds to deeper winter spawning grounds. Most adult fish return to the same feeding grounds each summer where most commercial and recreational fishing occurs.

California Halibut: California halibut (*Paralichthys californicus*) are a left-eyed flatfish of the family Bothidae. They range from Northern Washington at approximately the Quileute River to southern Baja, California (Eschmeyer *et al.* 1983), but are most common south of Oregon. The center of distribution occurs south of Oregon. They predominantly associate with sand substrates from nearshore areas just beyond the surf line to about 183 m. California halibut feed on fishes and squids and can take their prey well off the bottom. They are an important sport and commercial species, especially in California where they are

targeted using hook-and-line and trawl gear.

California Sheephead: California sheephead (*Semicossyphus pulcher*) are a large member of the wrasse family Labridae. They range from Monterey Bay south to Guadalupe Island in central Baja, California and in the Gulf of California, but are uncommon north of Point Conception. They can live to 50 years of age and attain a maximum length of 91 cm (16 kg). Like some other wrasse species, California sheephead change sex starting first as a female, but changing to a male at about 30 cm in length.

Coastal Pelagic Species (CPS): CPS are schooling fish not associated with the ocean bottom, that migrate in coastal waters. These species include: northern anchovy (*Engraulis mordax*), Pacific sardine (*Sardinops sagax*), Pacific (chub) mackerel (*Scomber japonicus*), jack mackerel (*Trachurus symmetricus*) and market squid (*Loligo opalescens*). These species are managed under the Coastal Pelagic Species Fishery Management Plan. Sardines inhabit coastal subtropical and temperate waters and at times have been the most abundant fish species in the California current. During times of high abundance, Pacific sardine range from the tip of Baja California to southeastern Alaska. When abundance is low, Pacific sardine do not occur in large quantities north of Point Conception, California. Pacific (chub) mackerel range from Banderas Bay, Mexico to southeastern Alaska. They are common from Monterey Bay, California to Cabo San Lucas, Baja California, and most abundant south of Point Conception, California. The central subpopulation of northern anchovy ranges from San Francisco, California to Punta Baja, Mexico. Jack mackerel are a pelagic schooling fish that range widely throughout the northeastern Pacific, however much of their range lies outside the U.S. EEZ. Adult and juvenile market squid are distributed throughout the Alaska and California current systems, but are most abundant between Punta Eugenio, Baja California and Monterey Bay, Central California.

Stock assessments for Pacific sardine and Pacific mackerel from December 1999 and July 1999, respectively, indicate increasing relative abundance for both species. Pacific sardine biomass in U.S. waters was estimated to be 1,581,346 mt in 1999; Pacific mackerel biomass (in U.S. waters) was estimated to be 239,286 mt. Pacific sardine landings for the directed fisheries off California and Baja California, Mexico, reached the highest level in recent history during 1999, with a combined total of 115,051 mt harvested. In 1998, near-record landings of 70,799 mt of Pacific mackerel occurred for the combined directed fisheries off California and Baja California.

Population dynamics for market squid are poorly understood, and annual commercial catch varies from less than 10,000 mt to 90,000 mt. They are thought to have an annual mortality rate approaching 100%, which means the adult population is almost entirely new recruits and successful spawning is crucial to future years' abundance. Amendment 10 to the CPS FMP (January 27, 2003; 68 FR 3819) describes and analyzes several approaches for estimating an MSY proxy for market squid.

Sea Cucumber: Two sea cucumber species are targeted commercially: the California sea cucumber (*Parastichopus californicus*) and the warty sea cucumber (*P. parvimensis*) (Rogers-Bennett and Ono 2001). These species are tube-shaped Echinoderms, a phylum that also includes sea stars and sea urchins. The California sea cucumber occurs as far north as Alaska, while the warty sea cucumber is uncommon north of Point Conception and does not occur north of Monterey. Both species are found in the intertidal zone to as deep as 300 feet. These bottom-dwelling organisms feed on detritus and small organisms found in the sand and mud. Because sea cucumbers consume bottom sediment and remove food from it, they can alter the substrate in areas where they are concentrated. They can also increase turbidity as they excrete ingested sand or mud particles. Sea stars, crabs, various fishes, and sea otters prey upon them. They spawn by releasing gametes into the water column, and spawning occurs simultaneously for different segments of a population. During development, they go through several planktonic larval stages, settling to the bottom two months to three months after fertilization of the egg. Little is known about the population status of these two species; and assessment is difficult, because of their patchy distribution. However, density surveys suggest abundance has declined since the late 1980s, which is not unexpected since a commercial fishery for these species began in the late 1970s and expanded substantially after 1990.

Spot prawn: Spot prawn (*Pandalus platyceros*) are the largest of the pandalid shrimp and range from Baja, California north to the Aleutian Islands and west to the Korean Strait (Larson 2001). They inhabit rocky or hard bottoms including coral reefs, glass sponge reefs, and the edges of marine canyons. They have a

patchy distribution, which may result from active habitat selection and larval transport. Spot prawns are hermaphroditic, first maturing as males at about three years of age. They enter a transition phase after mating at about four years of age when they metamorphose into females. Spot prawns are taken by both traps and trawls on the West Coast with the fishery taking predominantly older females. Further information on the biological environment can be found in Section 3 of the Pacific Coast Groundfish Fishery Management Plan, Essential Fish Habitat Designation and Minimization of Adverse Impacts, Draft EIS, prepared in February 2005.

3.3 SOCIO-ECONOMIC ENVIRONMENT

3.3.1 Conservation Areas and Depth-Based Management.

Since 1998, groundfish management measures have been shaped by the need to rebuild overfished groundfish stocks. The 80+ species in the West Coast groundfish complex mix with each other to varying degrees throughout the year and in different portions of the water column. Some species, like Pacific whiting, are strongly aggregated, making them easier to target with relatively little bycatch of other species. Conversely, other species like canary rockfish may occur in species-specific clusters, but are also found co-occurring with a wide variety of other groundfish species.

Over the past several years, groundfish management measures have been carefully crafted to recognize the tendencies of overfished species to co-occur with healthy stocks in certain times and areas. Management measures have been specifically designed to reduce incidental interception of overfished species taken in fisheries targeting more abundant groundfish stocks. In addition to reduce overfished species catch by reducing trip limits for target species that co-occurrence with overfished species, GCAs and RCAs (large geographically defined conservation areas where fishing is restricted or prohibited to protect overfished species) areas have been used to manage the fishery.

The Council and NMFS began using closed areas to reduce fisheries impacts on overfished groundfish species in 2001. NMFS initially defined two Cowcod Conservation Areas (CCAs) in the Southern California Bight. These areas were closed to recreational and commercial fishing for groundfish. These closures were located in areas of known cowcod abundance and were intended to prevent fishing vessels from taking cowcod either directly or incidentally in fisheries targeting other species. The CCAs have remained in place since 2001 and continue to be part of the Council's long-term rebuilding strategy for cowcod. In September 2002, NMFS introduced its first large-scale conservation area, a Darkblotched Rockfish Conservation Area (DBCA,) extending from the U.S./Canada border to Cape Mendocino, California. The DBCA extended between boundary lines approximating the 100 fm (183 m) and 250 fm (457 m) depth contours, with trawling prohibited within the conservation area. This closure was intended to reduce incidental darkblotched rockfish interception by fisheries targeting more abundant (continental) slope species.

Beginning in 2003, the Council recommended a greater suite of area closures intended to protect different overfished species from incidental harvest by vessels targeting other, more abundant species. Similar to Council efforts to craft landings limits and seasons to protect overfished species, the 2003 conservation areas were intended to protect overfished species at depths where they are most likely encountered and from gear that is most likely to encounter those species. For example, POP has historically been taken almost exclusively by trawl gear, while yelloweye rockfish is more susceptible to hook-and-line gear used in commercial and recreational fisheries. Since 2003, GCAs included the two CCAs; the Yelloweye RCA off the Washington coast that has been closed to recreational fishing; and the trawl and nontrawl RCAs. The trawl and nontrawl RCAs extended along the entire length of the West Coast and are based on ocean bottom depths. The RCAs can vary seasonally depending on when and where the overfished species targeted for protection were taken by historic fisheries. RCA boundary lines were designated by a series of latitude/longitude coordinates intended to approximate ocean bottom depth contours delineating overfished species habitats. A more in-depth discussion of the introduction of depth-based management to West Coast groundfish fisheries management is provided in the proposed rule to implement the 2003 and 2004 specifications and management measures (January 7, 2003, 68 FR 936 and January 8, 2004, 68 FR 1380.)

3.3.2 Commercial fisheries

Commercial fisheries land a larger portion, by weight, of West Coast fish than any other sector. CPS, followed by groundfish, crab, and HMS have made up the largest landings by weight since 2000. Crab, followed by groundfish, CPS, and HMS were the highest-valued fisheries between 2000 and 2003 (Table 3.3.2.1). During this same period, the gear groups with the largest amount of landings, by weight, were gill and trammel net, trawl, trap/pot, and troll gear (Table 3.3.2.2)

In 1994, NMFS implemented Amendment 6 to the groundfish FMP, a license limitation program intended to restrict vessel participation in the directed commercial groundfish fisheries off Washington, Oregon, and California. The limited entry permits that were created specified the type of gear that a permitted vessel could use in the limited entry fishery. Each limited entry permit also had an associated vessel length. Most of the Pacific Coast non-tribal commercial groundfish harvest is taken by vessels registered to limited entry permits. The groundfish limited entry program includes vessels using trawl, longline, and trap (or pot) gears.

There are also several open access fisheries that take groundfish incidentally or directly. Participants in those fisheries may use, among other gear types, longline, vertical hook-and-line, troll, pot, setnet, trammel net, shrimp and prawn trawl, California halibut trawl, and sea cucumber trawl. These vessels may target groundfish or catch them incidentally, yet they do not hold groundfish limited entry permits. Though the overall open access groundfish landings are much smaller than limited entry landings, they are part of the economic make-up of West Coast groundfish vessels.

As of August 2004, there were 406 vessels with Pacific Coast groundfish limited entry permits, of which approximately 43% were trawl only vessels, 48% were longline only vessels, 7% were trap vessels, and the remaining 2% were combinations of 2 or more gears. The number of vessels registered for use with limited entry permits has decreased since the implementation of the permit stacking program for sablefish-endorsed limited entry fixed gear permits in 2001 and the limited entry trawl vessel buyback program in late 2003.

Table 3.3.2.1. Shoreside Landings and Exvessel Revenue by Species Category and Year

Species Group	Data type	Year			
		2000	2001	2002	2003
CPS	Landed weight (lbs)	498,232,740	431,544,771	403,146,744	266,368,388
	Exvessel Revenue (\$)	42,069,760	32,494,118	32,732,787	33,824,432
Crab	Landed weight (lbs)	30,562,479	26,645,343	37,156,344	75,126,504
	Exvessel Revenue (\$)	64,575,735	54,017,788	62,570,332	118,393,209
Groundfish	Landed weight (lbs)	268,754,713	226,402,046	164,010,829	180,765,829
	Exvessel Revenue (\$)	62,689,248	52,034,893	43,438,224	48,945,438
HMS	Landed weight (lbs)	23,217,661	27,365,996	23,269,259	38,071,415
	Exvessel Revenue (\$)	22,790,849	24,253,397	17,256,645	28,126,563
Other	Landed weight (lbs)	21,579,099	19,705,423	20,890,419	16,868,699
	Exvessel Revenue (\$)	27,123,067	23,982,459	23,098,380	20,616,940
Salmon	Landed weight (lbs)	7,122,757	6,458,681	9,790,983	11,493,417
	Exvessel Revenue (\$)	13,962,096	10,605,885	14,345,088	20,959,564
Shellfish	Landed weight (lbs)	18,101,109	18,552,442	27,117,595	26,746,585
	Exvessel Revenue (\$)	45,577,879	44,101,002	61,294,480	69,678,867
Shrimp	Landed weight (lbs)	35,906,296	40,960,953	57,818,606	32,160,356
	Exvessel Revenue (\$)	20,543,414	16,753,777	21,407,954	11,479,887
Total Landed weight (lbs)		903,476,854	797,635,655	743,200,779	647,601,193
Total Exvessel Revenue (\$)		299,332,048	258,243,320	276,143,890	352,024,899

Source: PacFIN fl table. August 2004

Note: Data shown is for PFMC management areas and does not include inside waters such as Puget Sound and Columbia River.

Table 3.3.2.2. Shoreside Landings and Revenue by Gear Type and Year

Gear	Data type	Year			
		2000	2001	2002	2003
Dredge	Landed weight (lbs)			C	
	Exvessel Revenue (\$)			C	
Hook and Line	Landed weight (lbs)	11,802,585	11,020,956	12,614,636	10,825,355
	Exvessel Revenue (\$)	20,935,838	19,225,187	17,679,231	19,776,877
Misc	Landed weight (lbs)	35,380,715	33,635,105	42,904,188	38,561,396
	Exvessel Revenue (\$)	62,944,925	58,034,808	74,019,410	79,445,478
Net	Landed weight (lbs)	502,470,237	435,111,623	406,345,771	268,877,740
	Exvessel Revenue (\$)	48,226,898	36,665,962	36,382,949	36,919,258
Pot	Landed weight (lbs)	33,746,129	29,263,663	39,942,815	78,765,977
	Exvessel Revenue (\$)	75,724,736	64,286,487	71,891,553	129,824,380
Troll	Landed weight (lbs)	25,541,566	28,789,324	27,054,341	45,832,676
	Exvessel Revenue (\$)	29,247,312	29,245,055	25,667,562	43,931,473
Trawl	Landed weight (lbs)	259,658,663	220,003,436	157,474,652	173,261,044
	Exvessel Revenue (\$)	43,868,230	36,547,531	31,428,967	33,034,613
Shrimp Trawl	Landed weight (lbs)	34,876,959	39,811,548	56,862,974	31,477,005
	Exvessel Revenue (\$)	18,384,109	14,238,290	19,072,882	9,092,821
Total Landed weight (lbs)		903,476,854	797,635,655	743,199,377*	647,601,193
Total Exvessel Revenue (\$)		299,332,048	258,243,320	276,142,553*	352,024,899

Source: PacFIN fl table. August 2004

Note: Data shown is for PFMC management areas only and does not include areas such as Puget Sound and Columbia River for example.

C means data was restricted due to confidentiality

* totals do not include confidential data

3.3.3 Open Access Groundfish Fisheries

Unlike the limited entry sector, the open access fishery has unrestricted participation and is comprised of vessels targeting or incidentally catching groundfish with a large variety of nontrawl gears. Open access vessels must comply with cumulative trip limits established for the open access sector and are subject to the other operational restrictions imposed in the regulations, including the GCA and RCA restrictions. 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 restrictions that have affected participation in groundfish fisheries. The open access fisheries are generally distributed along the coast in patterns governed by factors such as location of target species and ports with supporting marine supplies and services, and restrictions or regulations imposed by state and federal governments.

The commercial open access groundfish fishery consists of vessels that do not necessarily depend on revenue from the sale of groundfish as their a major source of income and is split between vessels targeting groundfish (*directed fishery*) and vessels targeting other species (*incidental fishery*). The incidental catch of groundfish occurs in fisheries such as prawn, shrimp, California halibut, seas cucumber, salmon, HMS, and CPS. The majority of landings by the directed groundfish fishery, by weight, occur off California, while Oregon shows the next highest landings, followed by Washington. In the incidental groundfish fisheries, Washington has the lowest groundfish landings, by weight (Hastie 2001). Combining both the directed and incidental fisheries, the commercial groundfish open access fishery is potentially very large and includes a large variety of gear types.

Open access landings and estimated exvessel values by major species groups north and south of 40° 10' N lat. are shown in Tables 3.3.3.1 and 3.3.3.2. When landings and revenue are measured, the open access fishery is more expansive south of 40° 10' N lat. Open access fishers in the south earned more per pound for

their landed groundfish catch, reflecting the more lucrative live fish markets, among other things, in that region. In 1999, only 25 percent of the groundfish was landed north of 40° 10' N Lat and the remaining 75 percent was landed in the southern area. The landings differential between the two regions is now less dramatic. By 2003, the open access landings were nearly equally divided between the north and the south with 48 percent of the groundfish landed north of 40° 10' N Lat and 52 percent was landed in the southern area.

Rockfish in the south was 57 percent of the total groundfish landings by weight in 1999 and was an important component of the overall open access groundfish landings. By 2003, rockfish in the south was only 21 percent of the total groundfish landings by weight. The overfished declarations for certain rockfish species, bocaccio and cowcod in particular, may partly explain the steep drop in landings south of 40° 10' N Lat. In 2003. Substantial increases in sablefish landings were observed in both regions between 1999 and 2003.

Many open access vessels predominately fish for non-groundfish species and inadvertently catch and land groundfish. In times and areas when fisheries for other species are not as profitable, some vessels will transition into the groundfish open access fishery for short periods. Table 3.3.3.3 shows the historical harvests (landings) of groundfish and non-groundfish by open access vessels. In 2003, the first complete year in which coastwide RCAs were implemented, the round weight of groundfish landed by the open access fishery increased substantially over previous years while landings of non-groundfish species decreased. This change was primarily due to increased sablefish landings (shown in Table 3.3.3.1) in recent years.

Table 3.3.3.1 Historical harvest of groundfish by species group in the open access fishery north and south of Cape Mendocino, 1999-2003

Landings north of 40° 10' N. lat. in metric tons							
Year	Lingcod	Whiting	Flatfish	Sablefish	Rockfish	Other groundfish	Total Groundfish
1999	19.0	0.2	3.9	4.1	116.1	16.4	159
2000	14.8	0.0	0.7	8.5	90.9	7.1	122
2001	17.0	0.0	1.3	21.7	125.0	15.5	180
2002	28.1	0.0	1.2	13.2	109.3	45.9	198
2003	43.8	0.1	3.7	291.7	188.2	88.5	616
Landing south of 40° 10' N. lat. in metric tons							
	Lingcod	Whiting	Flatfish	Sablefish	Rockfish	Other groundfish	Total Groundfish
1999	15.0	0.0	19.2	2.8	276.2	168.8	482
2000	7.4	0.0	17.1	6.3	159.9	142.0	333
2001	11.5	0.2	23.1	6.3	154.7	107.9	304
2002	17.0	0.0	17.5	28.2	136.1	75.2	274
2003	27.5	0.1	14.7	315.2	166.1	139.6	663

Based on Table 8-6 in DEIS, Proposed Acceptable Biological Catch and Optimum Yield Specifications and Management Measures for the 2005-2006 Pacific Coast Groundfish fishery

Table 3.3.3.2 Exvessel revenues from historical harvest of groundfish by species group in the open access fishery north and south of Cape Mendocino, 1999-2003 (revenue in thousands of current dollars)

North of 40° 10' N. lat.							
Year	Lingcod	Whiting	Flatfish	Sablefish	Rockfish	Other groundfish	Total Groundfish
1999	42	0	3	12	216	54	327
2000	28	0	0	29	176	32	266
2001	50	0	1	75	312	99	537
2002	82	0	1	45	321	324	772
2003	141	0	3	1,082	613	359	2,199
South of 40° 10' N. lat.							
	Lingcod	Whiting	Flatfish	Sablefish	Rockfish	Other groundfish	Total Groundfish
1999	46	0	49	10	1,272	835	2,212
2000	17	0	54	39	1,307	1,003	2,420
2001	38	1	69	34	1,249	628	2,018
2002	63	0	64	132	1,033	399	1,692
2003	109	0	39	937	1,072	530	2,686

Extracted from Table 8-6 in DEIS, Proposed Acceptable Biological Catch and Optimum Yield Specifications and Management Measures for the 2005-2006 Pacific Coast Groundfish fishery

Table 3.3.3.3. Historical harvests for the open access fishery, 1999-2003 (landed round weight in mt and exvessel revenue in thousands of current dollars)

Year	Groundfish round weight (mt)	Groundfish exvessel value (\$)	Non-groundfish round weight (mt)	Non-groundfish exvessel value (\$)	Total round weight (mt)	Total exvessel value (\$)
1999	642	2,539	225,410	189,886	226,052	192,425
2000	455	2,686	277,349	191,658	277,804	194,344
2001	484	2,555	247,790	159,985	248,274	162,541
2002	472	2,463	250,954	166,343	251,426	168,807
2003	1,279	4,885	198,583	227,072	199,862	231,957

Extracted from table 8-3 DEIS, Proposed Acceptable Biological Catch and Optimum Yield Specifications and Management Measures for the 2005-2006 Pacific Coast Groundfish fishery

The open access groundfish fishery consists of many vessels that predominately fish for other non-groundfish species where they inadvertently catch and land groundfish. Because these incidental vessels do not necessarily depend on their revenue from the groundfish fishery as their major source of income, understanding the level of dependency that such participants have on the open access groundfish fishery must be considered in light of their overall fisheries revenues. Table 3.3.3.4 shows the number of open access vessels by vessel length and level of dependency on the groundfish fishery (proportion of annual revenue that is from groundfish). Table 3.3.3.5 shows the number of open access vessels by level of dependency based on gross income for all West Coast landings. Between November 2000 and October 2001, 1,287 vessels landed groundfish in the open access sector of the groundfish fishery. Of these vessels,

771 vessels (60%) had a greater than 5% dependency on the groundfish fishery with 345 of these vessels having a 95-100% level of dependency of groundfish. The open access fishery is dominated by vessels under 40 feet in length. About 78 percent of the vessels that landed open access groundfish between November 2000 and October 2001 were less than 40 feet on length. It is assumed that a portion of these smaller vessels fish exclusively in state waters, and thus would be excluded from the VMS requirements. However, the data is not available to identify the proportion of vessels that fish only in state waters. Approximately 36 percent of the open access vessels had a greater than 65 percent dependency on groundfish, with 56 percent of the most dependent vessels having less than \$5,000 in gross fishing income. A greater proportion of vessels with lower levels of dependency on groundfish fell within income categories greater than \$5,000. However, increases in higher valued groundfish catch in 2003 (primarily sablefish) may reduce the proportion of open access vessels in the lowest (<\$5,000) income category.

Table 3.3.3.4 Number of open access vessels by level of dependency and vessel length (based on data from November 2000 - October 2001) a/

	<40'	40'-50'	50'-60'	60'-70'	70'-150'	Unspecified	Total
<5%	324	109	29	28	25	1	516
>5% &<35%	154	32	6	4	1	0	197
>35% &<65%	96	8	1	0	0	0	105
>65% &<95%	115	5	0	0	1	3	124
>95% &<100%	310	21	5	2	0	7	345

Extracted from table 6-18a DEIS, Proposed Acceptable Biological Catch and Optimum Yield Specifications and Management Measures for the 2005-2006 Pacific Coast Groundfish fishery

a/ open access vessels with more than half of their total landings value coming from groundfish are considered to be in the directed fishery

Table 3.3.3.5 Number of open access vessels by gross income levels of dependency for all West Coast landings (based on data from November 2000 - October 2001) a/

	Exvessel revenue from West Coast landings				Total
	<5,000	\$5,000-\$50,000	\$50,000-\$200,000	>\$200,000	
<5%	45	268	169	34	516
>5% &<35%	52	101	44	0	197
>35% &<65%	47	50	8	0	105
>65% &<95%	63	55	6	0	124
>95% &<100%	200	138	7	0	345

Extracted from table 6-17a DEIS, Proposed Acceptable Biological Catch and Optimum Yield Specifications and Management Measures for the 2005-2006 Pacific Coast Groundfish fishery

a/ open access vessels with more than half of their total landings value coming from groundfish are considered to be in the directed fishery

Table 3.3.3.6 Historical landings of overfished species by commercial fishers prior to the implementation of RCAs and state requirements for finfish excluders on pink shrimp vessels, 1999-2001 (Extracted from table 6-14 DEIS, Proposed Acceptable Biological Catch and Optimum Yield Specifications and Management Measures for the 2005-2006 Pacific Coast Groundfish fishery)

	1999		2000		2001	
	OA landed catch (mt)	OA & LE landed catch (mt)	OA landed catch (mt)	OA & LE landed catch (mt)	OA landed catch (mt)	OA & LE landed catch (mt)
Bocaccio	Non-shrimp-22.8 Shrimp-0.2 Total-23.0	58.5 (40% OA)	Non-shrimp-5.9 Shrimp-0.0 Total- 5.9	24.6 (24% OA)	Non-shrimp-6.4 Shrimp-0.1 Total- 6.5	22.8 (3.5% OA)
Canary rockfish	Non-shrimp-56.6 Shrimp-21.3 Total- 77.9	642.2 (12% OA)	Non-shrimp-5.0 Shrimp-7.2 Total-12.2	55.8 (22% OA)	Non-shrimp-2.8 Shrimp-2.0 Total- 4.8	36.2 (13% OA)
Cowcod	Non-shrimp-2.2 Shrimp-0.2 Total- 2.4	6.5 (37% OA)	Non-shrimp-0.4 Shrimp-0.1 Total- 0.5	2.4 (21% OA)	Non-shrimp-0.0 Shrimp-0.0 Total- 0.0	0.8 (0% OA)
Darkblotched rockfish	Non-shrimp-0.1 Shrimp-2.0 Total- 2.1	284.3 (0.7% OA)	Non-shrimp-0.5 Shrimp-0.0 Total- 0.5	218.8 (0.2% OA)	Non-shrimp-0.2 Shrimp-0.0 Total- 0.2	143.1 (0.1% OA)
Lingcod	Non-shrimp-84.7 Shrimp-17.5 Total- 102.2	354.5 (29% OA)	Non-shrimp-49.0 Shrimp-9.1 Total- 58.1	143.5 (40% OA)	Non-shrimp-63.5 Shrimp-5.5 Total- 69	147.8 (47% OA)
POP	Non-shrimp-0.2 Shrimp-0.1 Total- 0.3	481.8 (0% OA)	Non-shrimp-0.0 Shrimp-0.1 Total- 0.1	140.6 (0% OA)	Non-shrimp-0.0 Shrimp-0.0 Total- 0.0	187.6 (0% OA)
Widow rockfish	Non-shrimp-41.4 Shrimp-4.6 Total- 46	3,903.5 (1% OA)	Non-shrimp-17.7 Shrimp-1.7 Total- 19.4	3,787.5 (0.5% OA)	Non-shrimp-13.0 Shrimp-0.6 Total- 13.6	1,765 (0.8% OA)
Yelloweye rockfish	Total-15.4	83.5 (18% OA)	Total- 2.9	8.95 (32% OA)	Total- 2.9	12.0 (24% OA)

Table 3.3.3.6 shows historical landings of overfished species in the open access fishery relative to all open access and limited entry catch. Table 3.3.3.6 is based on data that were collected prior to implementation of RCAs and prior to the state requirements regarding the use of finfish excluders on vessels targeting pink shrimp. Historically, most of the open access fishing activity has occurred in the nearshore and shelf areas. As a result, bocaccio, canary rockfish, lingcod, yelloweye rockfish, and cowcod have been encountered more frequently than the other overfished species. Deeper slope species such as darkblotched rockfish and POP, and pelagic shelf species such as widow rockfish, are more vulnerable to trawl gear, and have therefore been taken in smaller proportions in the open access fishery. Projected catches of overfished species in the open access sectors of the 2005 groundfish fishery are presented in Table 3.3.3.7.

As discussed above, fishery managers divide the open access sector into directed and incidental categories. The directed fishery comprises vessels targeting groundfish while the incidental fishery category applies to vessels targeting other groundfish, but landing some groundfish in the process. However, it is difficult to segregate vessels into these two categories because the choice depends on the intention of the fisher. Over the course of a year or during a single trip, a fisher may engage in different strategies and they may switch between directed and incidental fishing categories. Such changes in strategy are likely the result of a variety of factors, including the potential economic return from landing a particular mix of species.

Table 3.3.3.7 Total catch projections of overfished species in the 2005 open access fisheries. (Extracted from table2-13a DEIS, Proposed Acceptable Biological Catch and Optimum Yield Specifications and Management Measures for the 2005-2006 Pacific Coast Groundfish fishery)

	2005 bycatch projections (mt)							
	Bocaccio	Canary Rockfish	Cowcod	Darkblotched Rockfish	Lingcod	Pop	Widow	Yelloweye
Groundfish directed	10.6	1.0	0.1	0.2	70.0	0.1		0.6
California Halibut	0.1			0.0	2.0	0.0		
California Gillnet	0.5			0.0		0.0	0.0	
California Sheephead				0.0		0.0	0.0	0.0
CPS wetfish	0.3							
CPS squid								
Dungeness crab	0.0		0.0	0.0		0.0		
HMS		0.0	0.0	0.0				
Pacific Halibut	0.0		0.0	0.0		0.0	0.0	0.5
Pink Shrimp	0.1	0.5	0.0	0.0	0.0	0.0	0.1	0.1
Ridgeback prawn	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Salmon troll	0.2	1.6	0.0	0.0	0.0	0.0	0.0	0.2
Sea cucumber	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spot prawn (trap)								
Total 2005 Projected catch	11.9	3.1	0.1	0.2	72.0	0.1	0.1	1.4

Table 3.3.3.8. Open access groundfish landings by gear group, 2000 - 2003 (based on 8/24/04 PacFin data)

Open access gear group	Number of vessels landing groundfish	Landed weight of groundfish (mt)	Exvessel revenue of groundfish (\$)	Exvessel revenue per vessel (\$)
Longline - all groundfish a\				
2000	399	435	1,847,800	4,627
2001	392	408	1,656,395	4,221
2002	287	349	1,268,537	4,422
2003	307	507	1,728,038	5,625
4-year average	346	425	1,625,193	4,724
Longline - groundfish directed b\				
2000	133	399	1,679,851	12,619
2001	115	367	1,466,101	12,765
2002	96	318	1,129,437	11,733
2003	113	469	1,541,727	13,610
4-year average	114	388	1,454,279	12,682
Longline - CA Halibut				
2000	4	3	24,226	6,057
2001	2	3	29,774	14,887
2002	2	1	5,352	2,676
2003	0	0	0	0
4-year average	2	2	19,784	7,873
Pot - groundfish directed c\				
2000	28	164	834,087	29,789
2001	34	145	720,680	21,196
2002	35	124	573,289	16,380
2003	41	194	763,732	18,628
4-year average	35	157	722,947	21,498
Pot - Dungeness crab				
2000	71	45	165,638	2,333
2001	63	29	124,674	1,979
2002	63	34	149,311	2,370
2003	61	39	173,518	2,845
4-year average	65	37	153,285	2,382
Pot - prawn/shrimp				
2000	12	1	3,973	331
2001	10	5	21,569	2,157
2002	8	1	9,869	1,234
2003	7	6	25,635	3,662
4-year average	9	3	15,262	1,846
Pot - sheephead				
2000	49	4	43,446	887
2001	40	3	30,770	769
2002	36	9	58,951	1,638
2003	22	1	14,542	661
4-year average	37	5	36,927	989
Trawl - sea cucumber				
2000	3	0.1	189	63
2001	10	0.8	1,649	165
2002	8	0.8	2,962	370
2003	6	0.3	650	108
4-year average	7	1	1,363	177
Trawl - CA halibut				
2000	24	22	38,697	1,612
2001	30	7	12,324	411
2002	21	6	12,961	617
2003	15	2	5,513	368
4-year average	23	9	17,374	752
Trawl -Ridgeback Prawn				
2000	28	11	28,468	1,017
2001	0	0	0	0
2002	0	0	0	0
2003	0	0	0	0
4-year average	--	--	--	--
Open access gear group	Number of vessels landing groundfish	Landed weight of groundfish (mt)	Exvessel revenue of groundfish (\$)	Exvessel revenue per vessel (\$)

Line gear - all groundfish a/ 2000	1,180	391	2,029,516	1,720
2001	1,175	418	2,136,846	1,818
2002	881	406	2,178,544	2,474
2003	641	326	1,614,643	2,521
4-year average	969	385	1,989,887	2,133
Line gear - CA halibut 2000	< 285	10	32,419	114
2001	< 270	7	31,471	117
2002	< 250	5	31,333	125
2003	< 245	6	40,284	164
4-year average	< 263	7	33,877	129
Line gear - Salmon troll (coastwide) 2000	304	17	37,806	124
2001	229	14	27,860	122
2002	212	10	25,336	120
2003	220	9	19,604	89
4-year average	241	12	27,651	115
Line gear - Salmon troll (north only) 2000	163	11	24,280	149
2001	177	11	19,014	107
2002	152	6	13,742	90
2003	154	6	11,304	73
4-year average	162	9	17,085	106
Net gear - CPS 2000	3	2	738	369
2001	1	0	2	1
2002	1	0	14	14
2003	3	0	52	17
4-year average	2	1	213	100

a/ multiple records exist for landings with HKL gear that do not have an associated vessel id. The vessel count in this case is an estimate

b/ annual revenue of \$2,500 is used as a proxy for vessels that had efforts directed at groundfish

c/ if $\geq 20\%$ of revenue was from groundfish, a vessel was assumed to have target groundfish at some point during the year

Open Access Directed Fisheries

Participation in the directed open access fishery segment varies between years. Participants may move into other, more profitable fisheries, or they may have taking time off from fishing, or they may quit fishing altogether. Fishers use various non-trawl gears to target particular groundfish species or species groups. Longline and hook-and-line gear are the most common open access gear types used by vessels directly targeting groundfish and is generally used to target sablefish, rockfish, and lingcod. Pot gear is used for targeting sablefish, thornyheads and rockfish. Though largely restricted from use under current regulations, in the past in Southern and Central California setnet gear was used to target rockfish, including chilipepper, widow rockfish, bocaccio, yellowtail rockfish, and olive rockfish, and to a lesser extent vermillion rockfish.

Within the directed open access fishery, fishers are further grouped into the “dead” and/or “live” fish fisheries. The terms dead and live fish fisheries refers to the state of the fish when it’s landed. The dead fish fishery has historically been the most common way to land fish. In 2001, the dead fish fishery made up 80% of the directed open access landings. However, more recently, the market value for live fish has resulted in increased landings in the live fish fishery. In 2001, 20% of fish landed (by weight, coastwide) by directed open access fishers was landed alive as compared to only 6% in 1996 (PFMC 2004).

In the live-fish fishery, groundfish are primarily caught with hook and line gear (rod-n-reel), with limited entry longline gear and with limited entry pot gear, and a variety of other hook gears (e.g. stick gear). The fish are kept alive in a seawater tank on board the vessel. California halibut and rockfish taken in gill and trammel nets have increasingly appeared in the live fish fishery (CDFG 2001). Live fish are sold at a premium price to food fish markets and restaurants, primarily in Asian communities in California. Only limited information exists on the distribution of effort by open access vessels. Because the open access sector has an increasingly large live-fish fishery component with nearshore species making up most of the live fish landings, effort located near shore likely accounts for most live fish landings.

In California, hook and line gear for the live-fish fishery has been limited, since 1995, to a maximum of 150 hooks per vessel and 15 hooks per line within one mile of the mainline shore (CDFG 2001). Traps are limited to 50 per fisherman. In Washington, it is illegal to possess live bottom fish taken under a commercial fishing license. In Oregon, nearshore rockfish and species such as cabezon and greenling are the primary target of the live fish fishery. Sablefish and rockfish are also landed alive in Oregon, and are managed under limits which count against the federally set limited-entry allocations. The Oregon live fish fishery occurs in waters of ten fathoms or less (18 m). Only legal gears are allowed to be used to catch nearshore live fish. In early 2002, an Oregon Development Fisheries Permit was required for fishermen landing live fish species (e.g. Cabezon, greenling (except kelp greenling), brown, gopher, copper, black and yellow, kelp, vermilion, and grass rockfish (among others), buffalo sculpin, Irish lords, and many surfperch species). However, commercial fishing for food fish is prohibited in Oregon bays and estuaries and within 600 feet (183 m) seaward of any jetty.

Open Access Incidental Fisheries Many fishers catch groundfish incidentally when targeting other species, because of the kind of gear they use and the co-occurrence of target and groundfish species in a given area. Managers classify vessels as being in the open access incidental fishery if groundfish comprises 50% or less of their landings, measured by dollar value. These incidental open access fisheries may also account for substantial amounts of bycatch, especially for overfished groundfish species. Fisheries targeting pink shrimp, spot prawn, ridgeback prawn, California and Pacific halibut, Dungeness crab, salmon, sea cucumber, coastal pelagic species, California sheephead (California nearshore fishery), highly migratory species, and the mix of species caught in net fisheries comprise this incidental segment of the open access sector. These fisheries and associated target species are described below.

Dungeness Crab Fishery

The states of Oregon and California, and Washington in cooperation with the Washington Coast treaty tribes manage the Dungeness crab fishery. The Pacific States Marine Fisheries Commission (PSMFC) provides inter-state coordination. The Dungeness crab fishery is divided between treaty sectors, covering catches by Indian Tribes, and a non-treaty sector. This fishery is managed on the basis of simple “3-S” principles: sex, season, and size. The commercial fishery may retain only male crabs (thus protecting the reproductive potential of the populations); the fishery has open and closed seasons; and the commercial fishery must comply with a minimum size limit on male crabs.

Washington manages the Dungeness fishery with a limited entry system with two tiers of pot limits and a season from December 1 through September 15. In Oregon, 306 vessels made landings in 1999. The Oregon season generally starts on December 1. In California, distinct fisheries occur in Northern and Central California, with the northern fishery covering a larger area. California implemented a limited entry program in 1995, and as of March 2000 about 600 California residents and 70 non-residents hold limited entry permits. Nonetheless, effort has increased with the entry of larger multipurpose vessels from other fisheries. Landings have not declined. The effort increase has resulted in a “race for fish” with more than 80% of total landings made during the month of December.

Both personal use fishers and commercial fishers target Dungeness crab. At the commercial level, the Dungeness crab fishery generated \$67 to \$130 million in exvessel revenue (Table 3.3.3.9); in recent years (2002 and 2003) the amount of exvessel revenue generated by the fishery has been increasing due in part to increases in stock biomass. For many vessels, the Dungeness crab fishery has been the fishery with the largest exvessel revenues.

The majority of Dungeness crab fishing effort and catch occurs during the months of December and January. Many types of vessels participate in this fishery including vessels that may otherwise be limited entry groundfish trawlers and fixed gear vessels, as well as other types of vessels.

The Dungeness crab fishery tends to occur in areas nearer to shore than the limited entry trawl and fixed gear fisheries. To avoid gear interactions with the Dungeness crab fishery, a conscious effort has been made to allow groundfish trawl vessels access to waters deeper than 60 fathoms during winter months. All three states are comparable in terms of landed weight and revenue in coastal management areas, and Washington has an additional component in Puget Sound that is substantial. Washington had the highest landings recent years for coastal Dungeness crab, followed closely by Oregon and California. The ports with

highest landings are distributed among the three states (Table 3.3.3.10).

Table 3.3.3.9. Landings and Exvessel Revenue of Dungeness Crab by Area, State, and Year (2000 - 2003)

Area	State	Data type	YEAR			
			2000	2001	2002	2003
Coastal Management Areas	CA	Landed weight (lbs)	6,482,913	3,546,106	7,297,676	22,196,754
		Exvessel revenue (\$)	13,751,700	9,009,756	13,458,089	35,270,665
	OR	Landed weight (lbs)	11,180,845	9,689,804	12,442,612	23,480,735
		Exvessel revenue (\$)	23,710,261	19,291,484	20,759,342	36,399,904
	WA	Landed weight (lbs)	11,700,416	12,049,827	16,101,625	28,191,992
		Exvessel revenue (\$)	25,609,842	24,003,463	26,707,196	45,129,820
Other Management Areas	CA	Landed weight (lbs)				C
		Exvessel revenue (\$)				C
	WA	Landed weight (lbs)	6,732,220	7,522,403	6,944,948	6,941,032
		Exvessel revenue (\$)	14,084,886	14,752,254	13,548,402	13,259,518
Total Landed weight (lbs)			36,096,394	32,808,140	42,786,861	80,810,513*
Total Exvessel revenue (\$)			77,156,690	67,056,957	130,059,907	130,071,468*

Source: PacFIN ftl table. August 2004

Note: C represents data restricted due to confidentiality

"Other management areas" includes inside waters such as Puget Sound and Columbia River

* totals do not include confidential data

Table 3.3.3.10. Top 15 Ports for Dungeness Crab Landings and Revenue (2000 - 2003)

Rank	Top Ports for Dungeness Crab by Weight	Top Ports for Dungeness Crab by Value
1	WESTPORT	WESTPORT
2	ASTORIA	ASTORIA
3	CRESCENT CITY	CRESCENT CITY
4	NEWPORT	NEWPORT
5	BELLINGHAM BAY	BELLINGHAM BAY
6	CHARLESTON (COOS BAY)	CHARLESTON (COOS BAY)
7	EUREKA	EUREKA
8	BROOKINGS	BLAINE
9	BLAINE	BROOKINGS
10	ILWACO	SAN FRANCISCO
11	SAN FRANCISCO	LACONNER
12	CHINOOK	ILWACO
13	LACONNER	CHINOOK
14	TAHOLAH	TAHOLAH
15	ANACORTES	PRINCETON / HALF MOON BAY

Source: PacFIN FTL table. July 2004

Highly Migratory Species Fisheries

HMS fishery management unit includes five tuna species, five shark species, striped marlin, swordfish, and dorado. Complex management of HMS fisheries results from the multiple management jurisdictions, users, and gear types targeting these species, and from the oceanic regimes that play a major role in determining species availability and which species will be harvested off the U.S. West Coast in a given year.

Albacore tuna account for a large majority of the landed weight and value (Table 3.3.3.11). NMFS will monitor the numerous species caught by the HMS fishery, but which are not part of the fishery management unit. Commercial fishers use five distinctive gear types used to harvest HMS: hook-and-line, driftnet, pelagic longline, purse seine, and harpoon (Table 3.3.3.12). While hook-and-line gear catches many HMS species, traditionally it has been used to harvest tunas. The principal target species for hook-and-line fisheries include albacore and other tunas, swordfish and other billfish, several shark species, and dorado. Albacore make up the highest hook and line landings, with the majority taken by troll and jig-and-bait gear (92% in 1999). Gillnet, drift longline, and other gear take a small portion of fish. These gear types vary in the incidence of groundfish interception depending on the area fished and time of year. Overall, nearly half of the total coastwide landings of albacore, by weight, were landed in

California.

Fishers use pelagic longline to target swordfish, shark and tunas; drift gillnet gear to target swordfish, tunas, and sharks off California and Oregon; purse seine gear to target tuna off California and Oregon; and harpoon to target swordfish off California and Oregon. Some vessels, especially longliners and purse seiners, fish outside of the EEZ, but may deliver to West Coast ports. Drift gillnets intercept most groundfish, including whiting, spiny dogfish, and yellowtail rockfish. Most landings occur in Washington and Oregon (Table 3.3.3.11), and the top several ports occur in these states (Table 3.3.3.13).

Table 3.3.3.11 Landings and Revenue of HMS by Species and Year

Species Type	Data Type	Year			
		2000	2001	2002	2003
Albacore	Landed weight (lbs)	19,848,814	24,495,425	22,063,692	36,485,624
	Exvessel revenue (\$)	17,103,010	20,577,991	14,272,304	24,305,367
Shark	Landed weight (lbs)	547,195	567,274	517,745	491,807
	Exvessel revenue (\$)	720,450	670,249	629,727	588,697
Other Tuna	Landed weight (lbs)	1,559,831	1,644,104	78,491	113,077
	Exvessel revenue (\$)	900,461	833,464	90,157	100,998
Dorado and Marlin	Landed weight (lbs)	8,946	18,394	C	C
	Exvessel revenue (\$)	12,633	13,501	C	C
Swordfish	Landed weight (lbs)	1,252,875	640,799	609,248	980,229
	Exvessel revenue (\$)	4,054,296	2,158,192	2,264,288	3,131,158
Total Landed Weight (lbs)		23,217,661	27,365,996	23,269,176*	38,070,737*
Total Exvessel Revenue (\$):		22,790,849	24,253,397	17,256,476*	28,126,220*

Source: PacFIN FTL table. July 2004

Note: C represents data restricted due to confidentiality

* totals do not include confidential data

Table 3.3.3.12 HMS Landings and Exvessel Revenue by State, Year, and Major Gear Group

State	Gear Group	Data Type	YEAR				
			2000	2001	2002	2003	
CA	Hook and Line	Landed weight (lbs)	2,323,968	2,402,114	4,534,829	2,697,411	
		Exvessel revenue (\$)	2,741,226	2,334,606	2,945,594	2,741,955	
	Net	Landed weight (lbs)	2,902,991	2,802,769	1,090,415	930,255	
		Exvessel revenue (\$)	3,975,012	2,850,343	2,225,363	1,741,480	
	Troll	Landed weight (lbs)	1,964,550	3,907,886	1,364,167	1,360,872	
		Exvessel revenue (\$)	1,872,012	3,063,523	1,024,421	988,564	
	OR	Hook and Line	Landed weight (lbs)	C	76,513	323,497	C
			Exvessel revenue (\$)	C	41,340	198,261	C
	Net	Landed weight (lbs)	C		C	86,604	
		Exvessel revenue (\$)	C		C	13,720	
	Troll	Landed weight (lbs)	8,755,933	8,948,222	4,036,735	9,039,680	
		Exvessel revenue (\$)	7,488,326	7,545,405	2,752,640	6,115,181	
	WA	Hook and Line	Landed weight (lbs)	C	C	C	
			Exvessel revenue (\$)	C	C	C	
	Net	Landed weight (lbs)	C				
		Exvessel revenue (\$)	C				
	Troll	Landed weight (lbs)	7,020,617	9,145,451	11,776,387	23,792,124	
		Exvessel revenue (\$)	5,836,813	7,947,279	7,418,555	15,706,940	

Source: PacFIN FTL table. July 2004.

Note: C represents data restricted due to confidentiality

Table 3.3.3.13. Top Ports for HMS Landings and Exvessel Revenue (2000 - 2003)

Rank	Top 15 Ports by Weight	Top 15 Ports by Exvessel Revenue
1	ILWACO	ILWACO
2	NEWPORT	NEWPORT
3	WESTPORT	WESTPORT
4	ASTORIA	ASTORIA
	CHARLESTON (COOS BAY)	
5		SAN DIEGO
6	TERMINAL ISLAND	MORRO BAY
7	EUREKA	SAN PEDRO
8	MORRO BAY	CHARLESTON (COOS BAY)
9	MOSS LANDING	TERMINAL ISLAND
10	BELLINGHAM BAY	EUREKA
11	SAN PEDRO	MOSS LANDING
12	SAN DIEGO	BELLINGHAM BAY
13	OCEANSIDE	SAN FRANCISCO
14	FIELDS LANDING	OCEANSIDE
15	CRESCENT CITY	CRESCENT CITY

Source: PacFIN FTL table. July 2004

Pacific Pink Shrimp Fishery

The Council has no direct management authority over pink shrimp. In 1981, the three coastal states established uniform coastwide regulations for the pink shrimp fishery. The season runs from April 1 through October 31. Regulations authorize pink shrimp commercial harvest only by trawl nets or pots. Trawl gear harvests most of these shrimp off the West Coast from Northern Washington to Central California at depths from 60 fm and 100 fm (110 m to 180 m), with the majority taken off Oregon (Table 3.3.3.14). The ports with highest landings also occur in Oregon, followed by Washington and Oregon ports (Table 3.3.3.15).

Most shrimp trawl gear has a mesh size of one inch to three-eighths inches between knots. Shrimp trawl nets are usually constructed with net mesh sizes smaller than the net mesh sizes for legal groundfish trawl gear. Thus, shrimp trawlers commonly catch groundfish, while groundfish trawlers catch little shrimp. In some years the pink shrimp trawl fishery has accounted for a significant share of canary rockfish incidental catch. The Council has discussed methods to control shrimp fishing activities, such as requiring all vessels to use bycatch reduction devices (finfish excluders). In 2002, finfish excluders in the pink shrimp fisheries were mandatory in California, Oregon, and Washington. Many vessels that participate in the shrimp trawl fishery also have groundfish limited entry permits. Vessels participating in the pink shrimp fishery must abide by the same rules as vessels that do not have groundfish limited entry permits. However, all groundfish landed by vessels with limited entry permits are included in the limited entry total.

Table 3.3.3.14 Pink Shrimp Landings and Exvessel Revenue by Year and State (LBS and USD)

State	Data Type	YEAR			
		2000	2001	2002	2003
CA	Landed weight (lbs)	2,459,095	3,612,205	4,116,213	2,147,685
	Exvessel revenue (\$)	1,049,119	992,644	1,275,023	657,159
OR	Landed weight (lbs)	25,462,479	28,482,140	41,583,534	20,545,976
	Exvessel revenue (\$)	10,192,294	7,560,473	11,352,588	5,051,246
WA	Landed weight (lbs)	4,360,914	6,590,344	10,105,043	7,893,802
	Exvessel revenue (\$)	1,700,410	1,713,687	2,745,707	1,959,662
Total Landed Weight (lbs)		32,282,488	38,684,689	55,804,790	30,587,463
Total Exvessel Revenue (\$)		12,941,823	10,266,804	15,373,317	7,668,068

Source: PacFIN FTL table. July 2004

Table 3.3.3.15 Top 15 Ports for Pink Shrimp Landings and Exvessel Revenue (2000–2003)

Rank	Top Ports by Weight	Top Ports by Exvessel Revenue
1	ASTORIA	ASTORIA
2	NEWPORT	NEWPORT
3	CHARLESTON (COOS BAY)	CHARLESTON (COOS BAY)
4	WESTPORT	WESTPORT
5	GARIBALDI (TILLAMOOK)	GARIBALDI (TILLAMOOK)
6	EUREKA	EUREKA
7	CRESCENT CITY	CRESCENT CITY
8	BROOKINGS	BROOKINGS
9	ILWACO	ILWACO
10	SOUTH BEND	SOUTH BEND
11	TOKELAND	MORRO BAY
12	MORRO BAY	TOKELAND
13	AVILA	AVILA
14	FIELDS LANDING	FIELDS LANDING
15	MONTEREY	MONTEREY

Source: PacFIN FTL table. July 2004

Ridgeback Prawn Fisheries

The Ridgeback prawn fishery occurs exclusively in California, centered in the Santa Barbara Channel and off Santa Monica Bay. In 1999, 32 boats participated in the ridgeback prawn fishery. Traditionally, a number of boats fish year-round for both ridgeback and spot prawns, targeting ridgeback prawns during the closed season for spot prawns and vice versa. Most boats typically use single-rig trawl gear. Shrimp gear accounts for nearly all prawn landings, although groundfish trawl and other gears take minor amounts (Table 3.3.3.16). The top ports for landed weight and exvessel value occur in the Santa Barbara Channel-Santa Monica Bay region (Table 3.3.3.17). The State of California manages the ridgeback prawn fishery. Similar to spot prawn and pink shrimp fisheries, prawns are an “exempted” fishery in the federal open access groundfish fishery, entitling to groundfish trip limits.

Following a 1981 decline in landings, the California Fish and Game Commission adopted a June through September closure to protect spawning female and juvenile ridgeback prawns. Regulations allow an incidental take of 50 pounds of prawns or 15% by weight during the closed period. During the open prawn season, federal regulations limit finfish landings per trip to a maximum of 1,000 pounds, with no more than 300 pounds of groundfish. A vessel operator may land any amount of sea cucumbers with ridgeback prawns as long as the operator possesses a sea cucumber permit. Other regulations include a prohibition on trawling within state waters, a minimum fishing depth of 25 fm, a minimum mesh size of 1.5 inches for single-walled cod ends or 3 inches for double-walled cod ends and maintaining a logbook (required since 1986).

Table 3.3.3.16. Ridgeback Prawn Landings and Exvessel Revenue by Year (LBS and USD)

Gear Group	Data Type	YEAR			
		2000	2001	2002	2003
Trawl	Landed weight (lbs)	141,160	16,920	19,735	12,454
	Exvessel revenue (\$)	165,345	26,976	31,599	14,641
Shrimp Trawl	Landed weight (lbs)	1,414,844	340,024	422,240	486,890
	Exvessel revenue (\$)	1,633,636	508,853	606,064	669,274
Other Gears	Landed weight (lbs)	10,172			237
	Exvessel revenue (\$)	13,201			641
Total Landed Weight (lbs)		1,566,176	356,944	441,975	499,581
Total Exvessel Revenue (\$)		1,812,182	535,829	637,663	684,557

Source: PacFIN FTL table. July 2004

Table 3.3.3.17. Rank of All Ports with Ridgeback Prawn Landings and Exvessel Revenue (2000–2003)

Rank	Rank of Ports by Weight	Rank of Ports by Exvessel Revenue
1	SANTA BARBARA	SANTA BARBARA
2	VENTURA	VENTURA
3	OXNARD	OXNARD
4	TERMINAL ISLAND	TERMINAL ISLAND
5	LONG BEACH	LONG BEACH
6	PLAYA DEL REY	PLAYA DEL REY
7	PORT HUENEME	PORT HUENEME
8	SAN PEDRO	SAN PEDRO
9	MORRO BAY	MORRO BAY
10	AVILA	AVILA
11	SAN SIMEON	SAN SIMEON
12	POINT ARENA	POINT ARENA
13	PRINCETON / HALF MOON BAY	PRINCETON / HALF MOON BAY

Source: PacFIN ftl table. August 2004

Salmon

The ocean commercial salmon fishery, both non-treaty and treaty, is managed by both the states and the federal government. The Council manages fisheries in the EEZ while the states manage fisheries in their waters. All ocean commercial salmon fisheries off the West Coast states use troll gear, and primarily target chinook and coho. Limited pink salmon landings occur in odd-years. A gillnet/tangle net fishery that does not technically occur in Council-managed waters may have some impact on groundfish that migrate through state waters. Commercial coho landings fell precipitously in the early 1990s and remain very low. In response to the listing of many wild salmon stocks under the ESA, the management regime is largely structured around so-called “no jeopardy standards” developed through the ESA-mandated consultation process. Ocean fisheries are managed according to zones reflecting the distribution of salmon stocks and are structured to allow and encourage capture of hatchery-produced stocks while avoiding depressed natural stocks. The Columbia River, on the Oregon/Washington border; the Klamath River in Southern Oregon; and the Sacramento River in Central California support the largest runs of returning salmon.

California accounts for most landings and revenues of salmon caught in the coastal management areas,

followed by Oregon and Washington (Table 3.3.3.18). However, Washington landings in Puget Sound and other non-coastal areas substantially exceed the total coastal landings. Most of the top 10 ports for quantity of landings occur in Washington (Table 3.3.3.19), but the top ports in terms of revenues occur more evenly distributed by state.

The salmon troll fishery has a small incidental catch of Pacific halibut and groundfish, including yellowtail rockfish. The historical data show that salmon troll trips that did not land halibut had a higher range of groundfish landings (11-149 mt) than troll trips that landed halibut (1-19 mt). However, looking at groundfish catch frequency, either by vessel or trips, reveals that groundfish are caught more often by vessels or on trips catching halibut. To account for yellowtail rockfish landed incidentally while not promoting targeting on the species, federal managers have allowed salmon trollers to land up to one pound of yellowtail per two pounds of salmon in 2001, not to exceed 300 pounds per month (north of Cape Mendocino).

Table 3.3.3.19 Salmon Landings and Exvessel Revenue by Area, State, and Year (LBS and USD)

Area	State	Data type	YEAR			
			2000	2001	2002	2003
Coastal Management Areas	CA	Landed weight (lbs)	5,143,030	2,407,615	4,941,537	6,382,942
		Exvessel revenue (\$)	10,325,395	4,772,551	7,643,076	12,166,622
	OR	Landed weight (lbs)	1,563,697	2,960,716	3,501,154	3,667,155
		Exvessel revenue (\$)	3,069,828	4,736,557	5,388,352	7,198,494
	WA	Landed weight (lbs)	416,030	1,090,350	1,348,292	1,443,320
		Exvessel revenue (\$)	566,873	1,096,778	1,313,661	1,594,448
Other Management Areas	OR	Landed weight (lbs)	1,340,819	1,855,600	2,089,757	2,438,378
		Exvessel revenue (\$)	961,419	1,125,372	1,543,793	1,586,972
	WA	Landed weight (lbs)	12,750,614	28,791,819	32,904,386	31,122,453
		Exvessel revenue (\$)	9,772,895	11,298,116	12,013,803	11,100,583
Total Landed weight (lbs)			21,214,190	37,106,100	44,785,126	45,054,248
Total Exvessel revenue (\$)			24,696,410	23,029,373	27,902,685	33,647,119

Source: PacFIN fl table. August 2004

Note: "Other management areas" includes inside waters such as Puget Sound and Columbia River

Table 3.3.3.20 Top 15 Ports for Salmon Landings and Exvessel Revenue (2000–2003)

Rank	Top 15 Ports by Weight	Top 15 Ports by Exvessel Revenue
1	BELLINGHAM BAY	NEWPORT
2	SEATTLE	FORT BRAGG
3	SHELTON	BELLINGHAM BAY
4	COLUMBIA RIVER PORTS - OREGON	CHARLESTON (COOS BAY)
5	TAHOLAH	BODEGA BAY
6	LACONNER	SAN FRANCISCO
7	NEWPORT	COLUMBIA RIVER PORTS - OREGON
8	EVERETT	SHELTON
9	FORT BRAGG	PRINCETON / HALF MOON BAY
10	TACOMA	SEATTLE
11	BLAINE	MOSS LANDING
12	COPALIS BEACH	TACOMA
13	PORT ANGELES	TAHOLAH
14	BODEGA BAY	PORT ANGELES
15	CHARLESTON (COOS BAY)	BLAINE

Source: PacFIN fl tables. August 2004

Pacific Halibut

The bilateral (U.S./Canada) IPHC recommends conservation regulations for Pacific halibut, and the governments of Canada and the U.S. implement the regulations in their own waters. The IPHC requires a license to participate in the commercial Pacific halibut fishery in waters off Washington, Oregon, and California (Area 2A). Area 2A licenses, issued for the directed commercial fishery, have decreased from 428 in 1997 to 215 in 2004. The Pacific and North Pacific Fishery Management Councils have responsibility for allocation in Council waters within the IPHC management regime. The Pacific Halibut Catch Sharing Plan (CSP) for Area 2A specifies allocation agreements of the Council, the states of Washington, Oregon, and California, and the Pacific halibut treaty tribes. The CSP specifies recreational and commercial fisheries for Area 2A. The commercial sector has both a treaty and non-treaty components. Regulations limit the directed non-treaty commercial fishery in Area 2A to south of Point Chehalis, Washington, Oregon, and California. Commercial landings have ranged from about 0.5 to 1.0 million pounds (head on dressed weight) and \$1.5 to \$2.3 million (Table 3.3.3.21). Washington accounts for the majority of the highest-producing ports for landed weight and revenue (Table 3.3.3.22). In the non-treaty commercial sector, the directed halibut fishery receives an allocation of 85% of the harvest and the salmon troll fishery receives 15% to cover incidental catch. The limited entry primary sablefish fishery north of Point Chehalis, Washington (46° 53' 18" N latitude) may retain halibut when the Area 2A total allowable halibut catch (TAC) is above 900,000 pounds. In 2003, the TAC was above this level, and the allocation was 70,000 pounds. Final landings for this fishery in 2003 were 65,325 pounds; 56% (47,946 pounds) of the allocation was harvested.

Table 3.3.3.21 Pacific Halibut Commercial Landings and Exvessel Revenue by Year and Gear (LBS and USD)

		YEAR			
Gear Group	Data Type	2000	2001	2002	2003
Hook and Line	Landed weight (lbs)	519,645	745,500	949,274	807,131
	Exvessel revenue	1,358,462	1,578,914	1,941,603	2,226,31
Troll	Landed weight (lbs)	25,574	37,639	42,811	48,416
	Exvessel revenue	62,210	78,409	81,505	107,640
Total Landed weight		545,219	783,139	992,085	855,547
Total Exvessel Revenue		1,420,671	1,657,323	2,023,108	2,333,98

Source: PacFIN fl table. August 2004

Table 3.3.3.22 Top 15 Ports for Pacific Halibut Landings and Exvessel Revenue (2000–2003)

Rank	Top 15 Ports by Weight	Top 15 Ports by Exvessel Revenue
1	NEAH BAY	NEAH BAY
2	NEWPORT	NEWPORT
3	PORT ANGELES	PORT ANGELES
4	TAHOLAH	BELLINGHAM BAY
5	BELLINGHAM BAY	TAHOLAH
6	LAPUSH	LAPUSH
7	ASTORIA	ASTORIA
8	WESTPORT	WESTPORT
9	CHARLESTON (COOS BAY)	CHARLESTON (COOS BAY)
10	EVERETT	BLAINE
11	BLAINE	EVERETT
12	FLORENCE	FLORENCE
13	PORT ORFORD	GARIBALDI (TILLAMOOK)
14	GARIBALDI (TILLAMOOK)	CHINOOK
15	CHINOOK	PORT ORFORD

Source: PacFIN fl table. August 2004

California Halibut

The commercial California halibut fishery extends from Bodega Bay in northern California to San Diego in Southern California, and across the international border into Mexico. California halibut, a state-managed species, is targeted with hook-and-line, setnets and trawl gear, all of which intercept groundfish. Federal

regulations allow fishing with 4.5-inch minimum mesh size trawl in Federal waters, but California regulations prohibit trawling within state waters, except in the designated “California halibut trawl grounds,” where a 7.5-inch minimum mesh size must be used during open seasons. Historically, California commercial halibut fishers have preferred setnets because of these restrictions, and predominantly use 8.5-inch mesh and maximum length of 9,000. These nets take most of the landings (Table 3.3.3.23) Setnets are prohibited in certain designated areas, including a Marine Resources Protection Zone (MRPZ), covering state waters (to 3 nm) south of Point Conception and waters around the Channel Islands to 70 fm, but extending seaward no more than one mile. In comparison to trawl and setnet landings, commercial hook-and-line catches are historically insignificant. Over the last decade they have ranged from 11% to 23% of total California halibut landings. Most of those landings were made in the San Francisco Bay area by salmon fishers mooching or trolling slowly over the ocean bottom (Kramer et al. 2001). Overall, the ports with highest California halibut landings occur in central and southern California (Table 3.3.3.24).

Table 3.3.3.23. California Halibut Landings and Exvessel Revenue by Year and Gear (LBS and USD)

		YEAR			
Gear Group	Data type	2000	2001	2002	2003
Hook and Line	Landed weight (lbs)	118,519	124,241	166,307	208,887
	Exvessel revenue (\$)	366,478	398,222	523,217	654,537
Misc.	Landed weight (lbs)	C	C	C	C
	Exvessel revenue (\$)	C	C	C	C
Net	Landed weight (lbs)	380,105	319,235	255,720	181,439
	Exvessel revenue (\$)	1,122,396	981,323	820,973	601,822
Pot	Landed weight (lbs)	463	170	1,501	592
	Exvessel revenue (\$)	1,225	531	3,594	2,419
Troll	Landed weight (lbs)	9,163	10,382	8,259	13,735
	Exvessel revenue (\$)	21,241	24,687	18,784	29,589
Trawl	Landed weight (lbs)	277,878	377,094	451,186	342,609
	Exvessel revenue (\$)	728,537	1,076,334	1,276,334	912,487
Shrimp Trawl	Landed weight (lbs)	63,947	66,634	55,534	77,324
	Exvessel revenue (\$)	214,903	226,478	203,011	326,085
Total Landed weight (lbs)		850,075	897,756	938,507	824,586
Total Exvessel revenue (\$)		2,454,780	2,707,575	2,845,913	2,526,939

Source: PacFIN fti table. August 2004:

Note: totals exclude confidential data

Table 3.3.3.24 Top 15 Ports for California Halibut Landings and Exvessel Revenue (2000–2003)

Rank	Top 15 Ports by Weight	Top 15 Ports by Exvessel Revenue
1	SAN FRANCISCO	SAN FRANCISCO
2	PRINCETON / HALF MOON BAY	VENTURA
3	VENTURA	PRINCETON / HALF MOON BAY
4	SANTA BARBARA	SANTA BARBARA
5	SAN PEDRO	TERMINAL ISLAND
6	TERMINAL ISLAND	SAN PEDRO
7	OXNARD	OXNARD
8	MOSS LANDING	PORT HUENEME
9	SANTA CRUZ	OCEANSIDE
10	AVILA	SANTA CRUZ
11	PORT HUENEME	AVILA
12	OCEANSIDE	MOSS LANDING
13	MONTEREY	SAN DIEGO
14	SAN DIEGO	MONTEREY
15	MORRO BAY	MORRO BAY

Source: PacFIN fti table. August 2004

California Sheephead

Pot fishermen account for well over half of the total catch and revenues of Sheephead (Table 3.3.3.25), followed by hook and line gear. Nets and other gears take minimal amounts of Sheephead. The top 15 ports in California have a similar order of landed weight and revenue (Table 3.3.3.26)

Table 3.3.3.25 Landings and Exvessel Revenue of California Sheephead by State, Gear, and Year (LBS and USD)

State	Gear	Data type	YEAR			
			2000	2001	2002	2003
California	Hook and Line	Landed weight (lbs)	33,211	23,928	22,698	24,587
		Exvessel revenue (\$)	93,186	73,996	66,304	82,449
	Other Gears	Landed weight (lbs)	1,506	1,268	1,199	2,677
		Exvessel revenue (\$)	4,663	2,860	4,100	10,131
	Net	Landed weight (lbs)	3,067	3,097	1,432	474
		Exvessel revenue (\$)	5,897	3,401	1,388	1,317
	Pot	Landed weight (lbs)	136,161	121,941	95,719	79,618
		Exvessel revenue (\$)	490,773	437,409	339,741	292,673
Total Landed weight (lbs)			173,945	150,234	121,048	107,356
Total Exvessel revenue (\$)			594,519	517,666	411,532	386,570

Source: PacFIN fl table. August 2004

Table. 3.3.3.26 Ports for Sheephead Landings and Exvessel Revenue (2000–2003)

Rank	Top 15 Ports by Weight	Top 15 Ports by Exvessel Revenue
1	OXNARD	OXNARD
2	SAN DIEGO	SAN DIEGO
3	SANTA BARBARA	TERMINAL ISLAND
4	TERMINAL ISLAND	SANTA BARBARA
5	NEWPORT BEACH	NEWPORT BEACH
6	VENTURA	MISSION BAY
7	MISSION BAY	VENTURA
8	OCEANSIDE	OCEANSIDE
9	DANA POINT	DANA POINT
10	SAN PEDRO	SAN PEDRO
11	POINT LOMA	POINT LOMA
12	LONG BEACH	LONG BEACH
13	MORRO BAY	PLAYA DEL REY
14	PLAYA DEL REY	REDONDO BEACH
15	REDONDO BEACH	MORRO BAY

Source: PacFIN fl table. August 2004

Coastal Pelagic Species

The CPS fisheries are concentrated in California (Table 3.3.3.27), but CPS fishing also occurs in Washington and Oregon. Vessels using round haul gear (purse seines and lampara nets) account for 99% of total CPS landings and revenues per year (Table 3.3.3.28). In Washington, the Emerging Commercial Fishery regulations provides for the sardine fishery as a trial commercial fishery. The trial fishery targets sardines, but also lands anchovy, mackerel, and squid. Regulations limit the fishery to vessels using purse seine gear; prohibits fishing inside of three miles, and requires logbooks. Eleven of the 45 permits holders participated in the fishery in 2000, landing 4,791 mt of sardines (Robinson 2000). Three vessels accounted for 88% of the landings. Of these, two fished out of Ilwaco and one out of Westport. Oregon manages the sardine fishery under the Development Fishery Program under annually-issued permits, which have ranged from 15 in 1999 and 2000 to 20 in 2001. Landings, almost all by purse seine vessels, have rapidly increased in Oregon: from 776 mt in 1999 to 12,798 mt in 2001. The Southern California round haul fleet is the most important sector of the CPS fishery in terms of landings, and most of the highest production ports occur in this area (Table 3.3.3.29). This fleet is primarily based in Los Angeles Harbor, along with fewer vessels in the Monterey and Ventura areas. The fishery harvests Pacific bonito, market squid, and tunas as well as CPS. The fleet consists of about 40 active purse

seiners averaging 20 m in length. Approximately one-third of this fleet are steel-hull boats built during the last 20 years, the remainder are wooden-hulled vessels built from 1930 to 1949, during the boom of the Pacific sardine fleet. Because stock sizes of these species can radically change in response to ocean conditions, the CPS FMP takes a flexible management approach. Pacific mackerel and Pacific sardine are actively managed through annual harvest guidelines based on periodic assessments. Northern anchovy, jack mackerel, and market squid are monitored through commercial catch data. If appropriate, one third of the harvest guideline is allocated to Washington, Oregon, and northern California (north of 35E40' N latitude) and two-thirds is allocated to Southern California (south of 35E40' N latitude). An open access CPS fishery is in place north of 39°N latitude and a limited entry fishery is in place south of 39° N latitude. The Council does not set harvest guidelines for anchovy, jack mackerel, or market squid (PFMC 1998).

Table 3.3.3.27 CPS Landings and Exvessel Revenue by Area, State, and Year (LBS and USD)

			YEAR			
Area	State	Data type	2000	2001	2002	2003
Coastal Management Areas	CA	Landed weight (lbs)	465,666,430	376,633,573	316,754,663	182,994,919
		Exvessel revenue (\$)	40,179,911	29,373,729	27,852,840	29,261,203
	OR	Landed weight (lbs)	21,629,154	29,337,380	50,396,664	56,500,887
		Exvessel revenue (\$)	1,173,218	1,726,387	2,835,693	3,016,660
	WA	Landed weight (lbs)	10,937,156	25,573,818	35,995,417	26,872,582
		Exvessel revenue (\$)	716,632	1,394,002	2,044,254	1,546,569
Other Management Areas	OR	Landed weight (lbs)	C	C	C	C
		Exvessel revenue (\$)	C	C	C	C
	WA	Landed weight (lbs)	530,364	813,484	1,196,872	1,070,620
		Exvessel revenue (\$)	208,419	297,702	529,434	510,373
Total Landed weight (lbs)			498,763,104	432,358,255	404,343,616	267,439,00
Total Exvessel revenue (\$)			42,278,180	32,791,820	33,262,222	34,334,805

Source: PacFIN fti table. August 2004

Note: C represents data restricted due to confidentiality

Totals do not include confidential data

"Other management areas" includes inside waters such as Puget Sound and Columbia River

Table 3.3.3.28 CPS Landings and Exvessel Revenue by Year and Gear(LBS and USD)

Gear Group	Data type	YEAR			
		2000	2001	2002	2003
Hook and Line	Landed weight (lbs)	447,269	132,292	46,697	135,851
	Exvessel revenue (\$)	64,810	63,396	30,017	53,557
Misc	Landed weight (lbs)	238,310	53,720	90,661	141,291
	Exvessel revenue (\$)	82,093	390,882	621,647	463,864
Net	Landed weight (lbs)	496,714,839	430,478,604	404,186,770	266,878,952
	Exvessel revenue (\$)	42,035,766	32,142,853	32,605,922	33,761,365
Pot	Landed weight (lbs)	100,375	1,240	347	57,592
	Exvessel revenue (\$)	10,194	398	126	15,534
Troll	Landed weight (lbs)	645,533	307,434	558	43,777
	Exvessel revenue (\$)	57,140	11,811	666	15,701
Trawl	Landed weight (lbs)	626,541	1,384,594	21,999	181,009
	Exvessel revenue (\$)	28,150	182,129	2,734	24,105
Shrimp Trawl	Landed weight (lbs)	1,086	371	1,255	536
	Exvessel revenue (\$)	569	351	1,577	678
Total Landed weight (lbs)		498,773,953	432,358,255	404,348,287	267,439,008
Total Exvessel revenue (\$)		42,278,722	32,791,820	33,262,689	34,334,805

Source: PacFIN fil table. August 2004

Table. 3.3.3.29 Top 15 Ports for CPS Landings and Exvessel Revenue (2000–2003)

Rank	Top 15 Ports by Weight	Top 15 Ports by Exvessel Revenue
1	SAN PEDRO	SAN PEDRO
2	PORT HUENEME	PORT HUENEME
3	TERMINAL ISLAND	MOSS LANDING
4	MOSS LANDING	TERMINAL ISLAND
5	ASTORIA	VENTURA
6	VENTURA	ASTORIA
7	ILWACO	SAN FRANCISCO
8	MONTEREY	MONTEREY
9	SAN FRANCISCO	ILWACO
10	WESTPORT	SAUSALITO
11	SAUSALITO	PRINCETON / HALF MOON BAY
12	PRINCETON / HALF MOON BAY	WESTPORT
13	SANTA BARBARA	TACOMA
14	LONG BEACH	MARSHALL
15	MARSHALL	SANTA BARBARA

Source: PacFIN fil table. August 2004

Sea Cucumber

California implemented a permit program for sea cucumber in 1992. In 1997 the state established separate, limited entry permits for the dive and trawl sectors. Permit rules encourage permit transfer to the dive sector which has led to growth in this sector. The dive sector currently accounts for 80% of landings. There are currently 113 sea cucumber dive permits and 36 sea cucumber trawl permits. Many commercial sea urchin and/or abalone divers also hold sea cucumber permits and began targeting sea cucumbers more heavily beginning in 1997. At up to \$20 per pound wholesale for processed sea cucumbers, there is a strong incentive to participate in this fishery. California fishers account for the majority of sea cucumbers by weight and value, followed by Washington fishers (Table 3.3.3.30); Oregon has too few participants for public release of data.

Sea cucumbers are managed by the states. Along the West Coast, sea cucumbers are harvested by diving or trawling (Table 3.3.3.31). Only the trawl fishery for sea cucumbers lands an incidental catch of

groundfish. The warty sea cucumber is fished almost exclusively by divers. The California sea cucumber is caught principally by trawling in Southern California, but is targeted by divers in Northern California. The top ports for landed weight and ex-vessel revenue occur roughly equally in California and Washington (Table 3.3.3.32).

Sea cucumber fisheries have expanded worldwide. On the West Coast, a dive fishery for warty sea cucumbers occurs in Baja California, Mexico, and dive fisheries for California sea cucumbers occur in Washington, Oregon, Alaska, and British Columbia, Canada (Rogers-Bennett and Ono 2001). In Washington, the sea cucumber fishery only occurs inside Puget Sound and the Strait of Juan de Fuca. Most of the harvest is taken by diving, although the tribes can also trawl for sea cucumbers in these waters.

Table 3.3.3.30 Sea Cucumber Landings and Exvessel Revenue by Area, State, and Year (LBS and USD)

			YEAR			
Area	State	Data type	2000	2001	2002	2003
Coastal Management Areas	CA	Landed weight (lbs)	643,310	717,695	946,810	758,569
		Exvessel revenue (\$)	606,578	584,970	801,276	687,854
	OR	Landed weight (lbs)	C	C	C	C
		Exvessel revenue (\$)	C	C	C	C
Other Management Areas	WA	Landed weight (lbs)	605,755	661,657	549,127	438,707
		Exvessel revenue (\$)	836,720	903,570	598,820	560,533
Total Landed weight (lbs)			1,249,065	1,379,352	1,495,937	1,197,276
Total Exvessel revenue (\$)			1,443,297	1,488,540	1,400,096	1,248,387

Source: PacFIN fti table. August 2004

Note: C represents data restricted due to confidentiality

"Other management areas" includes inside waters such as Puget Sound and Columbia River

Table 3.3.3.31 Sea Cucumber Landings and Exvessel Revenue by Year and Gear (LBS and USD)

		YEAR			
Gear aggregation	Data type	2000	2001	2002	2003
Misc. (including dive gear)	Landed weight (lbs)	574,689	465,804	660,598	466,855
	Exvessel revenue (\$)	558,029	419,318	610,742	475,262
Other Gears	Landed weight (lbs)	674,667	913,583	835,339	731,109
	Exvessel revenue (\$)	885,777	1,069,291	789,354	774,084
Total Landed weight (lbs)		1,249,065	1,379,352	1,495,937	1,197,276
Total Exvessel revenue (\$)		1,443,297	1,488,540	1,400,096	1,248,387

Source: PacFIN fti table. August 2004

Note: C represents data restricted due to confidentiality

"Other management areas" includes inside waters such as Puget Sound and Columbia River totals are equivalent to previous table to protect confidentiality

Table 3.3.3.32 Top 15 Ports for Sea Cucumber Landings and Exvessel Revenue (2000–2003)

Rank	Top 15 Ports by Weight	Top 15 Ports by Exvessel Revenue
1	OXNARD	OXNARD
2	SANTA BARBARA	BLAINE
3	BLAINE	ANACORTES
4	ANACORTES	SANTA BARBARA
5	TERMINAL ISLAND	TERMINAL ISLAND
6	POULSBO	BELLINGHAM BAY
7	BELLINGHAM BAY	POULSBO
8	SEATTLE	SEATTLE
9	TACOMA	TACOMA
10	VENTURA	LACONNER
11	LACONNER	VENTURA
12	PUGET ISLAND	PUGET ISLAND
13	FRIDAY HARBOR	FRIDAY HARBOR
14	SAN PEDRO	SAN PEDRO
15	MISSION BAY	PORT TOWNSEND

Source: PacFIN fl table. August 2004

Spot Prawn

Spot prawns are targeted with both trawl and pot gear (Table 3.3.3.33). These fisheries are state-managed. For the purposes of managing incidentally-caught groundfish, the trawl fishery has been categorized as exempted trawl in the open access sector of the groundfish fishery. California has the largest and oldest trawl fishery with about 54 vessels operating from Bodega Bay south to the U.S./Mexico border. California has the top 15 ports for landed weight and ex-vessel revenue (Table 3.3.3.34). (Most vessels operate out of Monterey, Morro Bay, Santa Barbara, and Ventura, although some Washington-based vessels participate in this fishery during the fall and winter.) Standard gear is a single-rig shrimp trawl with roller gear, varying in size from eight-inch disks to 28-inch tires. Washington State phased out its trawl fishery by converting its trawl permits to pot/trap permits in 2003. California instituted area and season closures for the trawl fleet in 1984 to protect spot prawns during their peak egg-bearing months of November through January. In 1994, the trawl area and season closure was expanded to include the entire Southern California Bight. As of 2003, the spot prawn trawl fishery is closed. After 2003 Oregon prohibited the use of trawl nets for harvesting spot prawns. These closures, along with the development of ridgeback prawn, sea cucumber, and other fisheries, and also greater demand for fresh fish, have kept spot prawn trawl landings low and facilitated growth of the trap fishery. The trap fishery began in 1985 with a live prawn segment developing subsequently. The fleet operates from Monterey Bay, where six boats are based, to Southern California, where a 30 to 40 boat fleet results in higher production. Fishers in both fishing areas set traps at depths of 600 feet to 1,000 feet along submarine canyons or along shelf breaks. Between 1985 and 1991 trapping accounted for 75% of statewide landings; trawling accounted for the remaining 25% (Larson 2001). Landings continued to increase through 1998, when they reached a historic high of 780,000 pounds. Growth in participation and a subsequent drop in landings led to the development of a limited entry program, which is still in the process of being implemented. Other recent regulations include closures, trap limits, bycatch reduction measures for the trawl fishery, and an observer program.

Table 3.3.3.33 Spot Prawn Landings and Exvessel Revenue by Year and Gear in California (LBS and USD)

Gear	Data type	Year			
		2000	2001	2002	2003
Pot	Landed weight (lbs)	180,339	218,813	175,497	159,168
	Exvessel revenue (\$)	1,646,474	1,993,004	1,607,681	1,505,684
Trawl (all trawl types)	Landed weight (lbs)	266,682	203,346	218,067	6,841
	Exvessel revenue (\$)	2,188,968	1,709,452	1,759,197	61,364
Total Landed weight (lbs)		447,021	422,159	393,564	166,009
Total Exvessel Revenue (\$)		3,835,442	3,702,456	3,366,877	1,567,049

Source: PacFIN fl table. August 2004

Note: Spot prawn landings do not show up specifically in landed catch data for WA and OR

Table 3.3.3.34 Top 15 Ports for Spot Prawn Landings and Exvessel Revenue in California (2000–2003)

Rank	Top 15 Ports by Weight	Top 15 Ports by Exvessel Revenue
1	MORRO BAY	MORRO BAY
2	MONTEREY	MONTEREY
3	OXNARD	OXNARD
4	VENTURA	VENTURA
5	DANA POINT	DANA POINT
6	TERMINAL ISLAND	TERMINAL ISLAND
7	SANTA BARBARA	OCEANSIDE
8	OCEANSIDE	SANTA BARBARA
9	SAN DIEGO	MOSS LANDING
10	RICHMOND	SAN DIEGO
11	MOSS LANDING	RICHMOND
12	SAN FRANCISCO	SAN FRANCISCO
13	FORT BRAGG	FORT BRAGG
14	BODEGA BAY	BODEGA BAY
15	HUNTINGTON BEACH	MISSION BAY

Source: PacFIN fti table. August 2004

Buyers and Processors

Excluding Pacific whiting delivered to at-sea processors, vessels participating in Pacific groundfish fisheries deliver to shore-based processors within Washington, Oregon, and California. Buyers are located along the entire coast; however, processing capacity has been consolidating in recent years. Several companies have left the West Coast or have chosen to quit the business entirely, have been consolidated or are inactive. This has led to trucking groundfish from certain ports to another community for processing. Therefore, landings do not necessarily indicate processing activity in those communities. However, examination of the species composition of landed catch by state can lead to inferences of some processor characteristics.

According to PacFIN data, in 2002 Oregon had the largest amount of groundfish landings (56%), followed by Washington (28%), and California (16%). In contrast, Oregon has the largest amount of exvessel revenue (40%), followed by California (32%) and Washington (22%), respectively. Oregon accounts for the majority of Pacific whiting landings, which creates a large difference between the percentage of landed catch and exvessel revenue because Pacific whiting has a relatively low price per pound. The relatively high amount of Pacific whiting being landed in Oregon may create a case where many processors must generate capacity to handle large quantities at a time. Groundfish processors in Washington may receive landings from Alaska fisheries. Depending on the amount of catch Washington processors can draw from Alaska fisheries, some groundfish processors may require the capacity to process large amounts of product. California processors concentrating on West Coast fisheries may focus on relatively smaller throughput of groundfish.

The seafood distribution chain begins with deliveries by the harvesters (exvessel landings) to the shoreside networks of buyers and processors, and includes the linkage between buyers and processors and seafood markets. In addition to shoreside activities, processing of certain species (e.g., Pacific whiting) also occurs offshore on factory ships. Several thousand entities have permits to buy fish on the West Coast (Table 3.3.3.38). Of these, 1,780 purchased fish caught in the ocean area and landed on Washington, Oregon, or California state fishtickets in the year 2000 (excluding tribal catch) and 732 purchased groundfish (PFMC 2004).¹

^{1/} A "buyer" was defined here by a unique combination of PacFIN port code and state buyer code on the fishticket. For California, a single company may have several buying codes that vary only by the last two digits. In PacFIN, these last two digits are truncated, and so were treated as separate buying units only if they appear for different ports.

According to PacFIN data, the number of unique companies buying groundfish along the West Coast has declined in recent years. This trend coincides with recent regulatory restrictions and diminished landings of higher valued species such as rockfish (Table 3.3.3.38). The number of buyers purchasing other species such as crab and salmon has been stable or increasing in recent years.

Table 3.3.3.38 Count of Fish Buyers by Year, Species Type, and State (not unique records)

State	Species Group	Year			
		2000	2001	2002	2003
CA	Coastal Pelagic	174	126	118	112
	All Crab	298	306	291	351
	Groundfish	412	385	324	310
	HMS	233	241	222	199
	Other species	558	515	510	505
	All Salmon	277	225	269	273
	All Shell fish	6	10	2	2
	All Shrimp & Prawns	154	126	129	107
OR	Coastal Pelagic	14	15	16	16
	All Crab	67	77	81	83
	Groundfish	84	74	79	81
	HMS	96	112	125	138
	Other species	90	91	103	94
	All Salmon	104	134	143	150
	All Shell fish	19	14	46	27
	All Shrimp & Prawns	36	36	30	26
WA	Coastal Pelagic	12	17	16	15
	All Crab	125	125	158	168
	Groundfish	43	42	40	45
	HMS	37	39	55	53
	Other species	109	102	98	106
	All Salmon	189	218	219	213
	All Shell fish	167	178	177	171
	All Shrimp & Prawns	75	72	72	80

Source: PacFIN ftl and ft tables. July 2004

Note: records are not unique buyers and should not be summed

Fishing Communities

Fishing communities, as defined in the MSA, include not only the people who catch the fish, but also those who share a common dependency on directly related fisheries-dependent services and industries.

Commercial fishing communities may include boatyards, fish handlers, processors, and ice suppliers. Similarly, entities that depend on recreational fishing may include tackle shops, small marinas, lodging facilities catering to out-of-town anglers, and tourism bureaus advertising charter fishing opportunities. People employed in fishery management and enforcement makes up another component of fishing communities.

Fishing communities on the West Coast depend on commercial and/or recreational fisheries for many species. Participants in these fisheries employ a variety of fishing gears and combinations of gears. Community patterns of fishery participation vary coastwide and seasonally, based on species availability, the regulatory environment, and oceanographic and weather conditions. Communities are characterized by the mix of fishery operations, fishing areas, habitat types, seasonal patterns, and target species. Although unique, communities share many similarities. For example, all face danger, safety issues, dwindling resources, and a multitude of state and federal regulations. Individuals in unique communities have differing cultural heritages and economic characteristics. Examples include a Vietnamese fishing community of San Francisco Bay and an Italian fishing community in Southern California. Native U.S. communities with an interest in the groundfish fisheries are also considered. In spite of a variety of ethnic backgrounds, fishers in many areas come together to form the fishing communities, drawn together by their common interests in economic and physical survival in an uncertain and changing ocean and regulatory environment. The top 15 ports for open access groundfish and revenue are found in Table 3.3.3.39.

Table 3.3.3.39 Top Ports for Open Access Groundfish Landings and Revenue (2000 - 2003)

Rank	Top 15 Ports for Landed Revenue	Top 15 Ports for Landed Weight
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1	Morro Bay	Moss Landing
2	Port Orford	Neah Bay
3	Moss Landing	Fort Bragg
4	Fort Bragg	Port Orford
5	Gold Beach	Port Angeles
6	Avila	Morro Bay
7	Santa Barbara	Gold Beach
8	Port Angeles	Westport
9	Crescent City	Eureka
10	Neah Bay	Crescent City
11	San Francisco	Astoria
12	Monterey	San Francisco
13	Astoria	Avila
14	Eureka	Charleston (Coos Bay)
15	Westport	Brookings

Source: PacFIN VSMRFD files. July 2004

An overview of West Coast fishing communities organized around regions comprising port groups and ports consistent with the organization of fish landings data in the PacFIN database can be found in the The Pacific Coast Groundfish Fishery Management Plan, Essential Fish Habitat Designation and Minimization of Adverse Impacts, Draft EIS, prepared in February 2005.

Enforcement

Scarce State and Federal resources also limit the use of traditional enforcement methods. Traditional fishery monitoring techniques include air and surface craft surveillance, declaration requirements, landing inspections, and analysis of catch records and logbooks. Current assets for patrolling offshore areas include helicopter and fixed wing aircraft deployed by the U.S. Coast Guard and state enforcement entities, one large 210 foot Coast Guard cutter, and smaller Coast Guard and state enforcement vessels. Only the aircraft and large cutter are suitable for patrolling the more distant offshore closed areas. The availability of Coast Guard assets may be challenged by other missions such as Homeland Security and search and rescue

Shoreside enforcement activities complement at-sea monitoring and declaration requirements by inspecting recreational and commercial vessels for compliance with landing limits, gear restrictions, and seasonal fishery closures. State agencies are increasingly using dockside sampling as a means of assessing groundfish catch in recreational fisheries, which when combined with state and federal enforcement patrols at boat launches and marinas, provides a means of ensuring compliance with bag limits and fishery closures. Commercial landings are routinely investigated upon landing or delivering to buying stations or processing plants and can be tracked through fish ticket and logbook records.

4.0 IMPACTS OF THE ALTERNATIVES

The terms "effect" and "impact" are used synonymously under NEPA. Impacts include ecological, aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Direct effects are caused by the action and occur at the same time and place and indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems. Cumulative impacts are those impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Sections 4.1 through 4.3 of this document discuss the direct and indirect impacts on the physical, biological, and socio-economic environment that are likely to occur under each of the proposed alternatives, including the status quo alternative. Section 4.4 presents the reasonably foreseeable cumulative effects of the environment from the proposed alternatives.

4.1 Physical Impacts

PHYSICAL ENVIRONMENT - COMPARISON OF THE ALTERNATIVES	
PHYSICAL STRUCTURE	Changes to the physical environment as a result of VMS regulations
Alternative 1 Status quo	<p><u>Direct impact</u> No direct impacts beyond what has been considered in previous NEPA documents.</p> <p><u>Indirect impact</u> Little data available to assess OA fishing location and intensity.</p>
Alternative 2 Vessels using longline gear	<p><u>Direct impact</u> Data from vessels 165 vessels using longline gear to take and retain, possess or land OA groundfish (approximately 131 directed groundfish, 31 Pacific halibut, CA halibut, and 2 HMS vessels) could be used to maintain the integrity of habitat protection areas from longline effects. Unforeseen effects on the physical environment resulting from illegal fishing in the RCAs or habitat areas for OA vessels using longline gear will likely be reduced as a result of the deterrent effect.</p> <p><u>Indirect impact</u> VMS data can be combined with data on fishing gear impacts and habitat to better understand how effort shifts and closed area management measures affect the physical environment. Data would be available from 165 vessels using longline gear to take and retain, possess or land OA groundfish (approximately 131 directed groundfish, 31 Pacific halibut, 1 CA halibut, and 2 HMS vessels) .</p>
Alternative 3 Vessels using longline or pot gear	<p>In addition to impacts identified under Alt. 2</p> <p><u>Direct impact</u> Adds data from 128 vessels that take and retain, possess or land OA groundfish with pot gear (approximately 30 directed, 45 Dungeness crab, 8 prawn, 8 CA sheephead, and 37 CA halibut) could be used to maintain the integrity of habitat protection areas from pot fishing gear impacts. Deterrent effect will likely reduce RCA or habitat area incursions by vessels identified under this Alt.</p> <p><u>Indirect impact</u> Adds VMS position data from approximately 128 vessels (30 directed, 45 Dungeness crab, 8 prawn, 8 CA sheephead, and 37 CA halibut) that can be combined with data on fishing gear impacts and habitat to better understand effort shifts and the potential effects on the physical environment from closed area management measures.</p>
Alternative 4 Vessels using longline, pot or trawl gear, except: pink shrimp trawl	<p>In addition to impacts identified under Alt. 2 and 3</p> <p><u>Direct impact</u> Data from 41 vessels using trawl gear, excluding pink shrimp, to take and retain, possess or land OA groundfish (from approximately 18 ridgeback prawn, 6 sea cucumber and 17 CA halibut vessels) that could be used to maintain the integrity of habitat protection areas from trawl gear affects. Deterrent effect will likely reduce RCA or habitat area incursions by vessels identified under this Alt.</p> <p><u>Indirect impact</u> Provides VMS position data from approximately 41 vessels (18 ridgeback prawn, 6 sea cucumber and 17 CA halibut vessels) that can be combined with data on fishing gear impacts and habitat to better understand effort shifts and potential effects on the physical environment from closed area management measures. Understanding where bottom trawl effort is distributed will likely be the most important because trawl gear is believed to have greater impact on physical habitat than OA fixed gears.</p>

<p>Alternative 5A Vessels using longline, pot, trawl or line gear, except: pink shrimp trawl and salmon troll</p>	<p>In addition to impacts identified under Alt. 2, 3 and 4</p> <p><u>Direct impact</u> Data from 855 vessels using line gear, excluding salmon troll, to take and retain, possess or land OA groundfish (approximately 738 groundfish, 105 California halibut, and 12 HMS vessels) could be used to maintain the integrity of habitat protection areas from line gear impacts. Deterrent effect will likely reduce RCA or habitat area incursions by vessels identified under this Alt.</p> <p><u>Indirect impact</u> Provides VMS position data from approximately 855 vessels (738 groundfish, 105 California halibut, and 12 HMS vessels) using line gear to take and retain, possess or land OA groundfish, that can be combined with data on fishing gear impacts and habitat to better understand effort shifts and the potential effects on the physical environment from closed area management measures.</p>
<p>Alternative 5B Vessels using longline, pot, trawl or line gear, except: pink shrimp trawl, HMS longline and line, and Dungeness crab pot gear</p>	<p><u>Direct impact</u> Data from 163 vessels using longline gear as identified under Alt. 2 (excluding 2 HMS vessels); 83 vessels using pot gear as identified under Alt.3. (excluding 45 Dungeness crab vessels); 41 vessels using trawl gear as identified under Alt.4, and 1,020 vessels using line gear as identified under Alt. 5A (plus 177 salmon troll vessels coastwide) that take and retain, possess or land OA groundfish could be used to maintain the integrity of habitat protection areas from longline, pot, trawl, and line gear impacts. Deterrent effect will likely reduce RCA or habitat area incursions by vessels identified under this Alt.</p> <p><u>Indirect impact</u> Provides VMS position data from approximately 1,307 vessels that can be combined with data on fishing gear impacts and habitat to better understand effort shifts and the potential effects on the physical environment from closed area management measures. These vessels include 163 vessels using longline gear as identified under Alt. 2, except that HMS vessels would be excluded; 83 vessels using pot gear as identified under Alt.3., excluding Dungeness crab vessels; 41 vessels using trawl gear as identified under Alt.4; and 1,020 vessels using line gear to take and retain, possess or land groundfish as identified under Alt. 5A, except HMS vessels using line gear are excluded, and including approximately 241 salmon troll vessels.</p>
<p>Alternative 6A Vessels with RCA restrictions; except pink shrimp trawl</p>	<p><u>Direct impact</u> Data from 1,423 vessels could be used to maintain the integrity of habitat protection areas from longline, pot, trawl, line, net and other fishing gear impacts. Includes data from: vessels using longline gear as identified under Alt. 2 except that all Pacific halibut vessels are included; 128 vessels using pot gear identified under Alt. 3; all vessels using trawl gear (approximately 32 ridgeback prawn, 14 Sea cucumber, and 34 California halibut vessels); 1,032 vessels using line gear as identified under Alt. 5B (includes salmon troll coastwide and 12 HMS vessels) to take and retain, possess or land OA groundfish; vessels using net gear (approximately 3 CPS vessels); and 4 vessels using other OA gears (approximately 4 vessels). Deterrent effect will likely reduce RCA or habitat area incursions by vessels identified under this Alt.</p> <p><u>Indirect impact</u> Provides VMS position data from approximately 1,423 vessels that can be combined with data on fishing gear impacts and habitat to better understand effort shifts and the potential effects on the physical environment from closed area management measures. These vessels include: 214 vessels using longline gear as identified under Alt. 2, except that all 49 Pacific halibut vessels are included; 128 vessels using pot gear identified under Alt. 3; 80 vessels using trawl gear includes approximately 32 ridgeback prawn, 14 Sea cucumber, and 34 California halibut vessels; 1,032 vessels using line gear to take and retain, possess or land OA groundfish as identified under Alt. 5B (includes salmon coastwide and 12 HMS vessels), vessels using net gear (trammel, gillnet, setnet) include approximately 3 CPS vessels, and approximately 4 vessels using other OA gears.</p>

<p>Alternative 6B Vessels with RCA restrictions: except salmon troll north that retain only yellowtail rockfish and pink shrimp trawl</p>	<p><u>Direct impact</u> Essentially the same as Alt. 6A except that data that could be used to maintain the integrity of areas closed to protect habitat from fishing gear impacts is not available for salmon troll vessels that retain only yellowtail rockfish north of 40°10' N. lat. would not be available. Total of 1,289 vessels.</p> <p><u>Indirect impact</u> Essentially the same as Alt. 6A except that position data from salmon troll vessels that retain only yellowtail rockfish north of 40°10' N. lat. would not be available.</p>
<p>Alternative 7 Vessel >12 ft with RCA restriction; except, pink shrimp trawl</p>	<p><u>Direct impact</u> Essentially the same as 6A except that data from approximately 22 vessels (6 longline, 2 pot, and 14 line gear vessels) would not be available. Total of 1,401 vessels.</p> <p><u>Indirect impact</u> Essentially the same as 6A except that data from approximately 22 vessels (6 longline, 2 pot, and 14 line gear vessels) would not be available. It is likely that none of these small vessels are not fishing outside of 3 miles.</p>
<p>Each of the alternatives identifies and estimated number of vessels that are likely to be affected by the VMS requirement. These values are based on the average level of participation from 2000 to 2003. However, it is important to point out that these values may not be the actual number of vessels that would continue to use a particular gear type if VMS requirements were adopted due to the easy ability of directed groundfish fishers to change gears or for incidental groundfish fishers to discontinue participation in the OA fisheries by not retaining groundfish species.</p>	

4.1.1 Physical structure

Direct impacts on the physical environment from fishery management actions generally result from changes to the structure of the benthic environment as a result of fishing practices.

The proposed action pertains to a program that is expected to provide information for monitoring fishing locations in relation to time/area closures. Fleet coverage level, that portion of the overall open access fishing fleet that would be required to have VMS and provide declaration reports, is the only difference between the proposed alternatives. Each of the 9 alternatives defines the portion of the open access fleet, that would be required to carry and use VMS transceivers and provide gear declaration reports.

Direct effects on the physical environment could occur if the gathering of the position information resulted in changes to fishing gear impacts on the physical structure or habitat. VMS data could be used to maintain the integrity of habitat protection areas designed to protect the physical environment from fishing gear impacts. Different fishing gears have different effects on the benthic environment. Further discussion on the different direct effects of the gears used in the open access fishery can be found in the Pacific Coast Groundfish Fishery Management Plan, Essential Fish Habitat Designation and Minimization of Adverse Impacts, Draft EIS, prepared in February 2005. This DEIS also describes the physical impacts on the environment under status quo management.

One of the major benefits of VMS is its deterrent effect. VMS is expected to have a beneficial deterrent effect (the reduction in illegal fishing in closed areas when fishing vessel operators know that they are being monitored) by reducing the likelihood of unforeseen effects on the physical environment resulting from unknown illegal fishing in the RCAs. It has been demonstrated that if fishing vessel operators know that they are being monitored and that a credible enforcement action will result from illegal activity, then the likelihood of that illegal activity occurring is significantly diminished. In this context, VMS is a preventive measure that may reduce potential violations of areas that are closed for habitat protection.

At this time, there are no areas in federal waters specifically closed to protect groundfish habitat from fishing gear impacts. However, proposals for such areas are currently being considered. Further discussion on the proposed groundfish habitat areas can be found in the Pacific Coast Groundfish Fishery Management Plan, Essential Fish Habitat Designation and Minimization of Adverse Impacts, Draft EIS, prepared in February 2005. This DEIS also describes the physical impacts on the environment under status quo management.

Indirect impacts from fishery management actions include changes in fishing practices that affect the physical environment, but are further away in time or location than those occurring as a direct impact. Area management involves closing and sometimes opening areas formerly closed to specific open access fishing gear groups. When the size or location of closed areas change, the fishing fleet makes shifts in fishing effort. Understanding the nature of effort shifts, especially understanding where the effort shifts to (and the habitat types most common in these areas) and where the effort shifts from (and the habitat types most common in these areas), is critical to understanding how management actions will likely increase or decrease beneficial and adverse impacts to habitat.

VMS is expected to provide data that can be used in combination with data on fishing gear impacts and habitat to better understand effort shifts and the potential effects on the physical environment. Therefore, VMS provides an indirect benefit to the physical environment. The amount of information available for assessing the impacts of fishing effort on the physical environment varies under each of the alternatives. Therefore, the indirect effects vary between the alternatives and depend on the proportion of the fleet that is required to carry VMS and provide declaration reports as well as the potential impacts associated with a particular gear type.

Comparison of the Alternatives

Alternative 1, Status Quo, would continue the requirement for declaration reports from open access vessels using exempted trawl gear in the RCAs. Under Alternative 1, open access fishery position data

would be available from vessels who voluntarily use VMS units and from vessels that fish pursuant to the open access regulations, but carry VMS because the vessel is registered to a limited entry permit. Section 3.3 of the EIS, for the Proposed Acceptable Biological Catch and Optimum Yield Specifications and Management Measures for the 2005-2006 Pacific Coast Groundfish fishery addressed the physical impacts on the environment under status quo management. In addition, the Pacific Coast Groundfish Fishery Management Plan, Essential Fish Habitat Designation and Minimization of Adverse Impacts, Draft EIS, prepared in February 2005 also describes the physical impacts on the environment under status quo management.

Alternative 2 maintains the declaration provisions of status quo, but adds the VMS and declaration reporting requirements for approximately 165 vessels (131 directed groundfish, 31 Pacific halibut, California halibut, and 2 HMS) vessels using longline gear to take and retain, possess or land groundfish. Of the alternatives that require VMS, Alternative 2 would provide the least amount of data for monitoring areas established for habitat protection or for assessing fishing effort and intensity relative to fishing fleet activity. This is because Alternative 2 would require the smallest proportion of the open access fleet (only vessels using longline gear) to have and use VMS. Given the mobility of vessels within the fishery, directed longline vessels could change gears to avoid the VMS requirements. Alternative 3, includes the same vessels as Alternative 2, but adds the VMS and declaration reporting requirements for approximately 128 vessels (30 directed, 45 Dungeness crab, 8 prawn, 8 CA sheephead, and 37 CA halibut vessels) using pot gear to take and retain, possess or land groundfish. Similar to Alternative 2, some vessels may change to line gear to avoid the VMS requirement. Alternative 3 would provide more data than Alternative 2, however it would provide less data than Alternative 4, which includes the same vessels as Alternative 3, but adds the VMS and declaration reporting requirement for approximately 41 vessels (18 ridgeback prawn, 6 sea cucumber and 17 California halibut vessels) using exempted trawl gear that take and retain, possess or land groundfish.

Alternative 5A includes the same vessels as Alternative 4, but adds the VMS and declaration reporting requirements for approximately 738 groundfish, 105 California halibut, and 12 HMS vessels using line gear to take and retain, possess or land groundfish. Alternative 5B, includes slightly more vessels than 5A because the number of salmon troll vessels (177 vessels) that would be added under this alternative is greater than the number of HMS (12 line and 2 longline vessels) and Dungeness crab (45 vessels) vessels that would be excluded. Though Alternative 5B does not include vessels in fisheries that are projected to have minimal impacts on overfished species, it does include salmon troll vessels. Alternative 6A, which applies to any vessel engaged in commercial fishing to which a RCA restriction applies, includes the largest number of open access vessels (1,423) and would therefore provide the largest amount of data for monitoring habitat protection areas or for assessing fishing effort and intensity relative to fishing fleet activity. Unlike Alternatives 4-5B, all 80 exempted trawl vessels would be included under Alternative 6A, not just those that take and retain, possess or land groundfish. Because the trawl sector is believed to have a greater fishing gear impact on the physical environment, Alternatives 6A-7 which include all 80 trawl vessels, would be much more beneficial than the Alternatives 4-5B that include only a portion of the trawl vessels (41 vessels). There is no difference in trawl data availability between Alternatives 6A, 6B and 7. Alternative 6B, is essentially the same as Alternative 6A, but affects approximately >134 vessels, all of which use salmon troll gear. Alternative 7, is essentially the same as Alternative 6A because it applies to all the same vessels except those vessels less than 12 feet in length. Vessels under 12 feet in length are not expected to fish in Federal waters and would therefore not be required to have VMS.

The open access fishery does not require participants to have permits or gear endorsements. Directed groundfish participants using fixed gear have the mobility to choose between the legal open access fixed gears for harvesting groundfish. Therefore, if VMS requirements under Alternative 2 or 3 were implemented, it will likely result in some directed groundfish participants changing gear to avoid the VMS requirements. Because a substantial proportion of the fleet is required to use VMS under Alternatives 4-7, the number of directed groundfish vessel operators that are likely to change gear to avoid VMS requirements is reduced. Vessels that incidentally catch groundfish while targeting other species are less

likely to change gears to avoid VMS requirements. This is because the various state and federal requirements for the target fishery they are participating in generally restricts the type of gear participants can use. However, participants that catch groundfish incidentally are not considered to be in the open access groundfish fishery unless they take and retain, possess or land groundfish. Therefore, these participants may choose to avoid the VMS requirements by not retaining groundfish, though they would continue to catch groundfish incidentally to the target fishery. The number of participants that would choose to discard groundfish to avoid VMS requirements is unknown; however, a substantial number of participants making less than \$1000 of exvessel revenue per year from groundfish would likely avoid VMS requirements.

4.2 Biological Impacts

BIOLOGICAL ENVIRONMENT - COMPARISON OF THE ALTERNATIVES	
TOTAL CATCH	Changes in groundfish mortality levels as a result of VMS regulations
Alternative 1 Status quo	<p><u>Direct impacts</u> A higher level of fishing mortality than those being used to estimate total catch, may affect the integrity of closed areas if incursions result in higher rates of overfished species catch than projected.</p> <p><u>Indirect impacts</u> Little specific information on fishing location is available from the OA fleet for understanding impacts of effort shifts on adult and juvenile populations, or for refining overfished species total catch estimates. Declaration reports may be used to estimate the number of vessels/trips in conservation areas by exempted trawl vessels.</p>
Alternative 2 Vessels using longline gear	<p><u>Direct impacts</u> Allows the integrity of nontrawl RCAs to be maintained in relation to 165 vessels using longline gear to take and retain, possess of land OA groundfish (approximately 131 directed groundfish, 31 Pacific halibut, 1 CA halibut, and 2 HMS vessels). The risk of actual catch exceeding the OYs for overfished species is reduced for directed groundfish and Pacific halibut longline vessels that take and retain, possess or land groundfish. No change over Alt.1 for HMS longline vessels because they are not projected to catch overfished species.</p> <p><u>Indirect impacts</u> Fishing effort and location data could improve manager's understanding of groundfish mortality by approximately 165 vessels (131 directed groundfish, 31 Pacific halibut, and 2 HMS vessels) using longline gear to take and retain, possess or land groundfish. Data can be combined with observer, survey, and fish ticket data to better estimate: 1) total fishing mortality, 2) impacts on juveniles and other fishery resources related to changes in fishing locations and intensity, 3) data on fishing intensity (amount of time vessels are in an area) would be available, and 4) changes in fishing location and intensity over time.</p>
Alternative 3 Vessels using longline or pot gear	<p>In addition to impacts identified under Alt. 2:</p> <p><u>Direct impacts</u> Improves ability to maintain integrity of nontrawl RCAs in relation to 128 vessels using pot gear that take and retain, possess or OA land groundfish (30 directed, 45 Dungeness crab, 8 prawn, 8 CA sheephead, and 37 CA halibut vessels). The risk of actual catch exceeding the OYs for overfished species is reduced for directed groundfish pot and prawn vessels. No change over Alt.1 for Dungeness crab vessels because no overfished species catch is projected.</p> <p><u>Indirect impacts</u> Fishing effort and location data from approximately 128 vessels could improve manager's understanding of groundfish mortality for pot vessels in the same ways as identified under Alt. 2 for longline vessels.</p>
Alternative 4 Vessels using longline, pot or trawl gear, except: pink shrimp trawl	<p>In addition to impacts identified under Alt. 2 & Alt. 3:</p> <p><u>Direct impacts</u> Adds the ability to maintain the integrity of nontrawl RCAs in relation to 41 vessels using exempted trawl gear to take and retain, possess or land groundfish (approximately 18 ridgeback prawn, 6 sea cucumber and 17 California halibut vessels). The risk of actual catch exceeding the OYs for overfished species is reduced for exempted trawl vessels.</p> <p><u>Indirect impacts</u> Fishing effort and location data from approximately 41 vessels (18 ridgeback prawn, 6 sea cucumber and 17 California halibut vessels) could improve manager's understanding of groundfish mortality for trawl vessels in the same ways as identified under Alt. 2 for longline vessels.</p>

<p>Alternative 5A Vessels using longline, pot, trawl or line gear, except: pink shrimp trawl and salmon troll</p>	<p>In addition to impacts identified under Alt. 2, 3, and 4:</p> <p><u>Direct impacts</u> Improves the ability to maintain integrity of nontrawl RCAs in relation to vessels using line gear that take and retain, possess or land OA groundfish . The risk of actual catch exceeding overfished species OYs is reduced for directed groundfish vessels. No change over Alt. 1 for HMS line vessels because they are not projected to catch overfished species. Impacts on overfished species taken incidentally is neutral because they are expected to be encountered with or without VMS. However, VMS would likely deter mixed fishing strategies where vessels alter gear to catch groundfish within the RCAs.</p> <p><u>Indirect impacts</u> Fishing effort and location data available from approximately 738 vessels groundfish, 105 California halibut, and 12 HMS vessels could improve managers understanding of groundfish mortality for line vessels in the same ways as identified under Alt. 2 for longline vessels.</p>
<p>Alternative 5B Vessels using longline, pot, trawl or line gear, except: pink shrimp trawl, HMS longline and line, and Dungeness crab pot gear</p>	<p><u>Direct impacts</u> Adds the ability to maintain the integrity of gear nontrawl RCAs in relation to: 163 vessels using longline gear as identified under Alt. 2 (excluding 2 HMS vessels are excluded); 83 vessels using pot gear as identified under Alt.3. (excluding 45 Dungeness crab vessels); 41 vessels using trawl gear as identified under Alt.4, and vessels using line gear as identified under Alt. 5A (plus 177 salmon troll vessels coastwide) that take and retain, possess or land OA groundfish. No change over Alt.1 for HMS or Dungeness crab vessels because they are not projected to catch overfished species. Because canary rockfish, lingcod, bocaccio, and yelloweye rockfish are vulnerable to salmon troll gear, maintaining the integrity of the RCAs in relation to targeted groundfish fishing by salmon troll vessels would be beneficial. Impacts on incidentally taken overfished species is neutral because they would be encountered with or without VMS. However, VMS would likely deter fishing strategies where vessels alter their gear to catch more groundfish within the RCAs.</p> <p><u>Indirect impacts</u> Fishing effort and location relative to areas where overfished species are distributed would be available from vessels identified under Alt. 2, 3, 4 and 5A, except that vessels using Dungeness crab pot, HMS longline and HMS line gear would be excluded, but approximately 177 salmon troll vessels would be included. VMS data could improve manager’s understanding of groundfish mortality in the same ways as identified under Alt. 2 for longline vessels.</p>
<p>Alternative 6A Vessels with RCA restrictions; except pink shrimp trawl</p>	<p><u>Direct impacts</u> In addition to benefits identified under Alt. 2, 3, 4, and 5A, adds the ability to maintain the integrity of nontrawl RCAs in relation to all vessels with RCA requirements (pink shrimp vessels are excluded). Includes data from: 165 vessels using longline gear as identified under Alt. 2 except that all 49 Pacific halibut vessels are included; 128 vessels using pot gear identified under Alt. 3; all 80 vessels using trawl gear (approximately 32 ridgeback prawn, 14 Sea cucumber, and 34 California halibut vessels); 1,032 vessels using line gear as identified under Alt. 5B (includes salmon troll coastwide) to take and retain, possess or land OA groundfish; vessels using net gear (approximately 3 CPS vessels); and vessels using other OA gears (approximately 4 vessels). Because canary rockfish, lingcod, bocaccio, and yelloweye rockfish are vulnerable to salmon troll gear, maintaining the integrity of the RCAs in relation to targeted groundfish fishing in the RCAs by salmon troll vessels would be beneficial. In 2005, salmon troll vessels are projected to encounter 1.6 mt or 52 percent of the canary rockfish taken in all open access fisheries. Impacts on incidentally taken overfished species within the RCAs is neutral because they would be encountered with or without VMS. VMS would likely deter mixed fishing strategies where vessels alter their gear to catch more groundfish in the RCAs. No change over Alt. 1 for HMS line and sea cucumber vessels because they are not projected to catch overfished species</p> <p><u>Indirect impacts</u> In addition to benefits identified under Alt. 2, 3, 4, and 5, adds the ability to maintain the integrity of nontrawl RCAs in relation to all vessels with RCA requirements (pink shrimp vessels are excluded). Total of approximately 1,423 vessels.</p>

<p>Alternative 6B Vessels with RCA restrictions: except salmon troll north that retain only yellowtail rockfish and pink shrimp trawl</p>	<p><u>Direct impacts</u> The ability to maintain the integrity of the RCAs is slightly less than those identified under Alt. 6A, because salmon troll vessels fishing north of 40°10' N. lat. that only land yellowtail rockfish would be excluded.</p> <p><u>Indirect impacts</u> Increased data on fishing effort is slightly less than those identified under Alt. 6A, because salmon troll vessels fishing north of 40°10' N. lat. that only land yellowtail rockfish would be excluded.</p>
<p>Alternative 7 Vessel >12 ft with RCA restriction; except, pink shrimp trawl</p>	<p><u>Direct impacts</u> The ability to maintain the integrity of the RCA is slightly less than those identified under Alt. 6A because approximately 22 vessels (those <12 feet in length) less than that identified under Alt. 6A are excluded. Few if any of these vessels are likely to fish in Federal waters.</p> <p><u>Indirect impacts</u> Increased data on fishing effort is slightly less than that identified under Alt. 6A; approximately 22 vessels (those <12 feet in length) less than those identified under Alt. 6A are excluded. Few if any of these vessels are likely to fish in Federal waters.</p>

4.2.1 Fishing mortality

Direct impacts on fishing mortality include changes in the mortality of target and non-target species (incidental catch). This action would expand the VMS program to the open access gear sectors to monitor fishing location in relation to time-area closures. Direct benefits result if the integrity of RCAs are maintained as a result of VMS requirements.

To monitor the attainment of OYs, the total catch level must be estimated for each species or species group. The fishing mortality level (total catch level) for each species is the sum of retained catch and discarded catch (incidental or targeted catch that is not retained and landed by the vessel). There is no exact measure of discard amounts in the open access fisheries. For all species except lingcod, sablefish, and nearshore rockfish species, it is assumed that discarded fish are dead or die soon after being returned to the sea. Total catch estimates of overfished species in the limited entry fisheries are currently based a bycatch accounting model (for further information on current bycatch model see the preamble discussion in the proposed rules for the Harvest Specifications and Management Measures from 2003, 2004 and 2005-2006; January 7, 2003, 68 FR 936) which has applied depth-related discard assumptions since 2003. At this time, total catch estimates of overfished species taken in the open access fishery are based on landed catch from fish tickets, assumed discard rates, discard and discard mortality assumptions, expertise from state fisheries managers, and industry advisory body input. However, as observer and other data become available more formal bycatch modeling is expected to be used for a portion (directed) or perhaps all of the open access fisheries. The current bycatch model for the limited entry fisheries uses overfished species bycatch rates that are representative of fishing outside the RCAs, and would be higher if areas within the RCAs were included. An open access fishery bycatch model would likely be similar for the directed open access fisheries.

Discard assumptions used for modeling the fishery to estimate total catch of overfished species have been based on bycatch rates for areas where fishing is expected to occur. Thus, higher total mortality than assumed by the model could result if the integrity of the closed areas were not adequately maintained. This is especially a concern for those overfished species that constrain the fisheries and for which the OY is fully attained each fishing year. If incursions into the RCAs occur, the estimated total mortality would likely be underestimated and the risk of exceeding the OYs for overfished species increased, with the risk being greatest for species most frequently encountered by the open access gears (bocaccio, lingcod, yelloweye rockfish and canary rockfish), which the closed areas are intended to protect. If the true discard rates are higher than the discard assumptions used to estimate total catch, the OYs could unknowingly be exceeded. If the OYs are substantially exceeded, a stock's ability to rebuild could be impaired. If a rebuilding deficit is created for an overfished stock because the OY is repeatedly unknowingly exceeded, the stock may not be able to recover within the specified rebuilding time. For stocks in the precautionary zone (B25%-B40%), the stock biomass could be further reduced, possibly leading to an overfished status.

Indirect impacts from fishery management actions include changes in fishing practices that affect the biological environment, but are further away in time or location than those occurring as a direct impact. The prohibition of fishing in certain areas or during certain times is used to reduce overall fishing effort and to protect vulnerable populations. When depth-based RCA management was adopted, large areas of the continental shelf were closed to groundfish fishing to protect overfished species. This was expected to result in effort shifts to open areas that are shoreward and seaward of the conservation areas. Overtime, area management involves closing and sometimes opening formerly closed areas. When the size or location of closed areas change, the fishing fleet makes shifts in fishing effort. Knowing when and where fishing is occurring is necessary: for understanding total fishing mortality; evaluating possible impacts on the adult and juvenile groundfish species; assessing impacts with non-groundfish species; and determining if regulatory changes are needed.

Commercial data is primarily in the form of landing receipts or "fish tickets," which are filled out by fish buyers at the time of delivery from a fishermen. Fish tickets are a major source of information on the amount of fish and which provide information on the total weight landed by species or market categories, price per pound, and the condition of the catch. Little specific information on fishing locations is available for the open access fleet. Therefore, little is known about fishing patterns in the West Coast groundfish

open access fishery or how fishing effort shifts from closed areas to the remaining open fishing areas.

Logbooks are a useful tool for verifying landing receipts and for tracking fishing activity. The information recorded in logbooks typically consists of date, boat name and identification number, crew size, catch location, numbers or pounds of fish, gear type used, mesh size, principle target species, associated species taken and landing receipt number. Logbook data is not available from the directed open access fisheries at this time, but are for a few incidental fisheries such as the California gill and trammel nets, traps, and trawl gear fisheries. Without effort data, estimates of catch per unit of effort (CPUE) cannot be made. CPUE is the number or weight of fish caught per unit of effort. Typically, effort evaluated by gear type, gear size, and length of time the gear is used. CPUE can be used a measure of relative abundance for a particular species and can be used to understand abundance changes over time. VMS can aid in estimating CPUE base on fishing location and days at sea.

VMS systems provide accurate harvest location data that could be used to estimate the distribution of fishing effort throughout the WOC. Hourly position reports allow changes in fishing location and intensity to be monitored and assessed, it also allows the number of vessel trips to be verified. Because VMS would be required to be operated continuously after a vessel fishes in the open access fishery in Federal waters, data from additional non-groundfish fisheries off the West Coast may also be available. When VMS position information can be combined with data collected by at-sea observers and used to better understand the impacts of the effort shift on adult and juvenile populations. Overfished species bycatch estimates may be refined with VMS data. The response time for management to address unintended impacts on stocks resulting from effort shifts could be improved with VMS. However, the ability to understand the extent of the impacts resulting from effort shifts on groundfish and other resources would depend on the amount, availability and applicability of other data such as at-sea observer data for the different gears and sectors of the open access fishery.

Comparison of the Alternatives The level of fleet coverage, that portion of the overall open access fishing fleet that would be required to have VMS and provide declaration reports, is the only difference between the alternatives. Alternative 1, Status Quo, would continue the requirement for declaration reports from open access vessels using exempted trawl gear in the RCAs. Under Alternative 1, a higher level of fishing mortality than that being used to estimate total catch, may result if the integrity of closed areas are not maintained and incursions result in higher rates of overfished species than projected. The difficulty in maintaining the integrity of closed areas are greatest under status quo, Alternative 1. Alternative 2 maintains the provisions of status quo, but adds the VMS and declaration reporting requirements for approximately 131 directed groundfish, 31 Pacific halibut, and 2 HMS vessels using longline gear to take or retain, possess or land OA groundfish. Of the alternatives that require VMS, Alternative 2 requires the smallest proportion of the open access fleet (only vessels using longline gear) to have and use VMS. Alternative 3, includes the same vessels as Alternative 2, but adds the VMS and declaration reporting requirements for approximately 128 vessels (30 directed, 45 Dungeness crab, 8 prawn, 8 CA sheephead, and 37 CA halibut vessels) vessels using pot gear to take or retain, possess or land OA groundfish. Therefore, Alternative 3 would provide more data than Alternative 2, however it would provide less data than Alternative 4.

Alternative 4 includes the same vessels as Alternative 3, but adds the VMS and declaration reporting requirement for approximately 18 ridgeback prawn, 6 sea cucumber and 17 California halibut vessels using exempted trawl gear (excludes pink shrimp vessels) to take or retain, possess or land OA groundfish. Alternative 5A includes the same vessels as Alternative 4, but adds the VMS and declaration reporting requirements for approximately 1,032 vessels (738 groundfish, 105 California halibut, and 12 HMS vessels) using line gear to take and retain, possess or land groundfish (excludes salmon troll vessels). Alternative 5B, includes slightly more vessels (1,307 vessels) than 5A (1,189 vessels) because the number of salmon troll vessels that would be added under this alternative is greater than the number of HMS and Dungeness crab vessels that would not be included. Though alternative 5B does not include vessels in fisheries that are projected to have minimal impacts on overfished species (12 HMS line and 2 longline, 45 Dungeness crab pot), it includes the approximately 241 salmon troll vessels that take or retain, possess or land OA groundfish. Alternative 6, which applies to any vessel engaged in commercial fishing to which a RCA restriction applies, includes the largest number of open access vessels. Therefore Alternative 6 would provide the largest amount of data for assessing fishing effort and intensity relative to

fishing fleet activity. Alternative 6B affects approximately 79 fewer vessels annually than does Alternative 6A, all of which use salmon troll gear. Alternative 7, is almost the same as Alternative 6A because it applies to the same vessels except that vessels less than 12 feet in length would be excluded. Most, if not all, vessels under 12 feet in length are unlikely to fish in Federal waters and would therefore not trigger the VMS requirement.

Table 3.3.3.7 shows the projected catch of overfished species impacts for 2005 for the open access directed groundfish incidental fisheries. The proportion of all open access catch projected to be taken by the open access directed fisheries together is 89 percent of the bocaccio; 32 percent of the canary rockfish; 100 percent of the cowcod, pop, and darkblotched rockfish; 97 percent of the lingcod, 43 percent of the yelloweye rockfish, and 0 percent of the widow rockfish. On average between 2000 and 2003, directed longline vessels took approximately 425 mt of groundfish as compared to 157 mt taken by directed vessels using pot gear and 385 mt taken by vessels using line gear. Alternatives 2 and 3 each cover only a portion of the open access directed gears, leaving vessels using line gear to take and retain, possess or land groundfish without VMS coverage. Mobility in the fishery between directed gears could result in fishers shifting gears types to avoid VMS coverage, leaving less data available for estimating total catch and understanding shifts in fishing effort and intensity. Alternative 5A provides coverage to those sectors that catch the largest proportion of groundfish and prevents directed fishers from changing gears to avoid the VMS requirements.

Alternative 6A and 7 provide the most amount of information on fishing locations for the greatest number of participants, followed by 6B and then 5B. The integrity of the RCAs can be best maintained with these alternatives, because they provide coverage for the sectors that are projected to have the greatest impact on overfished species, reduce the ability of fishers to use alternative gears to avoid the VMS requirements, and reduce the incentive for salmon troll vessels to use their gear in a way that would increase groundfish bycatch in the RCAs. In 2005, salmon troll vessels are projected to encounter 1.6 mt or 52 percent of the canary rockfish taken in all open access fisheries. Alternatives 6A, 7 and 5B are similar in that all salmon troll vessels that take and retain, possess or land groundfish would be required to have and use VMS. Because alternative 6B does not require VMS for salmon vessels north of 40° 10' N. lat. that only land yellowtail rockfish, there are slightly fewer benefits than Alternatives 6A, 7 and 5B. Alternative 5B covers fewer vessels than Alternatives 6A or 7 because it excludes all 14 HMS, all 45 Dungeness crab, and 39 exempted trawl vessels (other than pink shrimp) that do not retain groundfish. There is no projected catch of overfished species for the HMS or Dungeness crab vessels, and the projected catch of overfished species by the exempted trawl fisheries is 0.1 mt of bocaccio, 1 percent of the catch in all open access fisheries. However, an unknown amount of small lingcod may be taken in Dungeness crab pots. When handled gently and immediately returned to the sea, lingcod have a strong chance of surviving capture. Therefore, the increased benefits from the availability of data for estimating total catch and monitoring the attainment of overfished species OYs resulting from Alternatives 6A and 7 over alternative 5B is minimal. The benefits of position data availability should be considered in the longer term because there is currently very little data (observer or otherwise) from open access vessels on the amounts and types of bycatch in their fisheries. In the short-term, using effort data obtained from a VMS system to estimate total catch and to monitor the attainment of OYs will be limited until more data becomes available.

4.2.2 Other Resources

Non-groundfish species interactions

The action is to expand the VMS program to monitor the integrity of closed areas in relation to open access fishing activities. None of the management alternatives is expected to have an adverse effect on the incidental mortality levels of CPS, Dungeness crab, Pacific pink shrimp, Pacific halibut, forage fish or miscellaneous species over what has been considered in previous NEPA analyses. Information on where fishing effort is occurring (Alternatives 2- 7) may be positive because it may allow NMFS observer data and data from other sources to be joined together to derive a better understand of potential fishing related impacts on these species.

Salmonids

The action is to expand the VMS program to monitor the integrity of closed areas in relation to open access fishing activities. None of the management alternatives is expected to have an adverse effect on the incidental mortality levels of listed salmon species over what has been considered in previous NEPA analyses. Information on where fishing effort is occurring (Alternatives 3- 7) may have a positive effect because it could be joined with NMFS observer data and data from other sources to derive a better understand of potential fishing related impacts on these species.

Marine Mammals

The action is to expand the VMS program to monitor the integrity of closed areas in relation to open access fishing activities. The West Coast groundfish fisheries are considered Category III fisheries, where the annual mortality and serious injury of a stock by the fishery is less than or equal to 1% of the PBR level (potential biological removal). Information on where fishing effort is occurring (Alternatives 3- 7) may have a positive effect because it could be joined with NMFS observer data and data from other sources to derive a better understand of potential fishing related impacts on these species.

Seabirds

The action is to expand the VMS program to monitor the integrity of closed areas in relation to open access fishing activities. None of the proposed management alternatives are likely to affect the incidental mortality levels of seabirds over what has been considered in previous NEPA analyses. Information on where fishing effort is occurring (Alternatives 3- 7) may have a positive effect because it could be joined with NMFS observer data and data from other sources to derive a better understand of potential fishing related impacts on these species.

Sea Turtles

The action is to expand the VMS program to monitor the integrity of closed areas in relation to open access fishing activities. None of the proposed management alternatives are likely to affect the incidental mortality levels of sea turtles over what has been considered in previous NEPA analyses. Information on where fishing effort is occurring (Alternatives 3- 7) may have a positive effect because it could be joined with NMFS observer data and data from other sources to derive a better understand of potential fishing related impacts on these species.

Endangered Species

Species listed under the ESA are identified in Section 3.2 of this EA. Specific discussion of species listed under the ESA can be found above in the sections titled salmonids, marine mammals, sea birds and sea turtles.

4.3 Socio-economic Impacts

SOCIO-ECONOMIC ENVIRONMENT - COMPARISON OF THE ALTERNATIVES	
FISHERY ENFORCEMENT	Changes in the ability to enforce groundfish fishery regulations as a result of VMS regulations
Alternative 1 Status quo	<u>Direct impact</u> Declaration reports may aid in identifying OA trawl vessels legally fishing in conservation areas.
Alternative 2 Vessels using longline gear	<p><u>Direct impact</u> Accurate and timely position data will allow enforcement resources to be used efficiently to maintain the integrity of RCAs in relation to approximately 165 vessels (131 directed groundfish, 31 Pacific halibut, 1 CA halibut, and 2 HMS longline vessels) that take and retain, possess or land OA groundfish. Deterrent effect will likely reduce the number of area violations by vessels using OA longline gear. Can be used to target at-sea and dockside inspections of OA vessels using longline gear.</p> <p><u>Indirect impact</u> VMS position data from 165 longline vessels: may be used as basis for enforcement actions; may be used to establish probable cause for investigations; may be beneficial to homeland security activities, and; may be used to support enforcement actions for closed area management in the Pacific Halibut directed fishery.</p>
Alternative 3 Vessels using longline or pot gear	<p>In addition to impacts under Alt. 2:</p> <p><u>Direct impact</u> Accurate and timely position data will allow enforcement resources to be used efficiently to maintain the integrity of RCAs in relationship to approximately 128 vessels (30 directed, 45 Dungeness crab, 8 prawn, 8 CA sheephead, and 37 CA halibut vessels) vessels using pot gear that take and retain, possess or land groundfish. Deterrent effect will likely reduce the number of area violations by vessels using OA pot gear. Can be used to target at-sea and dockside inspections of OA vessels using pot gear.</p> <p><u>Indirect impact</u> VMS position data from 165 longline and 128 pot vessels: may be used as basis for enforcement actions; may be used to establish probable cause for investigations; may be beneficial to homeland security activities, and; may be used to support enforcement actions for closed area management in the Dungeness crab and spot prawn pot fisheries.</p>

<p>Alternative 4 Vessels using longline, pot or trawl gear, except: pink shrimp trawl</p>	<p>In addition to impacts under Alt. 2 and 3:</p> <p><u>Direct impact</u> Accurate and timely position data allow enforcement resources to be used efficiently to maintain the integrity of RCAs in relation to approximately 41 vessels (18 ridgeback prawn, 6 sea cucumber and 17 CA halibut vessels) using exempted trawl gear to take and retain, possess or land OA groundfish. Deterrent effect will likely reduce the number of area violations by vessels using exempted trawl gear. Can be used to target at-sea and dockside inspections of OA vessels using exempted trawl gear.</p> <p><u>Indirect impact</u> VMS position data from 165 longline, 128 pot, and 41 trawl (except shrimp trawl) vessels: may be used as basis for enforcement actions; may be used to establish probable cause for investigations; may be beneficial to homeland security activities, and; may be used to support enforcement actions for closed area management in the ridgeback prawn, sea cucumber, and CA halibut fisheries excluding pink shrimp.</p>
<p>Alternative 5A Vessels using longline, pot, trawl or line gear, except: pink shrimp trawl and salmon troll</p>	<p>In addition to impacts under Alt. 2, 3 and 4,</p> <p><u>Direct impact</u> Accurate and timely position data will allow enforcement resources to be used efficiently to maintain the integrity of RCAs in relation to approximately 855 (738 vessels using line gear to target groundfish, 12 HMS, and 105 CA halibut OA vessels) using line gear to take and retain, possess or land groundfish. Deterrent effect will likely reduce the number of area violations by vessels using line gear. Can be used to target at-sea and dockside inspections for OA vessels using line gear.</p> <p><u>Indirect impact</u> VMS position data from 165 longline, 128 pot, 41 trawl (except shrimp trawl), and 855 line (except salmon troll) vessels: may be used as basis for enforcement actions; may be used to establish probable cause for investigations; may be beneficial to homeland security activities; and may be used for closed area management in the line fisheries excluding salmon troll.</p>
<p>Alternative 5B Vessels using longline, pot, trawl or line gear, except: pink shrimp trawl, HMS longline, HMS line, and Dungeness crab pot gear</p>	<p><u>Direct impact</u> Accurate and timely position data will allow enforcement resources to be used efficiently to maintain the integrity of RCAs in relation to vessels using longline gear as identified under Alt. 2 (excluding 2 HMS vessels); 83 vessels using pot gear as identified under Alt.3. (excluding 45 Dungeness crab vessels); 41 vessels using trawl gear as identified under Alt.4, and 1,020 vessels using line gear as identified under Alt. 5A (plus 177 salmon troll vessels coastwide) that take and retain, possess or land OA groundfish. Deterrent effect will likely reduce the number of area violations for incidental OA fisheries including salmon fishery area management measures. Can be used to target at-sea and dockside inspections for OA vessels</p> <p><u>Indirect impact</u> VMS position data from 163 longline (excludes 2 HSM vessels), 83 pot (excludes 45 Dungeness crab vessels), 41 trawl (excludes shrimp trawl), and 1,020 line (includes 177 salmon troll vessels but excludes 12 HMS vessels), may be used as basis for enforcement actions; may be used to establish probable cause for investigations; may be beneficial to homeland security activities; and; may be used for closed area management in the in OA incidental fisheries excluding pink shrimp, HMS longline, HMS line and Dungeness crab pot fisheries, but including salmon troll.</p>

<p>Alternative 6A Vessels with RCA restrictions; except pink shrimp trawl</p>	<p><u>Direct impact</u> Accurate and timely position data availability Will allow enforcement resources to be used efficiently to maintain the integrity of RCAs in relation to all vessels with RCA requirements (excluding pink shrimp vessels). Includes data from: 214 vessels using longline gear as identified under Alt. 2 except that all 49 Pacific halibut vessels are included; 128 vessels using pot gear identified under Alt. 3; all 80 vessels using trawl gear (approximately 18 ridgeback prawn, 14 Sea cucumber, and 34 California halibut vessels); 1,032 vessels using line gear as identified under Alt. 5B (includes salmon troll coastwide) to take and retain, possess or land OA groundfish; 3 vessels using net gear (approximately 3 CPS vessels); and 4 vessels using other OA gears. Deterrent effect will likely reduce the number of area violations for OA incidental fisheries including the salmon fishery. Can be used to target at-sea and dockside inspections for all OA vessels with RCA restrictions, including salmon troll coastwide.</p> <p><u>Indirect impact</u> VMS position data from 214 longline, 128 pot, 80 trawl (excludes shrimp trawl), and 1,032 line (includes 177 salmon troll vessels but excludes 12 HMS vessels) vessels: may be used as basis for enforcement actions; may be used to establish probable cause for investigations; may be beneficial to homeland security activities; and; may be used for closed area management in the in OA incidental fisheries with RCA restrictions, including salmon troll.</p>
<p>Alternative 6B Vessels with RCA restrictions: except salmon troll north that retain only yellowtail rockfish and pink shrimp trawl</p>	<p><u>Direct impact</u> Slightly less accurate and timely position data than identified under Alt. 6A, because salmon troll vessels fishing north of 40°10' N. lat. that only land yellowtail rockfish would be excluded</p> <p><u>Indirect impact</u> VMS position data from 214 longline, 128 pot, 80 trawl (excludes shrimp trawl), and >898 line (excludes salmon troll North though some land groundfish other than yellowtail) vessels: may be used as basis for enforcement actions; may be used to establish probable cause for investigations; may be beneficial to homeland security activities; and; may be used for closed area management in the in OA incidental fisheries with RCA restrictions.</p>
<p>Alternative 7 Vessel >12 ft with RCA restriction; except, pink shrimp trawl</p>	<p><u>Direct impact</u> Slightly less accurate and timely position data than identified under Alt. 6A because approximately 22 vessels (6 longline, 2 pot, and 14 line gear vessels <12 feet in length) fewer vessels (1,383 vessels) than those identified under Alt. 6A are excluded. Few if any of these vessels fish in Federal waters.</p> <p><u>Indirect impact</u> VMS position data from 214 longline, 120 pot, 80 trawl (excludes shrimp trawl), and 1,018 line (includes 177salmon troll vessels) vessels: may be used as basis for enforcement actions; may be used to establish probable cause for investigations; may be beneficial to homeland security activities; and; may be used for closed area management in the in OA incidental fisheries with RCA restrictions.</p>

4.3 Socio-economic Impacts

This section of the EA looks at impacts, positive and negative, on the socio-economic environment. Basic information regarding the people and the fisheries that are projected to be affected by the management alternatives was presented in Section 3 of this document. The following section differs in that it discusses what is projected to happen to the affected people, what social changes are expected to occur, and, how changes are expected to affect fishing communities. Changes in harvest availability to the different sectors of the fishery, changes in income and revenue, costs to participants; the effectiveness and costs of enforcing the management measures, effects on fishing communities, and how the actions affect safety of human life at sea will be examined in the following impact analysis.

Circumstances vary substantially between open access target fisheries and gear groups. In addition, little social and economic information is available on the various open access fisheries and the participants. Therefore, it is not possible to produce a detailed cost benefit study for VMS implementation in the open access fishery. The following analysis takes a general approach by examining; the costs and benefits to the open access fishery participants that are likely to result from the alternative VMS actions relative to economic status of the fishery participants; the ecological health of the resources; the geographical nature of the fishery; the type of fishing conducted (directed or incidental); the type of gear used; the quantity and size of vessels; fisheries enforcement; the management regime; and safety of human life at-sea.

4.3.1 Fishery Enforcement

Direct impacts on enforcement from fishery management actions includes; changes in the availability of information that directly aids enforcement officers in identifying violations; changes in information that helps enforcement officers to separate those individuals who are complying with the regulatory requirements from those who are not; and changes that alter the level of compliance by fishers.

At the present time there are 8 NMFS agents covering the Pacific Coast groundfish fishery. These officers and agents are responsible for enforcing all conservation regulations in the Pacific Coast groundfish fishery (e.g. size limits, trip limits, gear restrictions, etc). They are also responsible for monitoring all other fisheries in areas that are regulated by NMFS. In addition, there are state enforcement officers in California, Oregon, and for Washington that cover the groundfish fishery as well as other state fisheries. At this time, state enforcement resources (personnel and budgets) are extremely limited.

Implementing depth-based management measures over large geographic areas marked the transition to a much greater dependence upon at-sea enforcement. Maintaining the integrity of the conservation areas is largely dependent upon the ability to enforce such management measures. In the past, fishery management measures, such as landing limits, size limits, and species landing restrictions were largely enforced by the relatively easy and inexpensive method of dockside enforcement. Enforcing depth-based closed areas represents a more costly and difficult challenge, because effective enforcement requires frequent patrolling of the shoreward and seaward boundaries of the conservation areas. The single biggest factor that allows some operators to avoid compliance with closed area management measures, is that much of the fishing activity takes place out of view of anyone other than the vessel crew. Because VMS provides reliable and accurate information on the location of vessels and can be used to identify where fishing activity takes place with a reasonable degree of accuracy, VMS is a practical means of monitoring vessels activity in relation to area restrictions.

VMS will potentially show enforcement officers breaches of time/area restrictions. VMS can show officers those vessels that are following the rules as well those which are not. In doing so, it makes the activities of investigating officers much more cost effective because less time will be spent pursuing false trails and fishing operators who are following the rules.

Patrols by both sea and air will still be necessary for fully effective monitoring and management even with

an effective VMS program. A patrolling aircraft or vessel can spend considerable time and fuel investigating legitimate fishing vessels that will appear on their radar. Providing access to VMS data for patrol craft can minimize the effort spent confirming radar contacts of vessels fishing legitimately and thereby increase the efficiency of surveillance patrols. Further, identifying legitimate fishing vessels to patrol craft via VMS may help them choose particular contacts for more productive investigation when several contacts are made by radar.

In some cases, enforcement officers will have particular vessels or particular situations for which they may wish to conduct an at-sea or landing inspection without warning to the vessel operator. Without VMS, it is extremely difficult to determine where a vessel is located at-sea or where and at what time it might enter port. VMS provides a reliable means of achieving this with potential savings in time and other expense in moving officers and aircraft or patrol vessels to the correct location at the appropriate time.

Vessel position data and fishery declarations, which are otherwise not available from this sector of the groundfish fleet, would be used to identify vessels fishing in the closed areas and to target landing and at-sea inspections. Accurate and timely position data is necessary to allow enforcement resources to be used efficiently to maintain the integrity of RCAs. In addition, the deterrent effect of VMS will likely reduce the number of closed area violations.

One of the major benefits of VMS is its deterrent effect. If fishing vessel operators know that they are being monitored and that a credible enforcement action will result from illegal activity, then the likelihood of that illegal activity occurring is significantly diminished. In this context, VMS is a preventive measure rather than a cure. To be effective as a deterrent, the VMS program must maintain its credibility in the eyes of the vessel operators and its use must be kept at the forefront of their minds if the deterrent effect is to be maintained. The credibility of the system can only be maintained if all operational issues are followed up, particularly those that affect a vessel, such as failure of the vessel to report on schedule. The presence of the VMS equipment on the vessel will be a reminder to operators of its monitoring operation.

The open access fleet consists of many smaller vessels with many being under 40 feet in length (Table 3.3.3.4). Smaller vessels are generally not able to withstand rough seas as well as larger vessels. Because much of the open access groundfish fleet is comprised of small vessels, much of the effort is thought to occur in waters near the seaward boundary of the nontrawl RCAs. It is presumed that fishers with smaller vessels (<40 ft) fishing seaward of the RCAs are more likely to encroach on the seaward boundary of the RCAs, because of the desire to fish nearer to shore for safety and to reduce fuel consumption and general wear and tear on the vessel. Table 4.3.1.1 shows the proportion of open access vessels by target fishery that are less than 40 feet in length. From this table, it can be seen that a large portion of the vessels that participate in the directed fisheries and who have a greater than 5 percent dependency on groundfish are small vessels. Many of the nearshore vessels: may fish exclusively in state waters.

Table 4.3.1.1. Percent of open access vessels less than 40 feet (ft) in length, November 2000 through October 2001.

More than 5% of annual revenue from groundfish	
Target species	Vessel less than 40 ft in length
Sablefish	72%
Nearshore Rockfish	91%
Shelf Rockfish	90%
Slope rockfish	82%
Less than 5% of annual revenue from groundfish	
Sablefish	32%
Nearshore Rockfish	78%
Shelf Rockfish	60%
Slope rockfish	51%
Halibut	65%
Shrimp/prawn	21%
Dungeness crab	56%
Salmon	72%
HMS	31%
CPS	29%

Source: EIS, for the Proposed Acceptable Biological Catch and Optimum Yield Specifications and Management 2005-2006

Indirect impacts on enforcement from fishery management actions include change in the availability of information used for conducting further investigations or used with other sources of information to better understand compliance behavior.

VMS positions can be efficient in identifying possible illegal fishing activity and can provide a basis for further investigation by one or more of the traditional enforcement measures. VMS positions in themselves can also be used as the basis for an enforcement action. The positions may also be used to establish "probable cause" before pursuing some types of investigations, for example, in obtaining a search warrant. While not being evidence of sufficient significance by itself, VMS position data could provide sufficient evidence to lead an officer to believe that an illegal act had occurred that warrants further investigation.

Expansion of the VMS program clearly supports an enforcement mission and may also have indirect benefits to Homeland Security activities. Increased border security correlates directly with increased risk within our EEZ and along our coast line for illegal entry. In March 2002, the "Citizen Corps" initiative was announced, which includes the expansion of "Neighborhood Watch" to include the participation of ordinary citizens in detecting and preventing terrorism. Under "Coastal Watch", the Coast Guard requests fishers to report suspicious activities for investigation and intelligence purposes. Critical decisions on the deployment of enforcement assets could be based on VMS position reports. Satellite communication

could also update essential information during a law enforcement response. Investigative methodologies could be enhanced via surveillance data maintained within VMS, such as easily identifying potential witnesses to incidents, locating U.S. vessels in areas of suspicious activity for assistance and support and increased intelligence gathering capabilities. By expanding the number of U.S. fishing vessels operating with VMS, NOAA and fishers are expanding the capability to detect and prevent terrorism and other criminal activity in the EEZ. VMS also supports the Coast Guard's "Coastal Watch" initiative, which was developed in response to their homeland defense activities.

Comparison of the Alternatives

VMS would not replace or eliminate traditional enforcement measures such as aerial surveillance, boarding at-sea via patrol boats, landing inspections and documentary investigation. Traditional enforcement measures may need to be activated in response to information received via the VMS. Because the level of VMS coverage in the open access fleet varies between the alternatives, the degree to which a VMS program would aid enforcement in identifying vessels that are legally operating in the conservation areas from those that are fishing illegally or benefit enforcement in conducting further investigations would depend on the proportion of vessels required to carry and use VMS as well as the amount of time the vessels engage in fisheries in areas where the RCA restrictions or other area restrictions (such as OA incidental target fisheries or habitat protection area) apply.

Alternative 1 requires exempted trawl vessels to provide declaration reports prior to leaving port on a trip in which fishing occurs in an RCA. The greatest difficulty in maintaining the integrity of closed areas and the least efficient use of limited state and federal enforcement resources occurs under status quo, Alternative 1. Alternative 2 maintains the provisions of status quo, but adds the VMS and declaration reporting requirements for approximately 165 longline vessels (131 directed groundfish, 31 Pacific halibut, 1 California halibut, and 2 HMS vessels) using longline gear to take and retain, possess or land groundfish. Of the alternatives that require VMS, Alternative 2 requires the smallest proportion of the open access fleet (only vessels using longline gear) to have and use VMS. In recent years, the directed halibut fishery south of Point Chehalis has occurred in 3-6 one day 10 hour long openings per year. Given the duration of the directed halibut fishery, requiring the Pacific halibut vessels that retain groundfish to have VMS would provide minimal additional position data for enforcement purposes. Some fishers, those who do not otherwise fish in the groundfish fishery and land less than \$1,000 in incidentally caught groundfish caught during the primary halibut season, would likely choose to discard incidentally caught groundfish, rather than incur the cost of VMS and the burden of installation. Between 2000 and 2003, an annual average of only 2 HMS longline vessels landed incidental groundfish. HMS longline gear is currently not permitted in the EEZ off the West Coast; therefore, no additional HMS vessels over those affected by status quo would be included as a result of Alternative 2. Because the fishery occurs outside the RCA, HMS longline vessels would transit through the RCA and therefore pose a minimal risk to the integrity of the RCAs. Monitoring HMS longline vessels in relation to the RCA requirements is a lower priority to enforcement.

Alternative 3 includes the same vessels as Alternative 2, but adds the VMS and declaration reporting requirements for vessels using pot gear that take and retain, possess or land OA groundfish. Approximately 293 vessels, those identified under Alternative 2 plus approximately 128 vessels using pot gear (30 directed, 45 Dungeness crab, 8 prawn, 8 CA sheephead, and 37 CA halibut) would be included under Alternative 3. A small proportion of the Dungeness crab vessels, less than 10 percent (45 vessels per year), actually land the groundfish incidentally taken during the Dungeness crab season. The Dungeness crab fishery primarily occurs in depths between 5-100 fathoms of water. When the nontrawl RCAs extend from shore to 100 fm, as they are proposed for 2005 in the area North of 46°16' N. lat, the Oregon-Washington border, any groundfish retained by a pot vessel fishing for Dungeness crab would be required to have been caught the groundfish seaward of the 100 fm line. In addition, regulations prohibit vessels from fishing both shoreward and seaward of the RCA on the same trip. VMS could be used to determine if all fishing on a trip in which groundfish was retained occurred seaward of the RCA, or if fishing actually occurred within the RCA. Because few if any vessels target Dungeness crab offshore of 100 fm, the proposed action is expected to affect few if any Dungeness crab vessels that only fish in

waters off the state of Washington. For the coast south of the Oregon-Washington border, the proposed open access nontrawl RCA areas are defined by a shoreward fm curve that is seaward of areas where Dungeness crab fishing occurs. VMS would aid enforcement in maintaining the integrity of the shoreward boundary.

The California nearshore fisheries includes vessels that use traps or pot gear to harvest species managed under the groundfish plan as well as non-groundfish such as California Sheephead and Scorpionfish. Of the 37 vessels per year that landed sheephead, all 37 vessels retained open access groundfish. Because the nearshore fishery primarily occurs in state waters, it is likely that many of the vessel that only fish in state waters and would not be subject to the VMS requirements proposed under Alternatives 3-7; therefore, no VMS position data would be available to enforcement from these vessels. The open access nontrawl RCA between 40°10 and 34°27 N. lat. has a seaward boundary of 150 fm year round and a shoreward boundary of 20 fm during the summer (May-August) and 30 fm for the remainder of the year. Similarly, the proposed open access nontrawl RCA south of 34°27 N. lat. has a seaward boundary of 150 fm year round and a shoreward boundary of 60 fm throughout the year. When the shoreward boundary is deeper than 20 fm, it is likely that some vessels will enter the EEZ to fish and be required to carry VMS for the remainder of the year. During the period when the fishery is constrained to 20 fm, there may be a greater incentive for some fishers to harvest nearshore species in deeper water. VMS would be an effective deterrent to illegal fishing in the RCA's. Traditional enforcement measures will likely continue to be the dominant enforcement tool used for monitoring the integrity of the RCA's shoreward line, particularly north of 34°27 N. lat. In the area south of 34°27 N. lat, there may be more incentive for vessels to fish in the EEZ because the shoreward boundary of the RCA extends further into the EEZ.

Alternative 4 includes the same vessels as Alternative 3, but adds the VMS and declaration reporting requirement for approximately 334 vessels, those identified under Alternatives 2 and 4 plus 18 ridgeback prawn, 6 sea cucumber and 17 California halibut vessels using exempted trawl gear (excludes pink shrimp vessels). During the period when the fishery south of 40°10 N. lat. is constrained to 75 fm there may be a greater incentive for some fishers to harvest in deeper water. Having VMS would be expected to be an effective deterrent and aid enforcement in maintaining the integrity of the shoreward line of the RCAs.

Alternative 5A includes the same vessels as Alternative 4, but adds the VMS and declaration reporting requirements for approximately 1,189 vessels, those identified under Alternatives 2,3,and 4 plus 738 directed groundfish, 105 California halibut, and 12 HMS vessels using line gear to take and retain, possess or land groundfish(excludes salmon troll vessels). During the period when the fishery is constrained to 20 fm there may be a greater incentive for some fishers to harvest in deeper water. VMS would be an effective deterrent to illegal fishing in the RCAs. As stated above, traditional enforcement measures will likely continue to be the dominant enforcement tool used for monitoring the integrity of the RCAs shoreward line, particularly north of 34°27 N. lat. In the area south of 34°27 N. lat, there may be more incentive for vessels to fish in the EEZ because the shoreward boundary of the RCA extends further into the EEZ.

The inclusion of line vessels more than triples the number of vessels that would be required to have and use VMS. Though this is a large increase in vessels, the system developed for limited entry vessels already has the capacity to process these position data. Including most vessels in the VMS program could be expected to result in time savings for officers in the field and allow them time to conduct more focused investigations than would otherwise possible. Alternative 5B, includes 1,307 vessels, which is slightly more vessels than 5A because 177 salmon troll vessels are added under this alternative, though 14 HMS and 45 Dungeness crab vessels would not be included.

In general, VMS is an efficient enforcement tool for monitoring if a fishing trip occurred entirely inside or outside and RCA. Using VMS in this way would allow enforcement to determine which cumulative trip limits applied to a particular vessel. However, for salmon troll vessels north of 40°10 N. lat., there has been an allowance to retain yellowtail rockfish only on a trip that occurred both inside and outside and

RCA. VMS would be most suited for monitoring cumulative trip limits of groundfish species other than yellowtail rockfish taken and retained by salmon troll vessels north of 40°10 N. lat.

Alternative 6, which applies to any vessel engaged in commercial fishing to which a RCA restriction applies, includes the largest number of open access vessels, 1,396 vessels. Therefore, Alternative 6 would provide the largest amount of data for enforcement purposes. Alternative 6B, affects approximately 43 fewer vessels annually than does Alternative 6A, 1,353 vessels. Alternative 7, is essentially the same as Alternative 6A, 1,374 vessels, because it applies to the same vessels except that vessels less than 12 feet in length would be excluded. Most if not all of the 22 vessels that are under 12 feet in length are unlikely to fish in Federal waters and would therefore not trigger the VMS requirement.

In summary, the availability of information needed by enforcement to efficiently maintain the integrity of conservation areas would be greatest under Alternatives 6A and 7, and would provide the most amount of information on fishing locations for the greatest number participants, followed by 6B and then 5B. Alternatives 5B-7 will allow enforcement resources to be used efficiently to maintain the integrity of RCAs and may also be available to support salmon fishery area management measures. Under Alternatives 2-7 data position data may also be available to support enforcement actions for time area management of various state fisheries.

SOCIO-ECONOMIC ENVIRONMENT - COMPARISON OF THE ALTERNATIVES	
FISHERY MANAGEMENT	Changes to how the fisheries are managed as a result of the collection of VMS position data
Alternative 1 Status quo	<p><u>Direct impact</u> The use of area management regulations may need to be simplified, or buffers around closed areas added so the integrity of closed areas can be maintained. The use of management regulations that limit the duration or number of trips are less likely to be considered without adequate monitoring mechanisms.</p> <p><u>Indirect impact</u> Little position and effort data available from OA fisheries. Without adequate position and effort data, the use of observer and survey data for refining OA fishery total catch estimates for inseason management is very limited. Non-groundfish fisheries continue to occur in RCA, but incidental groundfish landings other than yellowtail rockfish north of 40°10' N. lat. cannot be retained or landed. Similarly, if a vessel fishes in the RCA on a trip, groundfish cannot be retained from areas outside the RCAs on the same trip. Some vessels: may misreport catch for areas other than where it was caught.</p>
Alternative 2 Vessels using longline gear	<p><u>Direct impact</u> VMS would allow for greater flexibility in the use of management rules with geographical areas restrictions including: seasonal access, closed areas, depth restrictions, limited by duration, or number of trips for approximately 165 vessels (131 directed groundfish, 31 Pacific halibut, 1 CA halibut, and 2 HMS OA vessels) using longline gear to take and retain, possess or land OA groundfish. VMS is likely to deter the misreporting of catch taken with longline gear for areas other than where fish were caught and thereby helping to maintain the integrity of data used for groundfish management decisions and possibly Pacific halibut management.</p> <p><u>Indirect impact</u> Increased OA longline position and effort data could be used along with declaration reports, observer data, survey information, and fish ticket data to better refine estimates of total fishing mortality and improve the ability to manage the fishery inseason to stay within the harvest guidelines and OYs. VMS may result in increased bycatch and lost landings data if incidental groundfish catch by Pacific halibut vessels is not retained. The added cost of VMS may result in Pacific halibut vessels choosing to not retain groundfish to avoid VMS requirements, particular 31 vessels with less than \$1,000 of annual revenue from groundfish. HMS longline gear is currently prohibited in EEZ.</p>
Alternative 3 Vessels using longline or pot gear	<p>In addition to impacts identified under Alt. 2:</p> <p><u>Direct impact</u> VMS would allow for greater flexibility in the use of management rules for approximately 128 vessels (30 directed, 45 Dungeness crab, 8 prawn, 8 CA sheephead, and 37 CA halibut vessels) using pot gear that take and retain, possess or land OA groundfish. Likely to deter misreporting of catch taken with pot and longline gear for areas other than where fish were caught and thereby help to maintain the integrity of data used for groundfish management decisions and possibly Dungeness crab, prawn, and CA nearshore species management.</p> <p><u>Indirect impact</u> Increased longline and pot position and effort data could be used along with declaration reports, observer data, survey information, and fish ticket data to better refine estimates of total fishing mortality and improve the ability to manage the fishery inseason to stay within the harvest guidelines and OYs. The added cost of VMS may result in vessels choosing to not retain groundfish to avoid VMS requirements, particular those vessels in incidental fisheries that are averaging less than \$1,000 of annual revenue from groundfish.</p>

<p>Alternative 4 Vessels using longline, pot or trawl gear, except pink shrimp trawl</p>	<p>In addition to impacts identified under Alt. 2 and 3:</p> <p><u>Direct impact</u> VMS would allow for greater flexibility in the use of management rules for approximately 18 ridgeback prawn, 6 sea cucumber and 17 CA halibut OA vessels using exempted trawl gear take and retain, possess or land OA groundfish. Likely to deter misreporting of catch taken with pot and longline gear for areas other than where fish were caught and thereby help to maintain the integrity of data used for groundfish management decisions and possibly prawn, sea cucumber, and CA halibut management.</p> <p><u>Indirect impact</u> Increased longline, pot and exempted trawl position and effort data could be used along with declaration reports, observer data, survey information, and fish ticket data to better refine estimates of total fishing mortality and improve the ability to manage the fishery inseason to stay within the harvest guidelines and OYs. The added cost of VMS may result in trawl vessels choosing to not retain groundfish to avoid VMS requirements, particular those vessels in incidental fisheries that are averaging less than \$1,000 of annual revenue from groundfish.</p>
<p>Alternative 5A Vessels using longline, pot, trawl or line gear, except: pink shrimp trawl and salmon troll.</p>	<p>In addition to impacts identified under Alt. 2, 3, and 4:</p> <p><u>Direct impact</u> VMS would allow for greater flexibility in the use of management rules for approximately 855 vessels (738 groundfish, 105 CA halibut , and 12 HMS vessels) using line gear to take and retain, possess or land OA groundfish. Likely to deter misreporting of catch taken with pot and longline gear for areas other than where fish were caught and thereby helping to maintain the integrity of data used for groundfish management decisions and possibly HMS and CA halibut management.</p> <p><u>Indirect impact</u> Increased longline, pot and exempted trawl position and effort data could be used along with declaration reports, observer data, survey information, and fish ticket data to better refine estimates of total fishing mortality and improve the ability to manage the fishery inseason to stay within the harvest guidelines and OYs. The added cost of VMS may result in line vessels choosing to not retain groundfish to avoid VMS requirements, particular those vessels in incidental fisheries that are averaging less than \$1,000 of annual revenue from groundfish.</p>
<p>Alternative 5B Vessels using longline, pot, trawl or line gear, except: pink shrimp trawl, HMS longline & line, and Dungeness crab pot gear.</p>	<p><u>Direct impact</u> VMS would allow for greater flexibility in the use of management rules as identified under Alt. 2, 3 and 4, except Dungeness crab and HMS vessels would not be included, but approximately 177 salmon troll vessels that take and retain, possess or land OA groundfish would be included. VMS is likely to deter misreporting of groundfish catch for areas other than where fish were caught by vessels identified under Alt. 2, 3, 4, and 5A (excluding Dungeness crab pot gear, HMS line gear, HMS longline gear) plus salmon troll vessels, and thereby will help to maintain the integrity of data used for groundfish management and possibly salmon management.</p> <p><u>Indirect impact</u> VMS data from vessels identified under Alt. 2, 3, 4, and 5A (excluding Dungeness crab and HMS vessels) plus approximately 241 salmon troll vessels could be used along with declaration reports, observer data, survey information, and fish ticket data to better refine estimates of total fishing mortality and improve the ability to manage the fishery inseason to stay within the harvest guidelines and OYs. The added cost of VMS may result in vessels choosing to not retain groundfish to avoid VMS requirements, particular vessels in incidental fisheries that are averaging less than \$1,000 of annual revenue from groundfish.</p>

<p>Alternative 6A Vessels with RCA restrictions</p>	<p><u>Direct impact</u> VMS would allow for greater flexibility in the use of management rules for: 214 vessels using longline gear as identified under Alt. 2 except that all 49 Pacific halibut vessels are included; 128 vessels using pot gear identified under Alt. 3; all vessels using trawl gear (approximately 32 ridgeback prawn, 14 Sea cucumber, and 34 California halibut vessels); 1,032 vessels using line gear as identified under Alt. 5B (includes salmon troll coastwide) to take and retain, possess or land OA groundfish; 3 vessels using net gear (approximately 3 CPS vessels); and 4 vessels using other OA gears. Likely to deter misreporting of groundfish catch for areas other than where fish were caught and thereby helping to maintain the integrity of data used for groundfish management and possibly salmon management.</p> <p><u>Indirect impact</u> Increased position and effort data from: vessels using longline gear as identified under Alt. 2 except that all 49 Pacific halibut vessels are included; 128 vessels using pot gear identified under Alt. 3; all vessels using trawl gear (approximately 32 ridgeback prawn, 14 Sea cucumber, and 34 California halibut vessels); 1,032 vessels using line gear as identified under Alt. 5B (includes salmon troll coastwide) to take and retain, possess or land OA groundfish; vessels using net gear (approximately 3 CPS vessels); and 4 vessels using other OA gears. Data could be used along with declaration reports, observer data, survey information, and fish ticket data to better refine estimates of total fishing mortality and improve the ability to manage the fishery inseason to stay within the harvest guidelines and OYs. The added cost of VMS may result in vessels choosing to not retain groundfish to avoid VMS requirements, particular vessels in incidental fisheries that are averaging less than \$1,000 of annual revenue from groundfish.</p>
<p>Alternative 6B Vessels with RCA restrictions except salmon troll north that retain only yellowtail rockfish</p>	<p><u>Direct impact</u> VMS would allow for greater flexibility in the use of management rules for slightly fewer vessels than those identified under Alt. 6A, because salmon troll vessels fishing north of 40°10' N. lat. that only land yellowtail rockfish would be excluded. Deterrent effect for misreporting of catch for areas other than where fish were caught is slightly less than Alt.6A.</p> <p><u>Indirect impact</u> VMS would decrease position and effort data for slightly fewer vessels than those identified under Alt. 6A, because salmon troll vessels fishing north of 40°10' N. lat. that only land yellowtail rockfish would be excluded. Fewer salmon vessels would be expected to discard groundfish to avoid VMS requirements.</p>
<p>Alternative 7 Vessel >12 ft with RCA restrictions</p>	<p><u>Direct impact</u> VMS would allow for greater flexibility in the use of management rules for slightly less vessels than those identified under Alt. 6A. Approximately 22 vessels under 12 ft in length would be excluded. Deterrent effect for misreporting of catch for areas other than where fish were caught is slightly less than Alt. 6A. However, few if any of these vessels are expected to fish in Federal waters.</p> <p><u>Indirect impact</u> Similar to those impacts identified under Alt.6A. because 22 vessels under 12 ft in length would be excluded. Few if any of these vessels are expected to fish in Federal waters.</p>

4.3.2 Fishery Management

Direct impacts on fishery management actions includes changes in the availability of information that directly aids fishery managers in administering time/areas restrictions. These restrictions typically include: seasonal access restrictions to a resources, closed area management, depth restrictions, trip duration restrictions, or limits on the number trips. Deterring misreporting of catch for areas other than where fish were caught is also a direct effect on management because accurate information is needed to maintain the integrity of data used for management decisions made during the fishing season.

When there is a high degree of error or potential non-compliance associated with time/area restrictions, meeting management objectives is more difficult. Therefore, managers must be more conservative in order to meet harvest objectives. Having greater flexibility in the use of management rules with time/areas restrictions is advantageous because it allows managers to deal with harvest issues on a refined level, rather than having to be more conservative to buffer for greater error or potential non-compliance. If problems can be identified early, prompt action can be taken to minimize the impacts on the groundfish fleet or the stock. For example, if fishing effort by some or all sectors of the fishery shifts to areas where data indicates that higher bycatch are likely, preseason projections may be inaccurate. If managers can identify such shifts, they may be able to restrict access to areas of high bycatch to keep overall catch within the harvest specifications.

Some mis-reporting and transcription errors can be addressed using VMS. Misreporting of catch directly undermines efforts to manage fisheries properly and impedes progress toward the goal of sustainable fisheries. Deterring the misreporting of catch taken in areas other than where fish were caught helps to maintain the integrity of data used for management decisions.

When linked with a personal computer, lap top or data terminal, VMS systems with 2-way communications (currently 2-way systems are not required in the groundfish fishery) can provide commercial fishers with the opportunity to report catch information electronically to home offices and fisheries managers. Under VMS, detailed commercial catch data and details of specific areas fished (provided by GPS) could be recorded using on-board computers or a mobile terminal and transmitted directly to a central database. The central database could be programmed to analyze the aggregate data from all vessels as it is received, thereby enabling the performance of the fishery to be monitored in 'real time', allowing more effective and timely fisheries management strategies to be developed. Satellite technology has the potential to quickly transform fisheries management from being reactive, based on limited historical data, to a pro-active process involving decisions based on analysis of real time data about the fishery. Fisheries management strategies are underpinned by catch data supplied by fishers and processors. There is usually a substantial delay before fish tickets, the primary information source to assess fishing activities, is received, analyzed and available in a format suitable for use by fisheries managers.

Indirect impacts on fishery management include change in the availability of information used as a basis for making management recommendations and decision that are more distant in time. VMS position data along with data from other sources may be combined and analyzed to better understand the effectiveness of management actions at achieving the intended results and to make recommend for future measures.

Typically, fisheries management rules are designed to achieve sustainable and profitable fishing through a variety of methods. This usually includes some form of licensed vessel access to particular areas, restrictions on gear types, restrictions on fishing time, quotas on the amounts of particular species which may be caught, etc. Fishery management is most effective when catch in the fishery can be quantified and measured. This means measuring the quantity of fish being caught and identifying the place where the fish are caught. VMS does not provide information on the quantity of fish being caught nor does the system being proposed for the open access groundfish fishery require that the VMS system be used as a means of communicating catch information, though some VMS transceivers can be used as a communication tool. VMS does, however, clearly make it possible to improve the availability of data in relation to the location of fish catch.

Data gathered from commercial fisheries are needed to assess the effectiveness of management regulations. Logbooks, landing surveys, VMS, and observers are different fishery dependent methods used to collect data on harvest location. Interception at sea by an independent vessel can also be used to

obtain harvest location data. The cost of collecting data directly from fishery participants tends to be lower than collecting the data from an independent source. This is because it is a byproduct of the fishing activity. Some forms of fishery dependent data, particularly unverified logbooks and landing surveys, are more subject to bias than other methods and their collection and use in measuring the effectiveness of management measures requires added care such as verification procedures. Alternatives 2 -7 provide for expanded VMS coverage that has the potential of producing reliable and useful position data for assessing the effectiveness of open access fishery management measures relating to time and area management. At a minimum, the data can be used to efficiently monitor fishing location and to verify times and dates for the open access fleet where logbook data is generally not available. It can also be used to provide information on days at sea and effort by area. When combined with observer data, broader interpretations of position data may be possible.

Understanding where fishing effort is occurring in real time may provide insight into understanding information reported on fish tickets and be useful in understanding how management measures affect fishing behavior. Knowing where a vessel is fishing as compared to where the catch is being landed, may be valuable in assessing the effectiveness of trip limit management lines and differential trip limits. The data provided by VMS are cost effective and accurate over large geographical areas. Accurate and timely data on fishing locations are necessary to assess effectiveness of closed areas and the overall results of the management scheme.

VMS data can be combined with observer data to assess the effectiveness of management measures. However, the value in combining observer data with VMS data for non-enforcement purposes depends on the amount of observer data on catch and discards that is available from the different gears and fishing strategies. At this time, there is little data on the open access fisheries. In the long term, when observer data becomes available, VMS may provide information that results in a better understanding of fishery location and a spacial understanding of fish stocks.

As noted above, electronic logbooks have been developed that can be integrated with VMS transceivers with two-way communications. If electronic logbooks could be combined with a VMS system for all or a portion of the open access fisheries, there would be several indirect benefits to management and to the quality and availability of information on which management decisions are based. First, there is only a single data entry function and this can be performed very soon after each fishing operation is completed (at-sea or shoreside depending on the individual fishery). Paper logbooks must first be filled out by the fisher and then submitted to a government agency for data entry before logbook data can be used. In performing the data entry function, the fisher will interact directly with the editing checks for the data and a more complete and accurate data record can be required before the data record is accepted by the computer system. Having electronically recorded the data, the operator may produce a hard copy and also transmit the data to the fisheries agency or other recipients such as the fishing company, allowing that data to be easily incorporated into appropriate databases. As a result, improvements in timeliness, accuracy and reduced costs are possible. When the data is in the database and available to be analyzed, it can be used to improve the ability of managers to measure the effectiveness and economic impacts of management measures.

Comparison of the Alternatives

Alternative 1 requires exempted trawl vessels to provide declaration reports prior to leaving port on a trip in which fishing occurs in an RCA. Under Alternative 1, the least amount of data would be available to support a flexible management regime or to deter misreporting of catch. However, this is the alternative that is most likely to result in incidentally caught groundfish being retained because the added cost for retaining incidentally caught groundfish is minimal and may be used to offset the cost of the fishing trip for the target species. Alternative 2 maintains the provisions of status quo, but adds the VMS and declaration reporting requirements for approximately 131 directed groundfish, 31 Pacific halibut, 1 California halibut, and 2 HMS vessels using longline gear to take and retain, possess or land OA groundfish. Of the alternatives that require VMS, Alternative 2 requires the smallest proportion of the open access fleet (only 165 vessels using longline gear) to have and use VMS. On average between 2000 and 2003, the longline gears landed the greatest amount of groundfish by weight of any of the OA sectors.

Alternative 3, includes the same vessels as Alternative 2, but adds the VMS and declaration reporting requirements for approximately 128 vessels (30 directed, 45 Dungeness crab, 8 prawn, 8 CA sheephead,

and 37 CA halibut vessels) using pot gear to take and retain, possess or land OA groundfish. Therefore, Alternative 3 would provide more data than Alternative 2; however, it would provide less data than Alternative 4. Alternative 4 includes the same vessels as Alternative 3, but adds the VMS and declaration reporting requirement for approximately 18 ridgeback prawn, 6 sea cucumber and 17 California halibut vessels using exempted trawl gear (excludes pink shrimp vessels) to take and retain, possess or land OA groundfish. Alternative 5A includes the same vessels as Alternative 4, but adds the VMS and declaration reporting requirements for approximately 738 vessels groundfish, 105 California halibut, and 12 HMS vessels using line gear to take and retain, possess or land groundfish(excludes salmon troll vessels). Alternative 5B, includes slightly more vessels than 5A because the number of salmon troll vessels that would be added under this alternative is greater than the number of HMS and Dungeness crab vessels that would not be included. Though Alternative 5B does not include vessels in fisheries that are projected to have minimal impacts on overfished species (12 HMS line and 2 longline, 45 Dungeness crab pot), it includes approximately 177 salmon troll vessels.

Alternative 6A, which applies to any vessel engaged in commercial fishing to which a RCA restriction applies, includes the largest number of open access vessels. Therefore Alternative 6 would provide the most VMS data and would support the most flexible management regime and would likely deter misreporting of catch location. The added cost of VMS is likely to result in most fishers not retaining groundfish so as to avoid the VMS requirements. Table 4.3.2.1 shows the proportion of vessels by gear group that averaged less than \$1,000 in annual exvessel revenue from groundfish. These are fishers that could be expected to avoid the VMS requirement. However, it must be noted that these values are based on averages. For any given vessel, the catch may be higher or lower than the average. Annual exvessel revenue for all species revenue for many of the incidental fisheries was substantially higher for most fisheries (Table 4.3.3.5). Some fishers making less than \$1,000 may speculate that others will leave the fishery and trip limits will increase, so they will pay for VMS and continue to retain groundfish. It must be noted that some unknown number of fishers with annual exvessel revenue of groundfish that is greater than \$1,000 will also likely drop out of the fishery, much of the decision will be based on their expected catch of groundfish and the added cost of catching that groundfish. Alternative 6B, affects approximately <134 vessels annually than does Alternative 6A, all of whom use salmon troll gear north of 40°10' N. lat. and retain only yelloweye rockfish. Alternative 7, is almost the same as Alternative 6A because it applies to the same vessels except that vessels less than 12 feet in length would be excluded. Most if not all vessels under 12 feet in length are not expected to fish in Federal waters and would therefore not trigger the VMS requirement.

Table 4.3.2.1 Open Access incidental fisheries, proportion of vessels by gear with average annual exvessel values of catch less than \$1,000, 2000-2003

Gear	Proportion of vessels with less than \$1,000 annual exvessel revenue from groundfish
Longline	
Pacific Halibut	68%
California Halibut	100%
Pot	
Dungeness crab	62%
Prawn	75%
California Sheephead	88%
Trawl	
Ridgeback prawn	72%
Sea cucumber	100%
California halibut	76%
Line	
HMS	83%
Salmon troll (coastwide)	99%
California halibut	99%
Net	
CPS	100%
Other gears	
Mixed	100%

SOCIO-ECONOMIC ENVIRONMENT - COMPARISON OF THE ALTERNATIVES	
HARVESTERS & PROCESSORS	Changes in fishery participation costs and groundfish revenue as a result of the requirement to carry and use VMS.
Alternative 1 Status quo	<p><u>Direct impacts</u> No change in fishery participation costs for harvesters.</p> <p>If the use of area management regulations is simplified, or buffers around closed areas added; so the integrity of closed areas can be maintained, fishers will likely encounter increased costs from fishing in areas where catch rates are lower.</p> <p>Because enforcement has less ability to target enforcement activities, vessels without VMS or declaration reports may be the subject of more investigations and boardings than vessels with VMS or those providing declaration reports.</p> <p><u>Indirect impacts</u> Potential future groundfish catch levels may be reduced and stability in the fishery may be decreased if non-compliance with depth-based management measures results in higher than projected of overfished species catch.</p>
Alternative 2 Vessels using longline gear	<p><u>Direct impacts:</u> Per vessel costs for a transceiver unit with installation are \$1,200-\$2,700 in Year 1, and \$250-\$625 in subsequent years. Annual operating cost to harvesters include: maintenance \$60-\$160 and transmission fees \$192-\$730. Fishers who land groundfish taken incidentally in non-groundfish fisheries and fishers who are less dependent on groundfish may choose to exit the fishery by not retaining groundfish or by not targeting groundfish. Approximately 131 directed groundfish, 31 Pacific halibut, 1 CA halibut, and 2 HMS vessels using open access longline gear that make less than \$1,000 in annual revenue from groundfish would likely leave the open access groundfish fishery. An unknown portion of directed groundfish vessels using longline gear to take and retain, possess or land groundfish may choose to change gears to pot or line gear avoid VMS requirements. Estimated purchase cost of VMS services to the fishing industry if all vessels remain in the fishery is \$249,150-\$756,690 year 1, \$51,150 - \$129,690 in subsequent years.</p> <p>Greater flexibility in the use of management rules with geographical areas restrictions allows greater access to healthy stocks than would otherwise be allowed.</p> <p><u>Indirect impacts:</u> Potential for future increases in groundfish catch levels could offset short-term economic loss associated with VMS if increased stability in the fishery results because the integrity of RCAs is maintained. Benefits of fishery stability would likely be greatest for fishers with high degrees of dependency on groundfish. If less dependent vessels leave the fishery groundfish, landings limits for healthy stocks could potentially increase for fishers remaining in the fishery.</p> <p>Vessels that purchase VMS units with 2-way communications could choose to use email communications to market catch that would otherwise be discarded at sea. If this were to occur, it could lead to greater efficiencies in seafood marketing and reduced discards for approximately 131 directed groundfish, 31 Pacific halibut, 1 CA halibut, and 2 HMS vessels using open access longline gear. If a large portion of the fishery chose to use 2-way communications to contact a broader range of buyers and coordinate deliveries or to negotiate purchase prices, it could result in shift in the processing sector.</p> <p>Processors buying low volumes of groundfish from a large number of fishers who each land small amounts, such as occurs in the live-fish fisheries, may have difficulty obtaining groundfish if the number of fishers who choose to exit the fishery is substantial in a given port.</p>

<p>Alternative 3 Vessels using longline or pot gear</p>	<p><u>Direct impact:</u> Per vessel costs are the same as Alt. 2. In addition to Alt. 2, approximately 128 vessels (30 directed, 45 Dungeness crab, 8 prawn, 8 CA sheephead, and 37 CA halibut vessels) using pot gear that make less than \$1,000 in annual revenue from groundfish would likely leave the open access groundfish fishery. An unknown portion of directed groundfish vessels using pot gear may choose to change to line gear to avoid VMS requirements. Estimated purchase cost of VMS services to the fishing industry if all vessels remain in the fishery is \$442,430 - 1,343,699 in year 1, and \$90,830-\$230,298 in subsequent years.</p> <p>Greater flexibility in the use of management rules with geographical areas - slightly greater benefit than Alt. 2 because both longline and pot vessels that take and retain, possess or land groundfish are included.</p> <p><u>Indirect impact:</u> Potential for future increases in groundfish catch levels slightly increased over Alt. 2., because likelihood of RCA integrity being maintained is increased when both longline and pot vessels that take and retain, possess or land groundfish are included. Benefits of fishery stability would be greatest for fishers with high degree of dependency on groundfish.</p> <p>Potential benefits of marketing efficiencies and potential shift in processing sector is as identified under Alt. 2 plus approximately 128 vessels using pot gear could choose to use VMS communications as marketing tool. Risk to low volume processors, slightly greater than Alt. 2</p>
<p>Alternative 4 Vessels using longline, pot or trawl gear (except pink shrimp)</p>	<p><u>Direct impact:</u> Per vessel costs are the same as Alt.2. In addition to Alt. 2 and 3, approximately 18 ridgeback prawn, 6 sea cucumber and 17 CA halibut vessels using exempted trawl gear that make less than \$1,000 in annual revenue from groundfish would likely leave the open access groundfish fishery. Estimated purchase cost of VMS services to the fishing industry if all vessels remain in the fishery is \$504,340 -\$1,531,724 in year 1, and \$103,540 -\$262,524 in subsequent years.</p> <p>Greater flexibility in the use of management rules with geographical areas - slightly greater benefit than Alt. 3 because longline, pot, and exempted trawl (excluding pink shrimp) vessels that take and retain, possess or land groundfish are included.</p> <p><u>Indirect impact:</u> Potential for future increases in groundfish catch levels slightly increased over Alt. 3., because likelihood of RCA integrity being maintained is increased when longline, pot, and exempted trawl (excluding pink shrimp) vessels are included. Benefits of fishery stability would be greatest for fishers with high degree of dependency on groundfish.</p> <p>Potential benefits of marketing efficiencies and potential shift in processing sector is as identified under Alt. 2 and 3 plus approximately 41 vessels using exempted trawl gear could choose to use VMS communications as marketing tool. Risk to low volume processors, slightly greater than Alt. 3</p>

<p>Alternative 5A Vessels using longline, pot, trawl or line gear, except: pink shrimp trawl and salmon troll.</p>	<p><u>Direct impact:</u> Per vessel costs are the same as Alt.2. In addition to Alt. 2, 3, and 4, approximately 855 vessels (738 groundfish, 105 CA halibut, and 12 HMS vessels) using line gear to take and retain, possess or land groundfish that make less than \$1,000 in annual revenue from groundfish would likely leave the fishery. Estimated purchase cost of VMS services to the fishing industry if all vessels remain in the fishery is \$1,795,390 - 5,452,754 in year 1, and \$368,590 - \$934,554 in subsequent years.</p> <p>Greater flexibility in the use of management rules with geographical areas - slight greater benefit than Alt. 4 because longline, pot, exempted trawl (excluding pink shrimp), and line vessel (excluding salmon troll) that take and retain, possess or land groundfish are included.</p> <p><u>Indirect impact:</u> Potential for future increases in groundfish catch levels slightly increased over Alt. 4., because likelihood of RCA integrity being maintained is increased when longline, pot, exempted trawl (excluding pink shrimp), and line vessel (excluding salmon troll) that take and retain, possess or land groundfish are included. Benefits of fishery stability would be greatest for fishers with high degree of dependency on groundfish.</p> <p>Potential benefits of marketing efficiencies and potential shift in processing sector as identified under Alt. 2, 3 and 4 except that approximately 738 groundfish, 105 California halibut, and 12 HMS vessels using line gear to take and retain, possess or land groundfish could also receive potential benefits of marketing efficiencies and stability in the groundfish fishery. Risk to low volume processors, slightly greater than Alt. 4</p>
<p>Alternative 5B Vessels using longline, pot, trawl or line gear, except: pink shrimp trawl, HMS longline & line, and Dungeness crab pot gear.</p>	<p><u>Direct impact:</u> Per vessel costs are the same as Alt.2. Vessels that make less than \$1,000 in annual revenue from groundfish would likely leave the fishery. Estimated purchase cost of VMS services to the fishing industry if all vessels remain in the fishery is \$1,973,570 - \$5,993,902 in year 1, and \$405,170 - \$1,027,302 in subsequent years.</p> <p>Greater flexibility in the use of management rules with geographical areas - slight greater than Alt. 5A because longline, pot, exempted trawl (excluding pink shrimp), and line vessels that take and retain, possess or land groundfish are included. HMS and Dungeness crab vessels are not projected to have overfished species catch in 2005; therefore excluding them would likely result in minimal if any changes to overfished species management flexibility.</p> <p><u>Indirect impact:</u> Potential for future increases in groundfish catch levels slightly increased over Alt. 5A., because likelihood of RCA integrity being maintained is increased when longline, pot, exempted trawl (excluding pink shrimp), and line vessels that take and retain, possess or land groundfish are included. Salmon troll vessels have a greater potential of taking constraining overfished species than do the Dungeness crab and HMS vessels that would be excluded under this alternative. Benefits of fishery stability would be greatest for fishers with high degree of dependency on groundfish.</p> <p>Potential benefits from marketing efficiencies and stability in the groundfish fishery as identified Alt. 2, 3, 4 and 5A, except Dungeness crab and HMS vessels, but for an additional 241 salmon troll vessels. Risk to low volume processors, slightly greater than Alt. 5A because salmon troll vessels are included</p>

<p>Alternative 6A Vessels with RCA restrictions</p>	<p><u>Direct impact:</u> Per vessel costs are the same as Alt.2. Vessels making less than \$1,000 in annual revenue from groundfish would likely leave the fishery. Estimated purchase cost of VMS services to the fishing industry if all vessels remain in the fishery is \$2,148,730-\$6,525,878 in years 1 \$441,130 - \$1,118,478 in subsequent years.</p> <p>Greatest flexibility in the use of management rules with geographical areas because all longline, pot, exempted trawl (excluding pink shrimp), and line vessel that have RCA restrictions would be included. Unlike 5B, all exempted trawl vessels would be included rather than only those that take and retain, possess or land groundfish.</p> <p><u>Indirect impact:</u> Potential for future increases in groundfish catch levels is greatest under this alternative, because likelihood of RCA integrity being maintained is increased when all vessels that have RCA restrictions are included. Benefits of fishery stability would be greatest for fishers with high degree of dependency on groundfish.</p> <p>Potential benefits from marketing efficiencies and stability in the groundfish fishery as identified under Alt. 2, 3, 4, & 5A and all Pacific halibut directed fishery vessels, vessels using salmon troll gear to take and retain, possess or land groundfish, and all vessels using exempted trawl gear. Risk to low volume processors similar to 5B</p>
<p>Alternative 6B Vessels with RCA restrictions except salmon troll north that retain only yellowtail rockfish</p>	<p><u>Direct impact:</u> Per vessel costs are the same as Alt.2. Vessels that are likely to leave the fishery is the same as Alt. 6A except that the number of salmon trollers that are likely to leave the fishery is slightly less than under Alt. 6A because vessels fishing north of 40°10' N. lat. that only land yellowtail rockfish would not be required to have VMS. The estimated purchase cost of VMS services to the fishing industry if all vessels remain in the fishery is \$399,590-\$1,013,154 in years 1, and \$1,946,390 -\$5,911,354 in subsequent years.</p> <p>Greater flexibility in the use of management rules with geographical areas (slightly less than 6A) because all longline, pot, exempted trawl (excluding pink shrimp), and line vessels (excluding salmon troll north of 40°10' N. lat. that only land yellowtail rockfish) that have RCA restrictions would be included. Unlike Alt.5B, all exempted trawl vessels would be included rather than only those that take and retain, possess or land groundfish.</p> <p><u>Indirect impact:</u> Potential for future increases in groundfish catch levels is slightly less than to those identified under Alt. 6A; salmon troll vessels fishing north of 40°10' N. lat. that only land yellowtail rockfish would be excluded.</p> <p>Potential benefits from marketing efficiencies as identified under Alt. 6A, because salmon troll vessels fishing north of 40°10' N. lat. that only land yellowtail rockfish would be excluded. Risk to low volume processors greatest, but similar to 5B</p>

Alternative 7 Vessel >12 ft with RCA restrictions

Direct impact: Per vessel costs are the same as Alt. 2. Vessels that are likely to leave the fishery is same as Alt. 6A plus than vessels less than 12 ft in length that make less than \$1,000 in annual revenue from groundfish would likely leave the fishery. Estimated purchase cost of VMS services to the fishing industry if all vessels remain in the fishery is \$2,115,510 - \$6,424,986 in year 1, and \$434,310 - \$1,101,186 in subsequent years.

Greater flexibility in the use of management rules with geographical areas because all longline, pot, exempted trawl (excluding pink shrimp), and line vessels >12 ft in length that have RCA restrictions would be included. Unlike Alt.5B, all exempted trawl vessels would be included rather than only those that take and retain, possess or land groundfish. Basically, same as 6A because it is unlikely that many, if any, of the 22 vessels that are < 12 ft in length fish in Federal waters.

Indirect impact: Potential for future increases in groundfish catch levels is similar to those identified under Alt.6A because 22 vessels under 12 ft in length would be excluded. Few if any of these vessels are likely to fish in Federal waters.

Potential benefits from marketing efficiencies similar to those identified under Alt.6A because 22 vessels under 12 ft in length would be excluded. Few if any of these vessels are expected to fish in Federal waters. Risk to low volume processors similar to 5B

4.3.3 Harvesters

Direct Impacts: While the primary focus of VMS, from a resource management perspective, is with the collection of position data to monitor compliance with depth-based area management, there are very clear benefits to industry from VMS. The most evident direct benefit to industry resulting from the availability of VMS information is the flexibility in fishery management, such as the use of depth-based management.

To allow for a more liberal depth-based management regime, as has been in place since 2003, it was necessary for the Council and NMFS to take action to establish a monitoring program to ensure the integrity of these large irregularly shaped depth-based conservation areas. With the 2003 Annual Specifications and Management Measures, the Council recommended along with depth-based management strategy, that NMFS include implementation of a VMS monitoring system to track movement of vessels through and within the RCAs. Without a depth-based management strategy, the fishery would be managed under more seriously constrained limits on healthy stocks that co-occur with overfished species. Geographically defined areas would likely revert to those that were in place before September 2002. These areas tended to be nearshore or defined by a simple latitude lines.

A more liberal depth-based management regime is only possible if the integrity of the depth-based conservation areas can be ensured. Maintaining the integrity of the conservation areas largely depends upon the ability to enforce such management measures. Without the ability to ensure the integrity of the conservation areas, it is most likely that the depth-based management strategy will be discontinued. If this were the case, the management structure for those fisheries without VMS could well revert back to more restrictive limits or no limits on healthy stocks in order to protect overfished species.

When linked with a personal computer, lap top or data terminal, VMS systems with 2-way communications (currently 2-way systems are not required in groundfish fishery). Two-way systems can provide commercial fishers with the opportunity obtain information from processors or home offices and to report catch information electronically to home offices and fisheries managers. Under VMS, detailed commercial catch data and details of specific areas fished (provided by GPS) could be recorded using on-board computers or mobile terminals and transmitted directly to a central database. The central database could be programmed to analyze the aggregate data from all vessels as it is received, thereby enabling the performance of the fishery to be monitored in 'real time', allowing more effective and timely fisheries management strategies to be developed. This provides potential cost savings for fishermen, particularly if fishery management transforms from being reactive to being a pro-active process involving decisions based on analysis of real time data about the fishery. Fisheries management strategies are underpinned by catch data supplied by commercial and recreational fishers. There is usually a substantial delay before this information is received, analyzed and available in a format suitable for use by fisheries managers and industry. Some mis-reporting and transcription errors can be addressed using VMS.

Cost burden: The cost burden of VMS includes the costs for installation, VMS transceiver unit, annual maintenance, replacement cost, cost to transmit hourly positions and declaration reports. Table 4.3.4.1 shows the estimated cost burden per vessel for VMS.

Table 4.3.3.1. Estimated burden, per vessel, for the VMS monitoring systems

	<u>Alternative 1</u> Status quo	<u>Alternatives 2-7</u> Cost per vessel for VMS and declaration reports
Installation - start up cost	\$0	Minimal - not to exceed 4 hours or \$200 Most are do-it yourself installation, manufacturer install approximately \$200 do-it-yourself \$120 5 min to complete installation report, \$3 to send fax to NMFS
VMS transceiver/transponder unit - start up cost	\$0	\$1,000 - \$2,500 (\$3,800 if computer is added for 2-way communications including email)
Annual maintenance * Self * Professional	\$0	2 hours or \$60 per year 2 hours or \$160 per year
Annual replacement costs (unit cost/years of service)	\$0	\$250-\$625 per year (estimate based on 4 years of service)
Annual cost to transmit 24 hourly position reports	\$0	\$192-\$730 (\$15.99/mo-\$2/day)
Annual cost to transmit exemption reports (4 min/rpt 2 per year)	\$0	\$0 (toll free call)
Annual cost to transmit declaration report (4 min/rpt- 12 time per year)	\$0	\$0 (toll free call)

Installation - The time burden for installation of the units is estimated at 4 hours per vessel, or \$120. Personnel costs are estimated to be \$30 per hour (Table 4.3.3.4.). The actual installation time for a VMS unit is estimated to be less than two hours, but a higher estimate of 4 hours/vessel is based on a worst case scenario where the power source (such as a 12 volt DC outlet) is not convenient to a location where the VMS unit can be installed. Most of the systems are do-it-yourself installations.

The installation of the Inmarsat-C Thrane units are do-it-yourself. The installation of software and attachment of a personal computer or lap top to an Inmarsat-C unit may also require dealer assistance. Satamatics and Orbcomm units can be self installed. However, vendor experience indicates that professional installations provide the best results for optimal unit performance.

Installation/Activation Report - Given that the VMS hardware and satellite communications services are provided by third parties as approved by NMFS, there is a need for NMFS to collect information on the individual vessel's installation in order to ensure that automated position reports will be received. This information collection would not increase the time burden for installation of VMS, but does require that a certification and checklist be returned to NMFS prior to using the VMS transceiver to meet regulatory requirements.

The checklist indicates the procedures to be followed by the installers. The VMS installer completes the NMFS issued checklist and signs the certification before returning it to NMFS. Signing the completed checklist shows that the installation was done according to the instructions and provides the Office of Law Enforcement with information about the hardware installed and the communication service provider that will be used by the vessel operator. Specific information that links a permitted vessel with a certain transmitting unit and communications service is necessary to ensure that automatic position reports will be received properly by NMFS. In the event that there are problems, NMFS will have ready access to a database that links owner information with installation information. NMFS can then apply troubleshooting techniques to contact the vessel operator and discern whether the problem is associated with the transmitting hardware or the service provider.

The time and cost burden of preparing and submitting installation information to NMFS is minor. Submission of a checklist would be required only for the initial installation or when the hardware or communications service provider changes. NMFS estimates a time burden of 5 minutes (\$2.50 at \$30 per hour) for completing the checklist and additional \$3 for mailing/faxing to NMFS, for a total of \$5.50 per occurrence (Table 4.3.3.4).

The ability for NMFS to ensure proper operation of the VMS unit prior to the vessel's departure will save time and money. The installation checklist and activation report are available over the internet website. These reports would be faxed or mailed to NMFS.

VMS transceiver unit On September 23, 1993, NMFS published proposed VMS standards at 58 FR 49285. On March 31, 1994, NMFS published final VMS standards at 59 FR 15180. These notices stated that NMFS endorses the use of VMS and defined specifications and criteria for VMS use. On September 8, 1998, NOAA published a request for information (RFI) in the Commerce Business Daily in which it stated the minimum VMS specifications necessary for NOAA's approval. The information was used as the basis for approving the mobile transceiver units and communications service providers for the Pacific coast groundfish fishery.

Units currently type approved for the Pacific Coast Groundfish Fishery are shown in (Table 4.3.3.2.) And include: Thrane and Thrane TT 3022D and 3026, Satamatics SAT101, and Stellar ST2500G. NMFS Type approved units are tested and approved by NMFS OLE. A list of VMS mobile transponder units and communications service providers approved by NOAA for the Pacific Coast groundfish fishery were published in the Federal Register on November 17, 2003 (68 FR 64860). Each time the list is revised, it will be published in the Federal Register. The cost of the transceivers currently type approved for the Pacific Coast groundfish fishery are shown in Table 4.3.3.2.

The North American Collection and Location by Satellite, Inc. (NACLS) is the sole service provider of the ArgoNet systems. The Argos Mar-GE and MAR-YX mobile transponder units costs \$2,000. The ArgoNet MAR GE uses NOAA polar-orbiting satellites, and, as such, it is considered a NOAA Data Collection and Location System. The use of any NOAA Data Collection and Location System is governed by 15 CFR part 911. Under these regulations, the use of a NOAA Data Collection and Location System can be authorized only if it is determined that there are no commercial services available that are adequate. In addition, special provisions have been made because of cost effectiveness to the Government, resulting in a temporary approval (3 year approval was granted for the Atlantic pelagic longline fishery).

On June 10, 2002, 50 CFR 679.7(a)(18), required all vessels fishing in the Bering sea and Gulf of Alaska using pot, hook-and-line or trawl gear that are permitted to directly fish for Pacific cod, Atka mackerel or pollock to have an operable VMS transceiver. Vessels that also participate in the WOC fisheries (primarily limited entry vessels) qualified for reimbursements to the Argos MAR-GE as a result of their participation in the Alaska groundfish fishery. Allowing the use of Argos MAR-GE by WOC operating vessels that have purchased these units for participation in the Alaska groundfish fisheries would eliminate the cost of purchasing, installing and maintaining a second unit for these vessels. As of April 15, 2004(69 FR 19985) new provisions for the Alaska fisheries prohibit the installation of new Argos units. Replacement units will need to be compatible with the requirements of both fisheries or vessels will need to purchase separate units. Similarly, allowing vessels to use units they have already purchased for other business purposes, providing they are a type-approved model with the required software and hardware, would also eliminate

the cost of purchasing, installing and maintaining a second unit for these vessels. The number of open access vessels that currently have VMS transceivers is unknown.

Most of the VMS transceiver units can be operated for extended periods from the same DC power source used to run other on board electronic equipment and so should increase power consumption only marginally.

Maintenance of transponder unit Once a vessel is used for fishing in the open access fishery in Federal waters, the vessel operator is required to operate the VMS unit continuously for the remainder of the year. This means that the vessel operator will need to maintain the transponder unit, antennas, and the electrical sources that power the system themselves or have it serviced by a professionally.

When an operator is aware that transmission of automatic position reports has been interrupted, or when notified by NMFS that automatic position reports are not being received, they must contact NMFS and follow the instructions provided. Such instructions may include, but are not limited to, manually communicating to a location designated by NMFS the vessel's position or returning to port until the VMS is operable. There is a reporting burden associated with this requirement, but it is not expected to be substantial. The annual burden of these communications and the time required to maintain the antennas and electrical systems on the vessel operator is estimated to be approximately 2 hours per year or \$60 if done by the vessels personnel, or \$160 if professionally serviced (Table 4.3.3.4). In addition, some systems may require software to be updated. Many of the transponders can have their set of features upgraded by being reloaded/flushed with updated versions.

If a unit needs to be repaired, there may be fishing opportunity lost unless the unit can be quickly replaced.

Replacement cost (purchase price/years of service) The various VMS transceivers have similar life spans of about 4- 5 years before the units need to be replaced. Because of advancements in VMS systems or service providers that may no longer provide services, some models may become obsolete in less than 5 years. The purchase of these units may be considered as a tax deductible business expense during the first year of use. For depreciation purposes, VMS devices using satellite technology may qualify as "five-year property", although devices using cell phone technology probably will be treated similar to other cell phone equipment, as "seven-year property." For the purposes of this analysis, 4 years was used to estimate unit replacement costs. Table 4.3.3.4. shows the range of replacement costs.

Cost to transmit hourly positions The primary costs after purchase and installation of a VMS is the charge for the messages that communicate the vessel's position. Once installed and activated, position reports are transmitted automatically to NMFS via satellite. Once a vessel is used for fishing in the open access fishery in Federal waters, the vessel operator is required to operate the VMS unit continuously for the remainder of the year. The total costs for these messages depend on the system chosen for operation and the number of fishing days for units with a sleep function. Many of the systems have a sleep function. Position transmissions are automatically reduced when the vessel is in port. This allows for port stays without significant power drain or power shutdown. When the unit restarts, normal position transmissions automatically resume before the vessel goes to sea.

The estimated time per response varies with type of equipment and requirement. Upon installation, vessel monitoring or transponder systems automatically transmit data, which takes about 5 seconds, except when issued a VMS exemption or when the vessel is inactive in port and the VMS goes into sleep mode. Transmission costs vary between units, with some having daily rates or monthly rates. The daily rate for the Inmarsat D+ , Inmarsat C, and Orbcom units is \$2, while providers have begun providing packages as low as \$15.99/mo for fishers who spend much of the month tied to the dock, resulting in reduced position reports (Table 4.3.3.4).

Table 4.3.3.2. VMS Equipment Currently in Type-approved for use in the Pacific Coast Groundfish Fisheries

Communication Service	Orbcomm	Inmarsat D+	Argos a/	Inmarsat-C
Transceiver/transponder name	SST2500G-NMFS	Satamatics SAT101	MAR GE	Thrane and Thrane TT3022D, TT3026D
Number of boats using				
Geographic coverage, when in line of sight of satellite or cell	Global	Global	Global	Global to 78°N/S
Communication between ship – shore	Two-way	Two-way	One-way, (ship-to-shore)	Two-way
Satellite type	Low earth orbit, Orbcomm Network	Geo-stationary, INMARSAT	Polar-orbiting, 5 NOAA meteorological	Geo-Stationary, INMARSAT
Time between the vessel position fix and receipt at NMFS	Within 5-10 minutes	Within 5-10 minutes	Varies per latitude, Alaska – 10-30min. avg. wait. HMS – 60-90min. wait	Within 5-10 minutes
Ability to poll/query the transceiver	Yes	Yes	No	Yes
Interval between position reports	Configurabel	Configurabel	30 - 60 minutes depending upon latitudes	Configurable for 5 minutes to 24 hours
Ability to change the interval between position reports	Remote from OLE	Remote from OLE	Factory reprogramming	Remotely from OLE
Position calculation (accuracy)	Integrated GPS (20 m)	Integrated GPS (20 m)	Integrated GPS (20m), reverts to Doppler when GPS blocked (350 or 1000m)	Integrated GPS (20m)
Automatic anti-tampering and unit status messages	Yes	Yes	Yes	Yes
Distress signal	Yes	Yes	Yes	Yes
Reduces power when stationary	Yes	Yes	Yes	Yes
Installation	Do-it-yourself	Do-it-yourself	Do-it-yourself	Dealer or electrician (costs not included), or do-it-yourself
Internal battery back-up	Yes	Yes	Yes, 48-hour	No
Log or memory buffer storing positions / number of positions	Yes	Yes	Yes, must download manually/?	Yes, auto, remote or manual download/ Trimble – 5000 Thrane – 100
Can send logbook/catch report data	Yes	Yes, limited	Yes, with computer	Yes, with computer
Transceiver/transponder cost	\$1,200	\$1,200	\$2000 (\$400 keypad optional)	Thrane TT3022D \$2,500, TT3026M \$1,550; additional \$1,300 if optional computer for email is included
Daily communications cost for hourly positions	\$2	\$2	\$5	\$2

a/ The Argos MAR GE is only allowed for vessels that have been required to have this model for other fisheries such as the Alaska groundfish fishery

Exemption reports Exemption Reports would be sent by the vessel owner or operator whenever their vessel qualified for being excused from the requirement to operate the mobile transceiver unit continuously 24 hours a day throughout the calendar year (e.g. when the vessel will be operating outside of the EEZ for more than 7 consecutive days or the vessel will be continuously out of the water for more than 7 consecutive days). A vessel may be exempted from the requirement to operate the mobile transceiver unit continuously 24 hours a day throughout the calendar year if a valid exemption report, is received by NMFS OLE and the vessel is in compliance with all conditions and requirements of the exemption. An exemption report would be valid until a second report was sent canceling the exemption.

Improved technology would be used to reduce the reporting burden on NMFS and the fishery participants. Vessels will call in exemption reports to a toll free number. With this system, vessels can call quickly and easily submit their report 24 hours a day.

Aside from the cost in time to summarize and call in an IVR report, there will be no additional cost burden for respondents. All respondents are assumed to have access to a telephone. The telephone call will be placed through a toll-free number, so the respondent will not pay for the call. Two exemption reports are estimated to be submitted per vessel annually. Each report would require approximately 4 minutes to submit, for an average cost of \$4 per vessel per year (at \$30 per hour) .

Declaration reports

Declaration reports are used to assist enforcement in identifying vessels that are legally fishing in conservation areas. Each declaration report is valid until cancelled or revised by the vessel operator. After a declaration report has been sent, the vessel cannot engage in any activity with gear that is inconsistent with that which can be used in the conservation area unless another declaration report is sent to cancel or change the previous declaration. Declaration reports are sent to NMFS and vessel operators receive confirmation that could be used to verify that the reporting requirement was met. It is necessary for a vessel owner, operator or representative to submit these reports because only they can make statements about where they intend to fish.

Vessels will call in declaration reports by dialing a toll-free, so the respondent will not pay for the call. The system allows vessels to quickly and easily submit their report 24 hours a day. Aside from the cost in time to summarize and call in an IVR report, there will be no additional cost burden for respondents. All respondents are assumed to have access to a telephone.

Table 4.3.3.3 Range of VMS of projected costs to the fleet, by fishery and gear

Open access gear group	Average annual no. of vessels landing groundfish, 2000-2003	Cost to the fleet for VMS		
		Year 1, range of cost for purchase and installation of VMS units - Per vessel cost - \$1,200 -\$2,500 (\$3,800 with PC)	Subsequent years, range of costs for maintenance and replacement of VMS units Per vessel cost \$310 - \$785	Range of annual Transmission cost Per vessel cost \$192 - \$730
Longline - groundfish directed a/	131	157,200 - 353,700 (497,800)	40,610 - 102,966	25,152 - 95-630
Longline - Pacific Halibut directed b/	31	37,200 -83,700 (117,800)	9,610 - 24,366	5,952 - 22,630
Longline - CA Halibut c/	1	1,200 - 2,700 (3,800)	310 - 786	192 -730
Pot - groundfish directed	30	36,000 -81,000 (114,000)	9,300 - 23,580	5,760 - 21,900
Pot - Dungeness crab d/	45	54,000 - 121,500 (171,000)	13,950 - 35,370	8,640 - 32,850
Pot - prawn/shrimp e/	8	9,600 - 21,600 (30,400)	2,480 - 6,288	1,536 -5,840
Pot - sheephead g/	8	9,600 - 21,600 (30,400)	2,480 - 6,288	1,536 -5,840
Pot - CA Halibut	37	44,400 -99,900 (140,600)	11,470 - 29,082	7,104 - 27,010
Trawl - spot prawn f/	6	7,200 - 16,200 (22,800)	1,860 - 4,716	1,152 - 4,380
Trawl - CA Halibut g/	17	20,400 - 45,900 (64,600)	5,270 - 13,362	3,264 - 12,410
Trawl - Sea Cucumber h/	6	7,200 - 16,200 (22,800)	1,860 - 4,716	1,152 - 4,380
Trawl - Ridgeback Prawn i/	18	21,600 - 48,600 (68,400)	5,580 - 14,148	3,456 - 13,140
Line gear - groundfish directed j/	738	885,600 -1,992,600 (2,804,400)	228,780 - 580,068	141,696 - 538,740
Line gear - CA halibut directed k/	105	126,000 - 283,500 (399,000)	32,550 - 82,530	20,160 - 76,650
Line gear - HMS l/	12	14,400 - 32,400 (45,600)	3,720 - 9,432	2,304 - 8,760
Line gear - Salmon troll (coastwide) m/	177	212,400 - 477,900 (672,600)	54,870 - 139,122	33,984 - 129,210
Line gear - Salmon troll (north only)	134	160,800 - 361,800 (509,200)	41,540 - 105,324	25,728 - 97,820
Net gear - CPS	3	3,600 - 8,100 (11,400)	930 - 2,358	576 - 2,190
Other gears	4	4,800 - 10,800 (15,200)	1,240 - 3,144	768 - 2,920

- a/ Open access longline groundfish vessels were defined as vessels without a federal LE permit that have greater than 30% of their longline revenues from groundfish.
b/ Longline Pacific Halibut OA directed vessels were defined as vessels where more than 50% of their longline revenue was from Pacific Halibut
c/ California halibut longline vessels are defined as vessels where greater than 80% of their longline revenues were derived from cal. halibut.
d/ Dungeness crab vessels are defined as vessels where greater than 15% of their pot revenue is derived from D crab
e/ Pot Prawn vessels are defined as vessels that make more that 5% of their pot revenue from pot prawns
f/ Spot prawn trawl vessels are defined as vessels that make more than 20% of their shrimp trawl revenue from spot prawns
g/ CA Halibut trawl vessels are defined as vessels that make more than 30% of trawl revenues from California Halibut
h/ Sea cucumber trawl vessels are defined as vessels that make more than 40% of trawl revenues from sea cucumbers
i/ Ridgeback prawn trawl vessels are defined as vessels that make more than 30% of their shrimp trawl revenues from ridgeback prawns
j/ OA hook and line (non longline) directed groundfish vessels are defined as vessels which made more than 30% of their line revenues from groundfish
k/ CA halibut non-longline line vessels are defined as vessels that make more than 20% of non-longline line revenues from CA halibut
l/ HMS non-longline line vessels are defined as vessels that make more than 25% of non-longline line revenues from HMS
m/ Salmon troll vessels are defined as vessels where greater than 20% of their troll revenues are from salmon

Table 4.3.3.4. Estimated burden, per vessel, for the VMS monitoring systems

	<u>Alternative 1</u> Status quo	<u>Alternatives 2-7</u> Cost per vessel for VMS and declaration reports
Installation - start up cost	\$0	Minimal - not to exceed 4 hours or \$200 Most are do-it yourself installation, manufacturer install approximately \$200 5 min to complete installation report, \$3 to send fax to NMFS
VMS transceiver/transponder unit - start up cost	\$0	\$1,000 - \$2,500 (\$3,800 if computer is added for 2-way communications including email)
Annual maintenance * Self * Professional	\$0	2 hours or \$60 per year 2 hours or \$160 per year
Annual replacement costs (unit cost/years of service)	\$0	\$250-\$625 per year (estimate based on 4 years of service)
Annual cost to transmit 24 hourly position reports	\$0	\$192-\$730 (\$15.99/mo-\$2/day)
Annual cost to transmit exemption reports (4 min/rpt 2 per year)	\$0	\$0 (toll free call)
Annual cost to transmit declaration report (4 min/rpt- 12 time per year)	\$0	\$0 (toll free call)

Fishers who land groundfish taken incidentally in non-groundfish fisheries operating in areas outside the RCAs, and fishers who are less dependent on groundfish may choose to exit the fishery by not retaining groundfish or by not targeting groundfish. Though it is difficult to know all of the reasons why any one individual fisher would make a particular decision, it is assumed that vessels making less than \$1,000 of groundfish revenue per year will likely exit the groundfish fishery and not incur the costs associated with VMS.

Tables 4.3.3.5 show by target fishery and gear, the number of fishers by revenue category. The open access groundfish fishery consists of vessels that do not necessarily depend on revenue from the fishery as a major source of income and predominately fish for other species where they inadvertently catch and land groundfish. Understanding the level of dependency that participants in this fishery have on groundfish should be considered in light of their overall fisheries revenues.

Table 4.3.3.6. shows the number of open access vessels by gross income levels of dependency for all West Coast landings. Between November 2000 and October 2001, 1,287 vessels landed groundfish in the open access sector of the groundfish fishery. Of these, 58 percent of the vessels (200) with a greater than 95 percent dependency on groundfish had less than \$5,000 of gross income from West Coast landings. These vessels would be the vessels most affected by VMS requirements. A greater proportion of vessels

with lower levels of dependency on groundfish fell within income categories greater than \$5,000. However, this table does not represent landings for years when the RCA requirements or state nearshore limited entry programs were in place. Increases in higher valued groundfish catch in 2003, primarily sablefish, which may reduce the proportion of open access vessels in the lowest (<\$5,000) income category, are not included in this table. Table 4.3.3.7 shows the annual fishing revenue for vessels landing groundfish in various open access target fisheries and with the different gears.

Table 4.3.3.5. Open access groundfish landings by gear group, 2000 - 2003 (based on 8/24/04 PacFin data)

Open access gear group	Number of vessels landing groundfish	Exvessel revenue of groundfish (\$)	Per vessel Exvessel revenue of groundfish (\$)	Exvessel revenue all fish taken with specific gear per vessel (\$)
Longline - groundfish directed				
2000	126	796,056	6,318	6,744
2001	140	713,893	5,099	5,696
2002	122	726,839	5,958	6,395
2003	137	1,087,142	7,935	8,725
4-year average	131	830,983	6,331	6,900
Longline - Pacific Halibut				
2000	32	14,011	438	3,763
2001	29	20,454	705	5,390
2002	33	18,305	555	6,640
2003	29	45,559	1,571	8,241
4-year average	31	24,582	799	5,974
Longline - CA Halibut				
2000	3	548	183	3,884
2001	1	71	71	2,212
2002	1	45	45	2,450
2003	0	0	0	0
4-year average	1	166	133	3,263
Pot - groundfish directed c\				
2000	42	316,932	7,546	8,807
2001	35	258,778	7,394	7,796
2002	33	190,771	5,781	6,163
2003	38	297,687	7,938	8,341
4-year average	30	264,282	8,809	9,584
Pot - Dungeness crab				
2000	43	134,047	3,117	48,797
2001	46	89,499	1,946	49,862
2002	43	94,502	2,198	51,666
2003	48	141,892	2,956	140,750
4-year average	45	114,985	2,555	74,275
Pot - prawn/shrimp				
2000	11	3,957	360	130,147
2001	6	11,785	1,964	118,416
2002	6	8,851	1,475	141,840
2003	7	25,635	3,662	176,648
4-year average	8	12,557	1,674	140,990
Pot - sheephead				
2000	9	18,717	2,080	65,146
2001	10	18,962	1,896	43,483
2002	11	12,271	1,116	36,194
2003	2	735	368	48,076
4-year average	8	12,671	1,584	47,357
Trawl - sea cucumber				
2000	2	29	15	5,773
2001	8	492	62	18,824
2002	7	2,204	315	24,094
2003	5	646	129	20,704
4-year average	6	843	153	19,742

Open access gear group	Number of vessels landing groundfish	Landed weight of groundfish (mt)	Exvessel revenue of groundfish (\$)	Exvessel revenue per vessel (\$)
Trawl - CA halibut				
2000	19	20,967	1,104	8,790
2001	23	11,933	519	9,063
2002	16	11,801	738	20,635
2003	10	4,867	487	11,373
4-year average	17	12,392	729	12,050
Trawl -Ridgeback Prawn				
2000	28	28,010	1,000	59,625
2001	16	13,994	875	27,965
2002	13	6,935	533	36,974
2003	15	4,347	290	27,227
4-year average	18	13,322	740	41,750
Line gear - all groundfish a/				
2000	922	1,981,665	2,149	2,177
2001	883	2,091,194	2,368	2,405
2002	683	2,135,914	3,129	3,218
2003	465	1,582,541	3,404	3,458
4-year average	738	1,947,829	2,639	2,688
Line gear - CA halibut				
2000	106	16,653	158	182,303
2001	125	40,615	325	245,723
2002	87	29,442	339	147,702
2003	104	8,233	80	161,740
4-year average	105	23,736	225	184,367
Line gear - HMS				
2000	16	3,014	188	6,020
2001	11	5,772	525	4,567
2002	13	35,035	2,695	6,559
2003	8	2,697	337	2,999
4-year average	12	11,630	969	5,330
Line gear - Salmon troll (coastwide)				
2000	227	41,432	183	29,808
2001	187	29,672	159	29,295
2002	150	26,042	174	37,764
2003	143	24,816	174	46,385
4-year average	177	30,491	173	34,713
Line gear - Salmon troll (north only)				
2000	139	30,748	221	20,719
2001	158	23,591	149	27,120
2002	122	19,236	158	32,830
2003	116	20,621	178	38,614
4-year average	134	23,549	176	29,251
Net gear - CPS				
2000	5	1,535	307	58,267
2001	2	555	278	40,669
2002	2	25	13	63,034
2003	4	2,541	635	93,151
4-year average	3	1,164	358	67,026
Other gears				
2000	8	1,183	148	41,078
2001	2	224	122	471
2002	2	258	129	1,902
2003	3	21	7	45,079
4-year average	4	427	114	31,240

- a/ Open access longline groundfish vessels were defined as vessels without a federal LE permit that have greater than 30% of their longline revenues from groundfish.
- b/ Longline Pacific Halibut OA directed vessels were defined as vessels where more than 50% of their longline revenue was from Pacific Halibut
- c/ California halibut longline vessels are defined as vessels where greater than 80% of their longline revenues were derived from cal. halibut.
- d/ Dungeness crab vessels are defined as vessels where greater than 15% of their pot revenue is derived from D crab
- e/ Pot Prawn vessels are defined as vessels that make more that 5% of their pot revenue from pot prawns
- f/ Spot prawn trawl vessels are defined as vessels that make more than 20% of their shrimp trawl revenue from spot prawns
- g/ CA Halibut trawl vessels are defined as vessels that make more than 30% of trawl revenues from California Halibut
- h/ Sea cucumber trawl vessels are defined as vessels that make more than 40% of trawl revenues from sea cucumbers
- i/ Ridgeback prawn trawl vessels are defined as vessels that make more than 30% of their shrimp trawl revenues from ridgeback prawns
- j/ OA hook and line (non longline) directed groundfish vessels are defined as vessels which made more than 30% of their line revenues from groundfish
- k/ CA halibut non-longline line vessels are defined as vessels that make more than 20% of non-longline line revenues from CA halibut
- l/ HMS non-longline line vessels are defined as vessels that make more than 25% of non-longline line revenues from HMS
- m/ Salmon troll vessels are defined as vessels where greater than 20% of their troll revenues are from salmon

Table 3.3.3.6 Number of open access vessels by gross income levels of dependency for all West Coast landings (based on data from November 2000 - October 2001) a/

	Exvessel revenue from West Coast landings				Total
	<5,000	\$5,000-\$50,000	\$50,000-\$200,000	>\$200,000	
<5%	45	268	169	34	516
>5% & <35%	52	101	44	0	197
>35% & <65%	47	50	8	0	105
>65% & <95%	63	55	6	0	124
>95% & <100%	200	138	7	0	345
Total	407	612	234	34	1,287

Extracted from table 6-17a DEIS, Proposed Acceptable Biological Catch and Optimum Yield Specifications and Management Measures for the 2005-2006 Pacific Coast Groundfish fishery

a/ open access vessels with more than half of their total landings value coming from groundfish are considered to be in the directed fishery

Table 4.3.3.6. Number of open access vessels groundfish by exvessel group, 2000 - 2003 (based on 8/24/04 PacFin data)

Open access gear group	Number of open access vessels by groundfish exvessel revenue group					
	0-500	500-1000	1000-2000	2000-3000	3000-5000	>5000
Longline - groundfish directed						
2000	18	11	14	14	18	51
2001	27	13	23	15	11	51
2002	16	17	14	16	8	51
2003	17	11	24	8	21	61
4-year average	20	13	18	13	15	54
Longline - Pacific Halibut						
2000	21	4	7	0	0	0
2001	19	2	5	1	2	0
2002	22	5	4	2	0	0
2003	11	2	8	4	3	1
4-year average	18	3	6	2	1	0
Longline - CA Halibut						
2000	2	1	0	0	0	0
2001	1	0	0	0	0	0
2002	1	0	0	0	0	0
2003	0	0	0	0	0	0
4-year average	1	0	0	0	0	0
Pot - groundfish directed c\						
2000	5	4	2	4	5	16
2001	11	2	6	3	4	15
2002	5	2	4	2	8	12
2003	5	4	5	5	2	15
4-year average	7	3	4	4	5	15
Pot - Dungeness crab						
2000	29	3	2	0	1	8
2001	24	6	6	1	3	6
2002	21	5	2	3	4	8
2003	21	2	8	4	3	10
4-year average	24	4	5	2	3	8
Pot - prawn/shrimp						
2000	9	0	2	0	0	0
2001	3	2	0	0	0	1
2002	3	1	1	0	0	1
2003	3	2	0	0	0	2
4-year average	5	1	1	0	0	1
Pot - sheephead						
2000	6	2	0	0	0	0
2001	7	1	1	0	0	1
2002	7	1	2	0	0	1
2003	2	0	0	0	0	2
4-year average	6	1	1	0	0	1
Trawl - sea cucumber						
2000	2	0	0	0	0	0
2001	8	0	0	0	0	0
2002	5	2	0	0	0	0
2003	5	0	0	0	0	0
4-year average	5	1	0	0	0	0

Open access gear group	Number of open access vessels by groundfish exvessel revenue group					
	0-500	500-1000	1000-2000	2000-3000	3000-5000	>5000
Trawl - CA halibut						
2000	8	5	4	0	1	1
2001	16	3	3	1	0	0
2002	9	3	3	0	0	1
2003	7	2	0	0	1	0
4-year average	10	3	3	0	1	1
Trawl -Ridgeback Prawn						
2000	14	4	6	3	0	1
2001	12	0	2	1	1	0
2002	9	0	4	0	0	0
2003	13	1	1	0	0	0
4-year average	12	1	4	1	0	0
Line gear - all groundfish a/						
2000	534	84	106	56	62	79
2001	385	120	113	100	66	100
2002	267	91	136	40	57	91
2003	173	59	63	42	34	93
4-year average	340	89	105	59	55	91
Line gear - CA halibut						
2000	104	0	2	0	0	0
2001	121	2	0	0	2	0
2002	85	0	0	0	2	0
2003	99	4	0	0	0	0
4-year average	102	2	0	0	1	0
Line gear - HMS						
2000	15	1	0	0	0	0
2001	9	0	0	2	0	0
2002	7	2	1	0	0	3
2003	6	1	1	0	0	0
4-year average	9	1	1	1	0	1
Line gear - Salmon troll (coastwide)						
2000	218	8	0	0	0	0
2001	182	4	0	0	0	0
2002	145	3	1	0	0	0
2003	141	1	0	0	0	0
4-year average	172	4	0	0	0	0
Line gear - Salmon troll (north only)						
2000	131	7	0	0	0	0
2001	153	4	0	0	0	0
2002	121	0	0	0	0	0
2003	115	0	0	0	0	0
4-year average	131	3	0	0	0	0
Net gear - CPS						
2000	4	1	0	0	0	0
2001	1	1	0	0	0	0
2002	2	0	0	0	0	0
2003	3	0	0	0	0	0
4-year average	3	1	0	0	0	0

Open access gear group	Number of open access vessels by groundfish exvessel revenue group					
	0-500	500-1000	1000-2000	2000-3000	3000-5000	>5000
Other gears						
2000	7	1	0	0	0	0
2001	2	0	0	0	0	0
2002	2	0	0	0	0	0
2003	3	0	0	0	0	0
4-year average	4	0	0	0	0	0

a/ Open access longline groundfish vessels were defined as vessels without a federal LE permit that have greater than 30% of their longline revenues from groundfish.
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Indirect impacts are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect impacts on harvesters and processors include, long-term changes in fishing opportunity, catch availability, and catch value that could result from the VMS requirement and collection of position data.

Short-term economic losses should be offset by future increases in catch levels if increased stability in the fishery results because the integrity of RCAs is maintained. The ability to know the precise location of vessels provides for speedy identification of suspicious or illegal fishing activity in relation to closed areas. Rather than spending significant resources on routine surveillance, enforcement resources can be directed to vessels operating in an unusual manner in the RCAs. Improved enforcement is in the interest of all fishers. Fishers and processors will be the ultimate beneficiaries when the fisheries regulations, developed for conservation and management are properly implemented and enforced. Maintaining the integrity of closed areas that are designed to protect overfished stocks, will aid in the recovery of the stocks and help to guaranteed the future of the industry.

With VMS, the law-abiding skipper can be satisfied that there will be less likelihood of the enforcement officers inspecting vessels that comply with the closed area regulations and a greater probability that inspection will focus on vessels that are suspected of violating the regulations. At times, the commercial fishing industry is subjected to criticism from members of the public and from other stakeholder groups regarding its responsibility to the environment in terms of complying with closure regulations intended to protect vulnerable species. While there may be some irresponsible operators, it is generally believed that the majority of commercial operators abide by closed area restrictions. VMS offers the commercial industry a mechanism to demonstrate its compliance with such regulations and hence honor its responsibility to the long-term sustainability of fisheries resources.

Electronic marketing is growing in importance in many industries, and could be developed for the fishing industry. If a sufficient number of vessels participating in the West Coast fisheries have 2-way communications through VMS and a computer, opportunities to market seafood through e-commerce services (electronic marketing systems) could become more readily available to the West Coast fishing industry. The ability to access the internet via Inmarsat makes likely that electronic marketing of seafood will become established as individual companies set up their own systems.

Electronic marketing system could become a component used to match the supply of fish from a number of

scattered producers with the demand from a variety of markets. An advantage of an electronic marketing systems is that the trading function is separate from the physical transfer of catch between sellers and buyers, which could allow prices to be formed centrally without the costly process of assembling buyers and sellers at a single location. As fishermen are made more aware of electronic market potential, they may choose to alter fishing practices to avoid gluts, avoid catching lower value species, or retain incidentally caught species because they find a buyer while still at sea. The overall result could be a more competitive market and improvement in the use of mixed catches, including the sale of fish that would otherwise have been discarded at sea. While electronic marketing of seafood has been technically possible for some years, extensive and high quality ship-to-shore communications were required to enable fishermen to communicate catch information to a shore-based computer linked into the system. Recent advancements in satellite technology, such as those made by Inmarsat makes it possible to bypass this impediment, allowing electronic marketing in the fishing industry much more feasible for small businesses, such as those found in the West Coast.

Comparison of the Alternatives

Alternative 1, is the least expensive alternative in the short-term since it only requires exempted trawl vessels to provide declaration reports prior to leaving port on a trip in which fishing occurs in an RCA. The greatest difficulty in maintaining the integrity of closed areas to ensure recovery of the overfished stocks occurs under status quo. In the long- term, if unmonitored incursions into the RCA affect the recovery of overfished stocks, fishing opportunity may be further reduced.

Alternatives 2-7 contain VMS requirements, for different gear groups within the open access fleet. The per vessel costs for a transceiver unit with installation is the same under all of the alternative: \$1,200-\$2,700 in Year 1, and \$250-\$625 in subsequent years. Annual operating cost to harvesters include: maintenance, \$60-\$160, and transmission fees, \$192-\$730. Fishers who land groundfish taken incidentally in non-groundfish fisheries and fishers who are less dependent on groundfish may choose to exit the fishery by not retaining groundfish or by not targeting groundfish. Under each of the Alternatives 2-7, Vessels that make less than \$1,000 in annual groundfish exvessel revenue and would likely leave the fishery

Alternative 2 maintains the provisions of status quo, but adds the VMS and declaration reporting requirements for approximately 131 directed groundfish, 31 Pacific halibut, 1 California halibut, and 2 HMS vessels using longline gear that take and retain, possess or land groundfish. Of the alternatives that require VMS, Alternative 2 requires the smallest proportion of the open access fleet (only 165 vessels using longline gear) to have and use VMS. The total cost of Alternative 2 to industry ranges between \$249,150 - \$756,690 for year 1, and \$51,150 - \$129,690 in subsequent years. An unknown portion of directed groundfish vessels using longline gear to take and retain, possess or land groundfish may choose to change gears to pot or line gear avoid VMS requirements.

Alternative 3 includes the same vessels as Alternative 2, but adds the VMS and declaration reporting requirements for approximately 128 vessels using pot gear. The estimated purchase cost of VMS services to the fishing industry if all vessels remain in the fishery is \$442,430 - 1,343,699 in year 1, and \$90,830-\$230,298 in subsequent years. An unknown portion of directed groundfish vessels using pot gear may choose to change to line gear to avoid VMS requirements.

Alternative 4 includes the same vessels as Alternative 3, but adds the VMS and declaration reporting requirement for approximately 18 ridgeback prawn, 6 sea cucumber and 17 California halibut vessels using exempted trawl gear (excludes pink shrimp vessels). Estimated purchase cost of VMS services to the fishing industry if all vessels remain in the fishery is \$442,430 - 1,343,699 in year 1, and \$90,830-\$230,298 in subsequent years. Vessels using exempted trawl gear that make less than \$1,000 in annual revenue from groundfish would likely leave the open access groundfish fishery.

Alternative 5A includes the same vessels as Alternative 4, but adds the VMS and declaration reporting requirements for approximately 738 vessels groundfish, 105 California halibut, and 12 HMS vessels using line gear to take and retain, possess or land groundfish(excludes salmon troll vessels). The estimated purchase cost of VMS services to the fishing industry if all vessels remain in the fishery is \$1,795,390 - 5,452,754 in year 1, and \$368,590 - \$934,554 in subsequent years.

Alternative 5B, includes slightly more vessels than 5A because the number of salmon troll vessels that would be added under this alternative is greater than the number of HMS and Dungeness crab vessels that would not be included. Though alternative 5B does not include vessels in fisheries that are projected to have minimal impacts on overfished species (12 HMS line and 2 longline, 45 Dungeness crab pot), it includes approximately 241 salmon troll vessels. The estimated purchase cost of VMS services to the fishing industry if all vessels remain in the fishery is \$1,973,570 - \$5,993,902 in year 1, and \$405,170 - \$1,027,302 in subsequent years.

Alternative 6A, which applies to any vessel engaged in commercial fishing to which a RCA restriction applies, includes the largest number of open access vessels. The estimated purchase cost of VMS services to the fishing industry if all vessels remain in the fishery is \$2,148,730-\$6,525,878 in years 1, and \$441,130 - \$1,118,478 in subsequent years. Vessels making less than \$1,000 in annual revenue from groundfish. Unlike 5B, all exempted trawl vessels would be included rather than only those that take and retain, possess or land groundfish. Therefore, Alternative 6A would provide coverage for the largest number of vessels, which supports the greatest flexibility in the use of management rules with geographical areas.

Alternative 6B, affects approximately 79 fewer vessels annually than does Alternative 6A, all of which use salmon troll gear. The estimated purchase cost of VMS services to the fishing industry if all vessels remain in the fishery is \$399,590-\$1,013,154 in years 1, and \$1,946,390 - \$5,911,354 in subsequent years. Under 6B, the vessels that are likely to leave the fishery is the same as Alt. 6A , except that the number of salmon trollers that are likely to leave the fishery is slightly less because vessels fishing north of 40°10' N. lat. that only land yellowtail rockfish would not be required to have VMS. Alternative 7, is essentially the same as Alternative 6A because it applies to the same vessels except that vessels less than 12 feet in length would be excluded. Most, if not, all vessels under 12 feet in length are not expected to fish in Federal waters and would therefore not trigger the VMS requirement.

SOCIO-ECONOMIC ENVIRONMENT	
SAFETY	Changes in search and rescue capability resulting from the requirement to carry and use VMS
Alternative 1 Status quo	<u>Direct impact</u> EPIRBS are the primary device used to identify a vessel's location in an emergency situation. VHF radios are also used.
Alternative 2 Vessels using longline gear	<p><u>Direct impact</u> May provide position information that can be used to aid in search and rescue efficiency for 165 OA longline vessels. If VMS transceiver unit has distress signal, it may further reduce response time in an emergency.</p> <p><u>Indirect impacts</u> If VMS results in those fishers who are less dependent on groundfish revenue leaving the fishery, higher catch limits may result for those vessels that remain in the fishery. If fishing opportunity improves and profits to the individual vessel increase there may be fewer of these marginal vessels that tend to display more risk prone behavior including, the tendency to not adequately maintain equipment and vessels.</p>
Alternative 3 Vessels using longline or pot gear	<u>Direct impact & Indirect Impacts</u> Same as Alt.2, but adds 30 directed, 45 Dungeness crab, 8 prawn, and 37 California halibut vessels using pot gear
Alternative 4 Vessels using longline, pot or trawl gear, except pink shrimptrawl	<u>Direct impact & Indirect Impacts</u> Same as Alt. 2 and 3, but adds approximately 41 vessels (18 ridgeback prawn, 6 sea cucumber and 17 California halibut vessels) using exempted trawl gear (excludes pink shrimp vessels) that take and retain, possess or land groundfish.
Alternative 5A Vessels using longline, pot, trawl or line gear, except: pink shrimp trawl and salmon troll	<u>Direct impact & Indirect Impacts</u> Same as Alt. 2, 3 and 4, plus 855vessels (738 vessels groundfish, 105 California halibut, and 12 HMS vessels) using line gear to take and retain, possess or land groundfish(excludes salmon troll vessels).
Alternative 5B Vessels using longline, pot, trawl or line gear, except: pink shrimp trawl, HMS longline & line, and Dungeness crab pot gear.	<u>Direct impact & Indirect Impacts</u> Same as Alt. 2, 3, 4 and 5A, except 12 HMS line and 2 longline, 45 Dungeness crab pot are not included, but an additional 177 salmon troll vessels are included. 1,307 vessels total.
Alternative 6A Vessels with RCA restrictions	<u>Direct impact & Indirect Impacts</u> In addition to benefits identified under Alt. 2, 3, 4, & 5A, increases data on fishing effort and fishing location relative to areas where overfished species are distributed from approximately 177 vessels using salmon troll gear, 39 vessels using exempted trawl gear, and an additional 18 Pacific Halibut vessels. 1,423 vessels total.

<p>Alternative 6B Vessels with RCA restrictions except salmon troll north that retain only yellowtail rockfish</p>	<p><u>Direct impact & Indirect Impacts</u> Same as Alt. 6A, but affects approximately <134 fewer vessels annually than does 6A because salmon troll vessel fishing north of 40° 10' N. lat. that only land yellowtail rockfish would be excluded.</p>
<p>Alternative 7 Vessel >12 ft with RCA restrictions</p>	<p><u>Direct impact & Indirect Impacts</u> Same as Alt. 6A, but benefits are slightly reduced from those identified under Alt. 6A because approximately 22 vessels/yr (6 longline, 2 pot, and 14 line gear) each less than 12 feet in length, would not be carrying VMS transceivers.</p>

4.3.4 Safety of Human life

Direct Impacts on the safety of human life at sea primarily consists of changes in search and rescue capability.

Response time to any incident at sea requires clear communications about the problem and the needs of the vessel's crew, an ability to quickly identify the location of the vessel, and the capability to either provide adequate information or to reach the vessel for an at seas rescue. An EPIRB is an emergency notification devise that is automatically released when a vessel sinks. After the EPIRB is released, it floats to the surface and automatically begins sending out an emergency distress signal that identifies the vessel location. Unfortunately, these devices do not always work as intended and a certain proportion of the units fail to work at all.

Though VMS transceivers are not replacements for EPIRBS, they can aid the USCG in search and rescue efforts when other sources of emergency information are not available. If an EPIRB or other safety system fails to transmit a vessel's last location, or if the vessel's last location is in question, VMS could be used to identify the vessel's last known position. Similarly, if a vessel's position reports fail to be received over a period of time, it may be used to alert processing center staff to a potential problem that can be forwarded to the USCG for further investigation. Though VMS shows where a vessel is located it becomes ineffective should the power be lost or a vessel sinks. Unlike EPIRBS which have their own power source, VMS is dependent on the vessel for power. Most VMS systems have distress buttons and some allow for two-way communications. Having the 2-way communication can aid in obtaining information about vessel safety and medical issues.

Indirect impacts on safety as a result of VMS would result if VMS altered risk prone behavior. When fishing opportunity is reduced and profits are marginal, vessels may display more risk prone behavior and may not adequately maintain equipment and vessels. If VMS results in those fishers who are less dependent on groundfish revenue leaving the fishery, higher catch limits may result for those vessels that remain in the fishery. Though farther removed in time, increases in groundfish revenue from increased trip limits could result in vessels being better maintained. Similarly, if the integrity of the RCA can be maintained, the potential for recovery of overfished stocks is more likely and future harvest rates are more likely to increase

There is a certain degree of danger associated with groundfish fishing, however, little is known about the connection between fisheries management measures and incident, injury, or fatality rates in the fishery. Moreover, little is known about risk aversion among fishers or the values placed on increases or decreases in different risks.

There are safety concerns when small vessels are encouraged to fish in deeper waters and farther from assistance. Extended transits will result in longer exposure to harsh weather conditions, especially during winter months. This problem is compounded by the relatively small size and slow speed of many open access fishing vessels which will make it difficult for them to run from weather or return to port before sea conditions become hazardous. Small vessels are not able to withstand rough seas as well as larger vessels. The VMS provisions currently in regulation set a standard that prohibits groundfish directed vessels from drifting in the RCAs. This provision would apply to the open access fisheries as well.

Comparison of the Alternatives

Safety is expected to vary with the alternatives because of the difference in vessel coverage and the VMS information that may be available in an emergency situation. No information regarding a vessel's fishing location is provided under Alternative 1, status quo. Alternative 2 maintains the provisions of status quo, but adds the VMS requirements for approximately 131 directed groundfish, 31 Pacific halibut, 1 California halibut, and 2 HMS vessels using longline gear. Of the alternatives that require VMS, Alternative 2 requires the smallest proportion of the open access fleet (only 165 vessels using longline gear) to have and use VMS and would therefore provide the least safety benefit of the VMS alternatives. Alternative 3, includes

the same vessels as Alternative 2, but adds the VMS and declaration reporting requirements for approximately 128 vessels (30 directed, 45 Dungeness crab, 8 prawn, 8 California sheephead, and 37 California halibut vessels) using pot gear. Therefore, Alternative 3 would more vessels would have VMS units than Alternative 2, however there would be less vessels than under Alternative 4 and therefore less of a safety benefit than Alternative 4. Alternative 4 includes the same vessels as Alternative 3, but adds the VMS and declaration reporting requirement for approximately 18 ridgeback prawn, 6 sea cucumber and 17 California halibut vessels using exempted trawl gear (excludes pink shrimp vessels). Alternative 5A includes the same vessels as Alternative 4, but adds the VMS and declaration reporting requirements for approximately 738 vessels groundfish, 105 California halibut, and 12 HMS vessels using line gear to take and retain, possess or land groundfish(excludes salmon troll vessels). Alternative 5B includes slightly more vessels than 5A because the number of salmon troll vessels that would be added under this alternative is greater than the number of HMS and Dungeness crab vessels that would not be included. Though alternative 5B does not include vessels in fisheries that are projected to have minimal impacts on overfished species (12 HMS line and 2 longline, 45 Dungeness crab pot), it includes approximately 241 salmon troll vessels. Alternative 6, which applies to any vessel engaged in commercial fishing to which a RCA restriction applies, includes the largest number of open access vessels. Therefore, Alternative 6A would have the greatest safety benefits because the greatest number of vessels will be required to carry VMS transceivers. Alternative 6B, affects approximately 79 fewer vessels annually than does Alternative 6A, all of which use salmon troll gear. Alternative 7, is almost the same as Alternative 6A because it applies to the same vessels except that vessels less than 12 feet in length would be excluded. Most, if not, all vessels under 12 feet in length are not expected to fish in Federal waters and would therefore not trigger the VMS requirement.

4.3.5 Communities

Fishing communities, as defined in the MSA, include not only the people who catch the fish, but also those who share a common dependency on directly related fisheries-dependent services and industries. Commercial fishing communities may include boatyards, fish handlers, processors, and ice suppliers. People employed in fishery management and enforcement make up another component of fishing communities. Community patterns of fishery participation vary coastwide and seasonally, based on species availability, the regulatory environment, and oceanographic and weather conditions. Communities are characterized by the mix of fishery operations, fishing areas, habitat types, seasonal patterns, and target species. Although unique, communities share many similarities. For example, all face danger, safety issues, dwindling resources, and a multitude of state and federal regulations.

Since 2003, the Council has used a depth-based management strategy to would allow fishing to continue in areas and with gear that can harvest healthy stocks with little incidental catch of low abundance species (overfished species). Stock assessments for four overfished species, bocaccio, yelloweye, canary and darkblotched rockfish indicated that little surplus production is available for harvest. Therefore, measures must be taken to protect these stocks and rebuild them to sustainable biomass levels.

Regulations that lower fishing quotas have historically reduced the income generated by the fishing fleet. When fishing income is reduced, the coastal communities typically suffer in the short-term. Constraints on the groundfish fishery resulting from the need to rebuild overfished species could cause an economic instability of fishery participants and associated fishing communities. However, recovery of fish stocks will help coastal communities and the industry, in the long term. In the long-term, Alternatives 2-7 provide a means to ensure the integrity of the depth-based management areas and thereby mitigate undesirable or greater economic impacts associated with overfished species management. If the RCAs cannot be maintained, it is likely that management measures will need to revert back to simple closed areas and very restrictive limits, which have a greater effect on fishing communities in the short-term.

In the short-term, if the added cost results in large numbers of incidental OA groundfish vessels and vessel that have a low level of dependency on groundfish leaving the fishery, the necessary fishing supplies that would otherwise be purchased by them may result in less sales for supporting businesses. However, since

these are primarily incidental OA groundfish vessels, it would be assumed that the gear and supplies they normally purchase for the target fishery would remain unchanged.

There is a risk to low volume processors (addressed in the previous section) if a substantial number of incidental OA groundfish and less dependent fishers exit the fishery to avoid the added cost of VMS. This may particularly be a problem under Alternatives 5A-7, in which most incidental fisheries are included. If fewer incidentally caught groundfish are available, prices to processors and buyers may increase, these increases would then be passed on to the businesses that purchase the fish and the consumer. Such increases may have a negative affect on business in coastal communities that depend on groundfish products for their business.

The level of fleet coverage, that portion of the overall open access fishing fleet that would be required to have VMS and provide declaration reports, is the only difference between the alternatives. The ability to maintain the integrity of the RCAs is directly related to the level of VMS coverage for open access vessels. In general, the higher the coverage level for vessels that interact with overfished species, the more likely that it is that the integrity of the RCAs can be maintained.

4.4 Cumulative Impacts

Cumulative effects must be considered when evaluating the alternatives to the issues considered in the EA. Cumulative impacts are those combined effects on quality of human environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what federal or non-federal agency undertake such actions (40 CFR 1508.7, 1508.25 (a), and 1508.25 (c))

[Section to be completed]

5.0 CONSISTENCY WITH THE FMP AND OTHER APPLICABLE LAWS

5.1 Consistency with the FMP

The socio-economic framework in the Pacific Coast Groundfish FMP requires that proposed management measures and viable alternatives be reviewed and consideration given to the following criteria: a) how the action is expected to promote achievement of the goals and objectives of the FMP; b) likely impacts on other management measures; c) biological impacts; d) and economic impacts, particularly the cost to the fishing industry; and e) accomplishment of one of a list of factors.

GOALS AND OBJECTIVES OF THE FMP

The Council is committed to developing long-range plans for managing the Pacific Coast groundfish fisheries that prevent overfishing and loss of habitat, yet provide the maximum net value of the resource, and achieve maximum biological yield. Alternatives 2- 7 are consistent with FMP goal 1-objective 1, and goal 3-objective 10.

Goal 1- 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.

Goal 3- Utilization: Objective 10 -- 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 information necessary to determine the extent to which it is practicable to reduce bycatch and bycatch

mortality.

ACCOMPLISHMENT OF ONE OF THE FACTORS LISTED IN FMP SECTION 6.2.3.

Under the socio-economic framework, the proposed action must accomplish at least 1 of the criteria defined in Section 6.2.3 of the FMP. Alternatives 2-7 are likely to accomplish objective 2 by providing information to avoid exceeding a quota, harvest guideline or allocation, and objective 13 by maintaining a data collection and means for verification.

5.2 Magnuson-Stevens Conservation and Management Act

The Magnuson-Stevens Act provides parameters and guidance for federal fisheries management, requiring that the Councils and NMFS adhere to a broad array of policy ideals. Overarching principles for fisheries management are found in the Act's National Standards. In crafting fisheries management regimes, the Councils and NMFS must balance their recommendations to meet these different national standards.

National Standard 1 requires 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 proposed action is to expand a monitoring program to monitor the integrity of closed areas that were established to protect overfished species. Information provided under Alternatives 2- 7 reduce the risk of overfishing because they would provide information that could be used to reduce the likelihood of overfishing while allowing for the harvests of healthy stocks. Because Alternative 6A and 7 provides the most information, they would have the least risk, while Alternative 1 has the greatest risk.

National Standard 2 requires the use of the best available scientific information. The proposed action is to expand a VMS program to monitor the integrity of closed areas that were established to protect overfished species. Data collected under Alternatives 2-7 would be used to understand the level of fishing effort and how it was distributed. When combined with data from the existing federal observer program, it could be used to more accurately estimate total catch.

National Standard 3 requires, to the extent practicable, that an individual stock of fish be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination. This standard is not affected by the proposed action to expand a monitoring program to monitor the integrity of closed areas.

National Standard 4 requires that conservation and management measures not discriminate between residents of different States. None of the alternatives would discriminate between residents of different States.

National Standard 5 is not affected by the proposed actions because it does not affect efficiency in the utilization of fishery resources.

National Standard 6 requires that conservation and management measures take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches." All alternatives meet this standard.

National Standard 7 requires that conservation and management measures minimize costs and avoid unnecessary duplication. Measures were taken to minimize the costs of a monitoring program by reducing the time burden and cost of declaration reports - they would only be required when vessel changes gears rather than on every trip.

National Standard 8 provides protection to fishing communities by requiring that conservation and management measures be 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 proposed alternatives are consistent with this standard.

National Standard 9 requires that conservation and management measures minimize bycatch and minimize the mortality of bycatch. NMFS is required to "promote and support monitoring programs to improve estimates of total fishing-related mortality and bycatch, as well as those to improve information necessary to determine the extent to which it is practicable to reduce bycatch and bycatch mortality. The proposed action is consistent with this standard.

National Standard 10 Conservation and Management measures shall, to the extent practicable, promote the safety of human life at sea. Alternatives 2-7 have safety benefits. Though VMS is not an emergency response system it has been used in search and rescue to determine a vessel's last known position and the VMS system provides for a distress signal that may also reduce response time in an emergency. Alternatives 6A and 7 have the greatest safety benefits because they require VMS for the largest portion of the open access fleet, followed by 5B and then 6B.

Essential Fish Habitat This action will affect fishing in areas designated as essential fish habitat (EFH). The proposed action is to expand a program to monitor the integrity of closed areas that were established to protect overfished species. The potential effects of the proposed actions are not expected to have either no adverse effect on EFH, to have a positive effect resulting from reduced fishing effort in critical areas, or to have a positive effect if used to support regulations to restrict fishing in areas to protect habitat. No EFH consultation is warranted for this action.

5.3 Endangered Species Act

NMFS issued Biological Opinions (B.O.) under the ESA on August 10, 1990, November 26, 1991, August 28, 1992, September 27, 1993, May 14, 1996, and December 15, 1999 pertaining to the effects of the groundfish fishery on chinook salmon (Puget Sound, Snake River spring/summer, Snake River fall, upper Columbia River spring, lower Columbia River, upper Willamette River, Sacramento River winter, Central Valley spring, California coastal), coho salmon (Central California coastal, southern Oregon/northern California coastal), chum salmon (Hood Canal summer, Columbia River), sockeye salmon (Snake River, Ozette Lake), and steelhead (upper, middle and lower Columbia River, Snake River Basin, upper Willamette River, central California coast, California Central Valley, south-central California, northern California, southern California). During the 2000 Pacific whiting season, the whiting fisheries exceeded the 11,000 fish chinook bycatch amount specified in the Pacific whiting fishery B.O. (December 19, 1999) incidental take statement, by approximately 500 fish. In the 2001 whiting season, however, the whiting fishery's chinook bycatch was about 7,000 fish, which approximates the long-term average. After reviewing data from, and management of, the 2000 and 2001 whiting fisheries (including industry bycatch minimization measures), the status of the affected listed chinook, environmental baseline information, and the incidental take statement from the 1999 whiting B.O., NMFS determined that a re-initiation of the 1999 whiting BO was not required. NMFS has concluded that implementation of the FMP for the Pacific Coast groundfish fishery 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. This proposed rule implements a data collection program and is within the scope of these consultations. Because the impacts of this action fall within the scope of the impacts considered in these B.O.s, additional consultations on these species are not required for this action.

5.4 Marine Mammal Protection Act

Under the MMPA, marine mammals whose abundance falls below the optimum sustainable population level (usually regarded as 60% of carrying capacity or maximum population size) can be listed as "depleted". Populations listed as threatened or endangered under the ESA are automatically depleted under the terms of the MMPA. Currently, the Stellar sea lion population off the West Coast is listed as threatened under the ESA and the fur seal population is listed as depleted under the MMPA. Incidental takes of these species in the Pacific Coast fisheries are well under their annual PBRs. None of the proposed management alternatives are likely to affect the incidental mortality levels of species protected under the MMPA. The West Coast groundfish fisheries are considered Category III fisheries, where the annual mortality and serious injury of a stock by the fishery is less than or equal to 1% of the PBR level. Implementation of Alternatives 2-7 are expected to benefit MMPA species because they would allow observer data and data from other sources to be joined to the VMS data to better understand the extent of potential fishing related impacts on various marine mammal species.

5.5 Coastal Zone Management Act

The proposed alternatives would be implemented in a manner that is consistent to the maximum extent practicable with the enforceable policies of the approved coastal zone management programs of Washington, Oregon, and California. This determination has been submitted to the responsible state agencies for review under Section 307(c)(1) of the Coastal Zone Management Act (CZMA). 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 recommended action is consistent and within the scope of the actions contemplated under the framework FMP. Under the CZMA, each state develops its own coastal zone management program which is then submitted for federal approval. This has resulted in programs that vary widely from one state to the next.

5.6 Paperwork Reduction Act

[Section to be completed]

5.7 Executive Order 12866

This action is not significant under E.O. 12866. This action will not have a cumulative effect on the economy of \$100 million or more, nor will it result in a major increase in costs to consumers, industries, government agencies, or geographical regions. No significant adverse impacts are anticipated on competition, employment, investments, productivity, innovation, or competitiveness of U.S.-based enterprises.

5.8 Executive Order 13175

Executive Order 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 upon Indian tribes.

The Secretary of Commerce recognizes the sovereign status and co-manager role of Indian tribes over shared Federal and tribal fishery resources. At Section 302(b)(5), the Magnuson-Stevens Act reserves a seat on the Council for a representative of an Indian tribe with Federally recognized fishing rights from California, Oregon, Washington, or Idaho.

The U.S. government formally recognizes that the four Washington Coastal Tribes (Makah, Quileute, Hoh, and Quinault) have treaty rights to fish for groundfish. In general terms, the quantification of those rights is 50% of the harvestable surplus of groundfish available in the tribes' usual and accustomed (U and A) fishing areas (described at 50 CFR 660.324). Each of the treaty tribes has the discretion to administer their fisheries and to establish their own policies to achieve program objectives. The proposed action is being developed in consultation with the affected tribe(s) and, insofar as possible, with tribal consensus.

5.9 Migratory Bird Treaty Act and Executive Order 13186

The Migratory Bird Treaty Act of 1918 was designed 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 Act states that 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. The Migratory Bird Treaty Act prohibits the directed take of seabirds, but the incidental take of seabirds does occur. None of the proposed management alternatives, or the Council recommended action are likely to affect the incidental take of seabirds protected by the Migratory Bird Treaty Act. Executive Order 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds) is intended to ensure that each Federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations develops and implements a Memorandum of Understanding (MOU) with the U.S. Fish and Wildlife Service that shall

promote the conservation of migratory bird populations. Currently, NMFS is developing an MOU with the U.S. Fish and Wildlife Service. None of the proposed management alternatives are likely to have a measurable effect on migratory bird populations.

5.10 Executive Order 12898 (Environmental Justice) and 13132 (Federalism)

There is no specific guidance on application of EO 12898 to fishery management actions. The EO states that environmental justice should be part of an agency's mission "by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority or low-income populations." These recommendations would not have federalism implications subject to E.O. 13132. State representatives on the Council have been fully consulted in the development of this policy recommendation.

6.0 REGULATORY IMPACT REVIEW AND REGULATORY FLEXIBILITY ANALYSIS

The RIR and IRFA analyses have many aspects in common with each other and with EAs. Much of the information required for the RIR and IRFA analysis has been provided above in the EA. Table 6.0.1 identifies where previous discussions relevant to the EA and IRFA can be found in this document. In addition to the information provided in the EA, above, a basic economic profile of the fishery is provided annually in the Council's SAFE document.

Table 6.0 1 Regulatory Impact Review and Regulatory Flexibility Analysis

RIR Elements of Analysis	Corresponding Sections in EA	IRFA Elements of Analysis	Corresponding Sections in EA
Description of management objectives		Description of why actions are being considered	
Description of the Fishery		Statement of the objectives of, and legal basis for actions	
Statement of the Problem		Description of projected reporting, recordkeeping and other compliance requirements of the proposed action	
Description of each selected alternative		Identification of all relevant Federal rules	
An economic analysis of the expected effects of each selected alternative relative to status quo			

[Section to be completed]

6.1 Regulatory Impact Review

[Section to be completed]

The RIR is designed to determine whether the proposed action could be considered a “significant regulatory actions” according to E.O. 12866. E.O. 12866 test requirements used to assess whether or not an action would be a “significant regulatory action”, and identifies the expected outcomes of the proposed management alternatives. 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 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 executive Order. Based on results of the economic analysis contained in Section 4.3, this action is not expected to be significant under E.O. 12866.

6.2 Initial Regulatory Flexibility Analysis

When an agency proposes regulations, the RFA requires the agency to prepare and make available for public comment an Initial Regulatory Flexibility Analysis (IRFA) that describes the impact on small businesses, non-profit enterprises, local governments, and other small entities. The IRFA is to aid the agency in considering all reasonable regulatory alternatives that would minimize the economic impact on affected small entities (attachment 1). To ensure a broad consideration of impacts on small entities, NMFS has prepared this IRFA without first making the threshold determination whether this proposed action could be certified as not having a significant economic impact on a substantial number of small entities. NMFS, must determine such certification to be appropriate if established by information received in the public comment period.

1) A description of the reasons why the action by the agency is being considered.

2) A succinct statement of the objectives of, and legal basis for, the proposed rule.

3) A description of and, where feasible, and estimate of the number of small entities to which the proposed

Requirements of an IRFA

The Regulatory Flexibility Act (5 U.S.C. 603) states that:

(b) Each initial regulatory flexibility analysis required under this section shall contain--

- (1) a description of the reasons why action by the agency is being considered;
- (2) a succinct statement of the objectives of, and legal basis for, the proposed rule;
- (3) a description of and, where feasible, and estimate of the number of small entities to which the proposed rule will apply;
- (4) a description of the projected reporting, recordkeeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for preparation of the report or record;
- (5) an identification, to the extent practicable, of all relevant Federal rules which may duplicate, overlap, or conflict with the proposed rule.

(c) Each initial regulatory flexibility analysis shall also contain a description of any significant alternatives to the proposed rule which accomplish the stated objectives of applicable statutes and which minimize any significant economic impact of the proposed rule on small entities. Consistent with the stated objectives of applicable statutes, the analysis shall discuss significant alternatives such as--

- (1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities;
- (2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities;
- (3) the use of performance rather than design standards; and
- (4) an exemption from coverage of the rule, or any part thereof, for such small entities.

rule will apply;

4) A description of the projected reporting, recordkeeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for preparation of the report or record.

5) An identification, to the extent practicable, of all relevant Federal rules which may duplicate, overlap, or conflict with the proposed rule.

6) A summary of economic impacts.

7) A description of any alternatives to the proposed rule which accomplish the stated objectives of applicable statutes and which minimizes and significant economic impacts of the proposed rule on small entities.

7.0 List of Preparers

This document was prepared by the Northwest Regional Office of the NMFS. 8.0 References

[Section to be completed]

8.0 References

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