

ENVIRONMENTAL ASSESSMENT

for the Issuance of an Exempted Fishing Permit to Test an Electronic Monitoring System to Estimate Halibut Bycatch in the Central Gulf of Alaska Rockfish Fishery

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(907) 586-7650 **Abstract:** This document is an Environmental Assessment (EA) of the potential impacts of issuing an exempted fishing permit (EFP) to allow for the testing of an electronic monitoring (EM) system on trawl vessels fishing in the Central Gulf of Alaska (GOA) rockfish fishery. The system is designed to collect data at-sea that will allow a shoreside reviewer to enumerate the number of halibut discarded at sea and to estimate their lengths. If effective, the EM system may allow improved estimation of halibut bycatch and reduce the need for at-sea observer coverage. The purpose of the EFP is to exempt the applicant from Central GOA rockfish fishery closures to allow the project to be conducted without disruption and without impacting other GOA trawl fisheries. The analysis found no significant impacts on the human environment for this action.

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Glossary of Abbreviations

ABC	Allowable Biological Catch
AFSC	Alaska Fishery Science Center
BSAI	Bering Sea and Aleutian Islands Management Area
CEQ	Council on Environmental Quality
CEY	Constant Exploitation Yield
CFR	Code of Federal Regulation
CPUE	Catch Per Unit of Effort
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EFP	Exempted Fishing Permit
EIS	Environmental Impact Statement
EM	Electronic Monitoring
FMP	Fishery Management Plan
FONSI	Finding Of No Significant Impact
GOA	Gulf of Alaska
IPHC	International Halibut Commission
LLP	License Limitation Permit
MRA	Maximum Retainable Amount
MSA	Magnuson Stevens Fishery Conservation and Management Act
NEPA	National Environmental Protection Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPFMC	North Pacific Fishery Management Council
OFL	Overfishing Level
PBR	Potential Biological Removal
POP	Pacific Ocean Perch
PSC	Prohibited Species Catch
PSEIS	Programmatic Supplemental Environmental Impact Statement
PSQ	Prohibited Species Quota
SAFE	Stock Assessment and Fishery Evaluation
SEIS	Supplemental Environmental Impact Statement
TAC	Total Allowable Catch

Executive Summary

Amendment 68 to the Fishery Management Plan for the Groundfish of the Gulf of Alaska (FMP) established a pilot program for quota-based management of the rockfish fisheries in the Central GOA. Under this program, catcher vessels with historic participation in the rockfish fisheries may form cooperatives. Each cooperative is allocated a share of the total allowable catch (TAC) for various rockfish species, sablefish and Pacific cod. The cooperatives are also allocated halibut prohibited species catch (PSC) to allow the prosecution of the quota fisheries. Under the program, all quota species must be retained by the vessel and delivered to a shoreside processor where they are weighed and debited from the cooperative's quota. Halibut PSC, however, must be discarded at-sea and, at this time, can only be effectively accounted against the cooperative's PSC quota if there is an observer onboard to estimate the amount of halibut catch in each haul.

The proposed exempted fishing permit (EFP) supports a project to test an electronic monitoring (EM) system designed to capture video footage of the at-sea discard of halibut and to analyze those data after the vessel has returned to port, in order to estimate the quantity and size of halibut discarded. Currently, vessels that wish to participate in the rockfish pilot program must carry an observer on all pilot program fishing trips. To estimate halibut bycatch in a haul, the observer takes an approximately 300 kg basket sample from each sampled haul and determines the quantity of halibut (and other species) in the sample. This sample is then expanded to estimate the total quantity of halibut in the haul as well as the quantity of halibut in unsampled hauls. Such an approach may result in imprecise estimates of halibut bycatch on a haul-by-haul level and, to the extent that the need for halibut bycatch data drives observer coverage rates, result in the need for more observer coverage.

The EFP is necessary to allow the applicant certain exemptions from fishery closures, observer requirements, maximum retainable amounts, and PSC limits. The objective of the EFP is to study whether an EM system is able to ensure that discard only takes place in a single designated location; accurately enumerate the total number of halibut discarded; and accurately estimate the length of discarded halibut. Further, the study will seek to compare the accuracy and precision of halibut discard estimates from the EM system against a full census of halibut discard from each haul and against standard observer basket sampling. The information from the project will be used to determine whether a larger feasibility study of the use of EM to assess halibut bycatch should be undertaken in 2008. The degree to which the EM system accomplishes the goals and objectives will be evaluated by the applicant and NMFS Alaska Fishery Science Center (AFSC).

The alternatives are limited to the no action alternative (Alternative 1) and the issuance of the EFP (Alternative 2). Alternative 2 would issue an EFP with the following regulatory exemptions: (1) directed fishing closures in the Central GOA implemented under §§ 679.20, 679.21, 679.23 or 679.25; (2) PSC limits for halibut; (3) rockfish pilot program regulations at §§ 679.4, 679.5 and 679.7; and (4) maximum retainable amount (MRA) regulations at § 679.20(e). The total amount of groundfish allowed to be harvested under this EFP would be 400 mt. Pacific ocean perch (POP), northern rockfish, and pelagic shelf rockfish would be targeted, and it is estimated that approximately 285 mt of the catch will consist of these species. In the course of trawling for rockfish, it is also estimated that other species, principally sablefish, arrowtooth flounder, and Pacific cod, will also be harvested. Halibut mortality for the proposed EFP is estimated to be 8 mt. The permit would be effective September 10, 2007, through October 31, 2007.

The environmental effects of Alternative 2 are limited to halibut, marine mammals, groundfish, the benthic environment, and socioeconomic components. The effect of the action on halibut, marine mammals, the benthic environment, and groundfish is insignificant. This EFP is not

expected to have significant socioeconomic effects in the present, although the results of the project may have socioeconomic effects in the future. These future effects cannot be predicted.

Comparison of Alternatives and Selection of a Preferred Alternative

Alternative 2 had no significant environmental impacts nor potential socioeconomic or cumulative socioeconomic effects. Alternative 1 had no additional environmental impacts beyond those already identified in previous analyses. Alternative 1 would not provide for the testing of an EM system, nor would it allow the collection of information that may inform future, larger scale, EM studies. Alternative 2 is the preferred alternative because it provides for the testing of an EM system in the Central GOA and meets the purpose and needs of this project.

1.0 Purpose and Need

The purpose of the proposed EFP is to develop and test an EM system that may allow NMFS to better estimate the amount of halibut PSC discarded in the Central GOA trawl rockfish fisheries. This system would collect video data at-sea which will allow a shoreside reviewer to count and determine the length of discarded halibut.

Because halibut must be discarded at-sea, it is currently only possible to estimate halibut bycatch through standard observer sampling protocols. These protocols, which involve sampling only a small fraction of the catch, may not provide precise estimates of halibut bycatch on a haul-by-haul level and necessitate that an observer be carried on 100% of fishing trips in the GOA trawl rockfish fishery. To the extent that an EM approach to assessing halibut bycatch is effective, it may result in more precise estimates of halibut bycatch as well as either allowing at-sea observers to focus on other duties or possibly reducing the level of required observer coverage. The EFP is needed to provide exemptions from certain regulations to facilitate the experiment.

1.1 Background

GOA trawl rockfish fisheries

Traditionally, the trawl fishery for rockfish in the GOA took place in early July when the trawl fisheries were opened. Though all trawl fisheries opened at the same time, effort was focused on the POP fishery, which generally closed after approximately one week. Following this closure, most vessels shifted effort into the northern rockfish fishery which normally closed about two weeks later. The rapid pace of the fishery created economic inefficiencies that reduced the value of the delivered rockfish. In response to these inefficiencies, congress granted NMFS specific statutory authority to manage Central GOA rockfish fisheries in Section 802 of the Consolidated Appropriations Act of 2004. This section required the North Pacific Fishery Management Council (Council) to establish a pilot rationalization program that recognized the historical participation of rockfish participants. NMFS published a final rule implementing this program in November of 2006 (71 FR 67211). In brief, this program allows vessels with historic participation in the rockfish fishery to form cooperatives around a processor that has a history of taking rockfish deliveries. Based on the amount of rockfish harvested during the qualifying years, the cooperative is then given a fraction of the allowable catch for primary rockfish species (Pacific ocean perch, northern rockfish and pelagic shelf rockfish) and secondary species (sablefish, Pacific cod, rougheye rockfish, shortraker rockfish, and thornyhead rockfish). Additionally, each cooperative is given an allocation of halibut mortality, which may not be retained onboard the vessel and must be discarded at sea. Vessels belonging to the cooperative are allowed to harvest those species between May 1 and November 15. Because this is the first year of fishing under the rockfish pilot program, it is not known to what extent fishing behaviors and areas will change as a result of rationalization.

Vessels fishing for rockfish incidentally catch halibut. The amount of halibut caught varies depending on the gear used, the species targeted, and the location fished. In general, vessels targeting POP or using midwater gear can be expected to encounter less halibut than vessels targeting northern rockfish or using bottom contact gear. Under the rockfish pilot program, cooperatives and the vessels that fish for them will have a strong incentive to reduce halibut bycatch to the extent that it may limit their full harvest of primary and secondary species. It is anticipated that POP, for example, will be harvested almost exclusively with midwater nets and that bycatch rates for halibut will be very low. However, some level of halibut bycatch is

unavoidable, especially when a vessel is targeting those species, such as northern rockfish, that live near the bottom in close association with halibut.

Catch Accounting in the rockfish fishery

Catcher vessels participating in the rockfish fishery have traditionally been required to carry an observer 30% of the time. Prior to rationalization, NMFS accounted for catch in the fishery using two primary data sources: observer data when available from observed trips, and production data submitted by processors receiving trawl catch. These data are sufficient for managing an “open access” type fishery, but are inadequate for monitoring a quota fishery where catch of all quota species must be debited from a specific account. To manage a quota based rockfish fishery, NMFS has implemented new catch accounting procedures. Quota species (primary as well as secondary) may not be discarded at sea and are accounted for on a delivery by delivery basis at the time of each offload. Halibut PSC, however, may not be retained onboard the vessel so it is not possible to account for halibut at the time of delivery and it must be accounted for at-sea. Under the regulations implementing the rockfish pilot program, NMFS increased observer coverage requirements for catcher vessels from 30% to 100%. There were two primary reasons for this increase. First, it would not be possible to account for halibut PSC on unobserved trips using existing methodologies and second, it would not be possible to ensure that less valuable quota species were not being discarded at-sea.

The at-sea estimation of species composition in general and halibut bycatch specifically is problematic. When a codend comes onboard, the observer on a rockfish trawl catcher vessel estimates the volume of fish in the net. The observer then takes a density sample to estimate the weight of fish per unit volume and multiplies the two estimates to obtain an estimate of the total catch. If conditions do not allow an observer to obtain a volumetric estimate, then the captain’s hail weight is used to estimate official total catch.

Using a random sampling methodology, the observer obtains a sample of approximately 300 kg of fish. Fish within the sample are identified to species and weighed. This sample is then expanded by the estimated weight of the haul to give an estimate of the weight of each species in the haul.

Because the observer cannot work 24 hours a day, not all hauls are sampled. When it is not possible for an observer to sample a given haul, the species composition estimate from other hauls is applied to the unsampled haul and expanded based on the skipper’s hail weight for the haul.

While the accuracy and precision of this methodology is not known, there are clearly several potential sources of error. First, the estimation of the volume of fish in a net is imprecise. Second, the observer must estimate the weight of their sample as well as the weight of the individual species using fairly simple scales that are neither as precise nor as accurate as the electronic scales that are used to weigh catch shoreside. Third, the average tow in the rockfish fishery is approximately 13 mt, so less than 2% is actually sampled. Especially for less common species, the estimate of species composition is imprecise on a haul-by-haul level though it may be accurate when the estimates are aggregated across deliveries, vessels, and the season.

Potential for EM estimation of halibut PSC

Whenever possible, NMFS seeks to account for catch in quota based fisheries using a full census of the catch rather than basing accounting on a smaller sample. This approach not only yields better quota management data but prevents conflict between the observer collecting the accounting data and the quota holder. NMFS has found in other rationalized fisheries that observer sampling data is routinely questioned by quota holders in those cases where the quota holder believes that the sample data overestimates the amount of a quota harvested. Many of these problems are obviated when catch accounting is based on a full census of the quota species. In the rockfish pilot program, this is possible for all quota species except halibut. EM may offer a method to collect full census data on halibut discard. To the extent that this approach is successful, it may reduce pressure on observers, result in better catch accounting data, and reduce cost to industry.

EM has been used successfully in other fisheries to monitor no-discard policies; and for the whiting fishery off Oregon and Washington as well as several west coast Canadian fisheries, EM is used to monitor at-sea discards (McElderry et al. 2004). During the 2005 rockfish fishery, NMFS in cooperation with Pacific States Marine Fisheries Commission (PSMFC), investigated the usefulness of EM for monitoring discard in the Kodiak rockfish fishery (McElderry et al. 2006). During this study, discard was uncontrolled and generally took place at multiple locations on the vessel. Further, there was frequent discard of non-halibut catch, which made the enumeration of discards problematic. The study concluded that EM could effectively be used to monitor discard if the type and location of that discard can be controlled. Currently, there are no regulations prohibiting the discard on non-quota species (i.e., other flatfish, grenadiers, etc.) and NMFS anticipates that vessels will continue to discard catch of limited value even under a rationalized fishery. Further, there is no requirement to limit the locations where discard takes place. In the fishery prosecuted as in the past, large volumes of discard were frequently shoveled off the back of the trawl alley while halibut and other selectively discarded catch was disposed of over both rails, through scuppers on both sides of the vessel, and out the back of the trawl alley. This study anticipates that the discard of non-quota species and prohibiting the discard of halibut except through a single location could be prohibited under regulations. To the extent that these factors are controlled, a qualified reviewer coupled with a well designed EM system should be able to accurately enumerate all halibut bycatch and ensure that there is no unauthorized discard. However, the ability of a shoreside reviewer to accurately estimate the length of discarded halibut under actual field conditions is not known.

EM may also offer cost savings to the fishing industry. The 2005 rockfish EM investigations indicated that EM and observer coverage were fairly similar in overall cost. However, the majority of the costs for EM were associated with data review, and an experimental pilot program would be expected to incur greater data review costs. Further, the cost of EM technology has declined markedly in recent years, whereas the cost of observer coverage has increased (Kinsolving 2006). NMFS has not analyzed the potential to reduce observer coverage in the rockfish fishery in the event that EM monitoring of halibut bycatch is successful. Clearly cost savings would only be realized if observer coverage levels could be reduced while maintaining the collection of adequate biological data.

1.2 Project Area

The EFP would authorize the permit holder to fish in the Central GOA. This area is also described as Statistical Areas 620 and 630 for purposes of fisheries management. See Figure 1 for the location of Areas 620 and 630, which include waters in the Exclusive Economic Zone.

Specifically, fishing is anticipated to occur in Statistical Area 630 to the south and east of Kodiak in the vicinity of the continental shelf edge. These areas are shown in Figure 2.

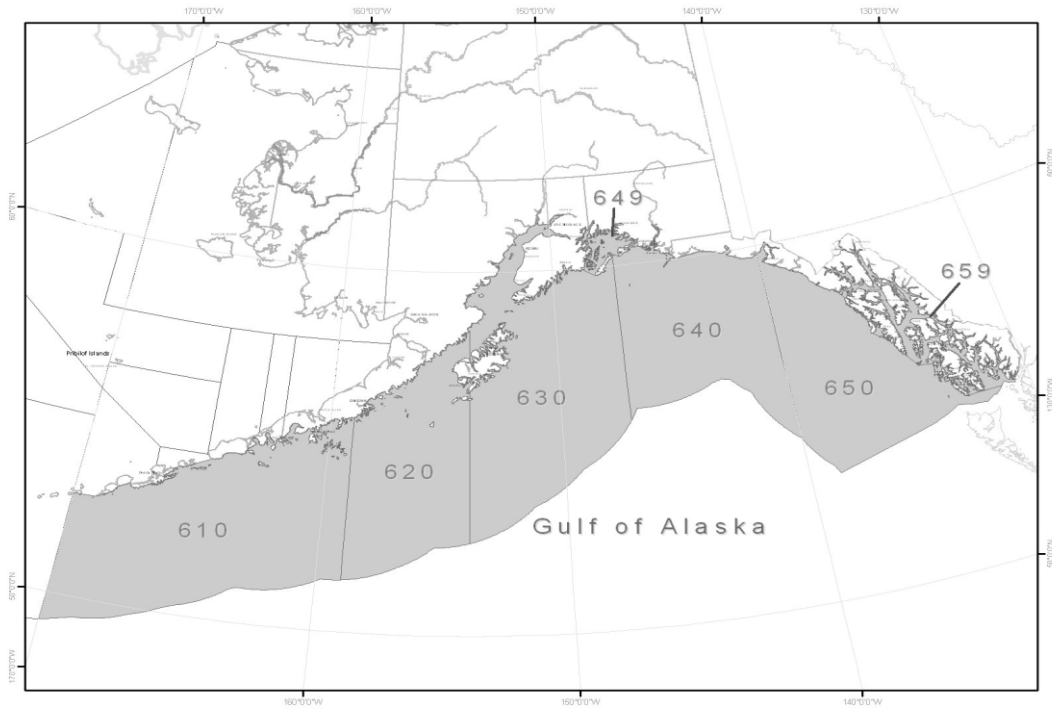


Figure 1: Central GOA management area (statistical areas 620 and 630)

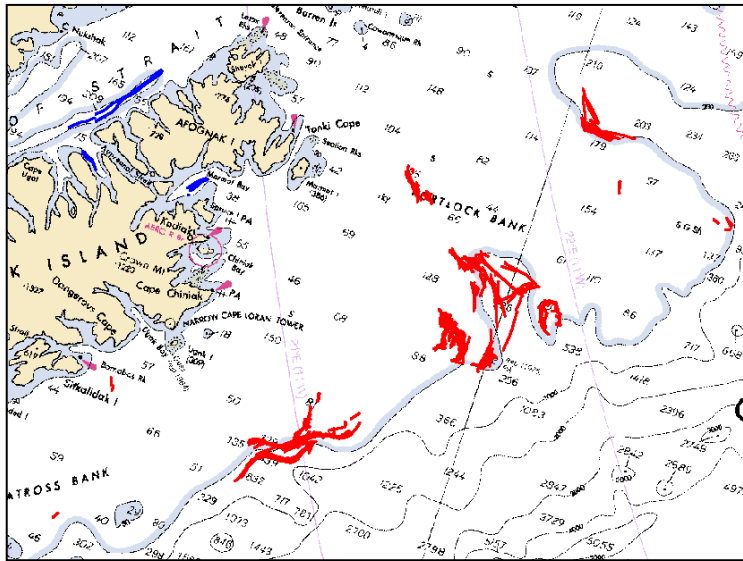


Figure 2. Common rockfish trawling areas. GPS tracks for vessels that carried EM systems during the 2005 rockfish fishery are shown in red, southeast of Kodiak Island. The vast majority of rockfish fishing takes place on or near the shelf edge, which is shown as the blue line, to the north of Kodiak Island in Shelikof Strait, and immediately to the south of Afognak Island.

1.3 Current EFP Proposal

The objective of the EFP is to test an EM system designed to determine the number and length of halibut on a trawl vessel targeting rockfish. The specific goals of the study are as follows:

1. Assess the haul level accuracy and precision of estimates of the number and weight of halibut discarded (using published tables of length/weight regression) on a trawl vessel based on data from EM and standard observer sampling using a complete census of halibut in each haul as a known standard reference. This assessment will include appropriate statistical tests of whether there are differences between the estimates and the known haul amounts.
2. Assess the extent to which error in the EM estimates of number and length of halibut is a function of the equipment and its placement, pace of discards and liveliness (viability) of halibut passing by the cameras, ambient conditions affecting the ability of cameras to obtain length data on halibut, technique used for reviewing EM data (including individual reviewer bias), and other important factors associated with estimating halibut discards with EM.
3. Assess the costs associated with collecting and reviewing EM data.

The proposed study would utilize one fishing vessel and fishing would occur between September 15, 2007, and October 31, 2007. The vessel conducting the fishing will be a typical GOA trawl catcher vessel based in Kodiak. The vessel will make multiple trips each lasting two to three days and will make two to five hauls per day. The applicant estimates that a total of approximately 30 tows will be made under this EFP.

With the exception of halibut, all fish caught during the EFP will be retained. A “prediscard” chute will be installed on the vessel prior to field work. The prediscard chute will be designed to mimic the actual discard scupper on vessels of this size and all halibut “discard” will take place through this chute. Instead of leading overboard, however, the prediscard chute will lead to an area where the halibut can be counted and measured prior to actual discard.

There would be two samplers working on the vessel during the EFP study. The first will concentrate on obtaining a full census of halibut bycatch while the second will conduct standard observer sampling duties. Data from observer sampling will be expanded for each haul using the normal methodology to estimate halibut bycatch.

EM cameras will be placed on the vessel for two purposes: first, to ensure that all discard takes place through the prediscard chute and second, to enumerate and allow length estimation of halibut discarded. The prediscard chute will have length markings on a set of strips placed on the vessel deck in the discard chute itself. These will assist reviewers in determining the length of discarded fish. The EM data will be reviewed shoreside by reviewers with experience collecting and reviewing fisheries video data.

The EFP is necessary to allow the applicant certain exemptions from fishery closures and requirements. With the exception of a small quantity of rockfish TAC reserved for an entry level fishery, the rockfish TAC in the GOA is fully allocated among rockfish pilot program and limited access fishery participants. In order to test the EM system under realistic conditions, it is necessary for the applicant to obtain sufficient rockfish and associated bycatch for conducting the experiment. Second, while unlikely, it is possible that the EFP vessel will exceed an MRA on one or more tows. In order for the experimental design to work, it is important that only halibut be discarded. Thus, the EFP would also exempt the applicant from MRA regulations. These regulatory exemptions are being considered because the information gathered about the harvest of target and incidentally taken species will allow the applicant to develop a potentially improved method of accounting for bycatch. The proposed EFP would allow the applicant to continue harvesting groundfish up to the amount specified in the permit unless NMFS determines there are overfishing concerns.

2.0 Description of Alternatives

This EA provides an analysis of potential impacts resulting from issuing the EFP permit. Two alternatives are presented in this analysis: no issuance of the EFP, the no action alternative, (Alternative 1) and issuance of the EFP permit (Alternative 2). Alternative 2 exempts the applicant from the minimum amount of regulation needed to achieve the experiment’s goal as described in Section 1.0.

No other alternatives are considered. The proposed action is based on an EFP application that describes a carefully designed experiment developed by the applicant in consultation with the AFSC. The experiment is specifically designed to meet a set of scientific goals that require the regulatory exemptions outlined under Alternative 2. It is not reasonable for NMFS to develop alternative experiments that could be implemented under an EFP, especially when no applications to implement any of those alternatives have been received. For NMFS to develop additional alternatives to what is presented in this EA, an additional application that outlined an alternative experimental design would be required. This is not reasonable given the time frame in which the project is to be completed and the applicant’s resources (i.e., financial, vessels, and staff).

In this analysis, the alternatives are evaluated for all direct, indirect, and cumulative effects on resources, species, and issues within the action area (Central GOA) as a result of the preferred alternative. Because of the need to adhere to the experimental design as presented in the EFP application and to meet the purpose of the project, no other alternatives than those presented below are proposed.

Alternative 1: No action alternative. The applicant’s request for the EFP is not approved.

Alternative 2: Preferred alternative. The applicant’s request for the EFP is approved.

Under this alternative, NMFS would issue the EFP with the following conditions:

1. Location and timing. The EFP will be authorized in the Central GOA from September 15, 2007, through October 31, 2007. The permit may be modified to extend the effective dates for an additional year of testing.
2. Amounts and disposition of halibut and groundfish. The total amount of groundfish taken and retained would not exceed 400 mt. All groundfish catch is exempt from TAC requirements, and halibut mortality would be exempt from being counted against the trawl halibut PSC limit. If the 400 mt limit was reached, fishing activities under the EFP must stop. The NMFS Regional Administrator must be notified by the applicant before the EFP limits are reached. The applicant estimates that the following amounts of groundfish would be harvested under this EFP:

Species	Quantity (mt)
Pacific ocean perch	145
Northern rockfish	88
Pelagic shelf rockfish	52
Pacific cod	42
Arrowtooth flounder	34
Sablefish	26
Thornyhead rockfish	4
Shortraker and roughey rockfish	1
Other	8
TOTAL GROUND FISH	400

The total amount of halibut mortality for this EFP is estimated to be approximately 8 mt. This amount of halibut bycatch is reasonable for the amount of rockfish anticipated to be taken during the project. At-sea observer data collected from catcher vessels using non-

pelagic trawl gear in the GOA rockfish fishery from 2003 through 2006 were used to estimate the amount of halibut mortality needed to meet the experimental design of the EFP. Because the goal of the EFP is to study the effectiveness of EM at a variety of halibut bycatch rates, it is important that the EFP not be limited by halibut mortality as estimated based on historical catch rates. Therefore the halibut mortality for purposes of the EFP needs to allow for unforeseen higher levels of halibut bycatch on one or more tows and would be set at 12 mt.

The EFP will exempt the applicant from inseason actions except for actions that address overfishing. The applicant would also be exempted from MRA regulations described in Table 10 to 50 CFR part 679. Groundfish may be retained for sale as described in Federal Regulation, but all halibut must be carefully released as described above.

3. Vessel and Gear: A shoreside catcher vessel that commonly participates in the trawl rockfish fishery in the GOA would be selected for this EFP. The vessel would use trawl gear commonly used in the rockfish trawl fishery. A total of approximately 30 tows would be made.

Regulatory Exemptions

Completion of the project would require the applicants' exemption from several groundfish regulations at 50 CFR part 679:

1. The EFP would exempt the applicant from Central GOA directed fishing closures implemented under §§ 679.20, 679.21, 679.23 or 679.25 for reasons other than overfishing concerns. The EFP would allow for the harvest of up to 400 mt of groundfish species. These exemptions are necessary to ensure the EFP participant can harvest a sufficient amount of groundfish and halibut to ensure a statistically valid number of tows during the EFP time period when the rockfish fishery is likely to be closed to directed fishing due to either reaching the TAC or due to halibut PSC limits. Rockfish is fully allocated in the Central GOA; and therefore, the EFP must provide for an amount of rockfish and incidental catch to ensure the project may be conducted during the time period specified. In addition, the fish harvested under the EFP would not be counted against the TAC or PSC limit to ensure the activities under the EFP would not constrain fishing activities by the industry.
2. The EFP would exempt the applicant from the requirements of the rockfish pilot program. The permit would require exemptions from §§ 679.4(n), 679.5(r) and 679.7(n). Harvest of rockfish would be conducted under the EFP outside of any cooperative quota and therefore compliance with the rockfish pilot program requirements is not necessary.
3. Because the EFP vessel would be carrying at-sea samplers, the EFP would exempt the applicant from regulations requiring observers to be onboard the vessel. Specifically, the permit would require exemptions from Sections 679.50, 679.7(a)(3), 679.7(g) while the experiment is being conducted. This exemption would ensure the data necessary for the EFP is collected by qualified individuals using methods not normally practiced by observers in the directed rockfish fishery. Data collected and duties performed by NMFS observers would not fulfill the requirements of the EFP and therefore at-sea samplers would be used instead.
4. Halibut mortality from this project would not be applied against the halibut PSC limits allocated to the Central GOA trawl fishery or to prohibited species quota (PSQ) limits in the rockfish pilot program. The proposed EFP would exempt a vessel from halibut PSC limits at § 679.21(d)(3) and permit up to 12 mt of halibut mortality. This exemption is necessary to

ensure the halibut taken under the EFP would not constrain other fishery participants in the Central GOA and to limit the amount of halibut taken under the EFP to only the estimated amount needed to complete the project.

5. The vessel would be exempted from MRA regulations at 50 CFR 679.20(e) and Table 10 to 50 CFR part 679. Additional discard occurring during the EFP would hamper the ability of reviewers to determine whether or not all halibut were retained. It is highly unlikely that discard above the MRA would be required, but it is a possibility on one or more tows. To ensure only halibut is discarded and to allow the accounting of incidentally caught species, the EFP participant would need to be exempt from the MRA requirements.

3.0 Affected Environment

The National Environmental Policy Act (NEPA) documents listed below contain extensive information on the fishery management areas, marine resources, ecosystem, social and economic parameters of these fisheries, and the harvest specifications. Rather than duplicate an affected environment description here, readers are referred to those documents. All of these are public documents and are readily available in printed form or over the Internet at links given in the references. Because this action is limited in area and scope, the description of the affected environment is incorporated by reference from the following documents:

Annual Harvest Specifications EA and Environmental Impact Statement (EIS) In January 2007 NMFS released the Alaska Groundfish Harvest Specifications EIS (NMFS 2007). This document evaluated the effects of alternative harvest strategies for groundfish. A Record of Decision was released in February 2007 which selected the preferred alternative, allowing TACs to be set within the range of acceptable biological catches (ABCs) recommended through the Council harvest specifications process and TACs recommended by the Council. The 2006-2007 harvest specifications were analyzed in an EA and a Finding of No Significance Impact (FONSI) determination was made prior to publication of the rule (NMFS 2006a). Additionally, the ecosystem considerations section of the Stock Assessment and Fishery Evaluation reports is included as Appendix C to the groundfish harvest specifications EIS (NMFS 2007). It contains summaries and references to recent studies and information applicable to understanding and interpreting the criteria used to evaluate impacts that may result from alternative harvest quotas. Appendix B to the EIS contains the GOA stock assessment and fishery evaluation (SAFE) reports.

Final Environmental Assessment for Amendment 68. This EA examined the impact of the rockfish pilot program and a FONSI determination was made prior to publication of the rule (NMFS 2006b). This document contains a description of how rationalization of the rockfish fisheries in the GOA may impact the human environment as well as how it will impact the management and oversight of rockfish quotas.

Groundfish Programmatic EIS. The Alaska Groundfish Fisheries Final Programmatic Supplemental Environmental Impact Statement (PSEIS) evaluates the fishery management policies embedded in the Bering Sea/Aleutian Islands and GOA groundfish FMPs against policy level alternatives and the setting of TACs, ABC, and overfishing level (OFL) at various levels of fishing (NMFS 2004). The PSEIS is available at <http://www.fakr.noaa.gov/sustainablefisheries/default.htm>. This document contains a description of the impacts from the GOA groundfish fishery.

GOA Groundfish Rationalization Supplemental EIS (SEIS). In this analysis, ongoing since May 2002, the Council is considering alternative management approaches to “rationalize” the GOA groundfish fisheries. Rationalization may improve the economic stability to the various participants in the fishery. These participants may include harvesters, processors, and residents of fishing communities. The Council is considering these new management policies at the request of the GOA groundfish industry to address its increasing concerns about the economic stability of the fisheries. Some of these concerns include changing market opportunities and stock abundance, increasing concern about the long-term economic health of fishing dependent communities, and the limited ability of the fishing industry to respond to environmental concerns under the existing management regime. The Council may consider rationalizing the fishery through individual fishing quotas, allocations to communities or processors, or cooperatives. Alternatively, the Council may choose to modify the License Limitation Program or maintain the existing management system. As yet, specific alternatives have not been selected, and the SEIS will guide the Council in its decision making process. For more information see the http://www.fakr.noaa.gov/sustainablefisheries/goa_seis/default.htm.

Essential Fish Habitat (EFH) Identification and Conservation in Alaska EIS (NMFS 2005). This EIS reexamines the effects of fishing on EFH in waters off Alaska, presents a wider range of alternatives, and provides a thorough analysis of potential impacts on EFH caused by the groundfish fishery. The analysis provides a description of managed groundfish species, marine mammals, and the socioeconomic environment in the Central GOA trawl fishery. The analysis indicates that there are long-term effects of fishing on benthic habitat features off Alaska and acknowledges that considerable scientific uncertainty remains regarding the consequences of such habitat changes for the sustained productivity of managed species. The EIS is found at <http://www.fakr.noaa.gov/habitat/seis/efheis.htm>.

Steller Sea Lion Protection Measures Final Supplemental Environmental Impact Statement (SEIS) (NMFS 2001). This SEIS evaluates alternatives to mitigate potential adverse effects as a result of competition for fish between Steller sea lions under a no action alternative as well as other alternatives that would substantially reconfigure the GOA and Bering Sea and Aleutian Islands (BSAI) groundfish fishery. Impacts are disclosed, both significantly positive and significantly negative as required by NEPA. A biological opinion prepared according to the Endangered Species Act is included for the preferred alternative. This document also describes the life history characteristics of Steller sea lions and potential interactions with the groundfish fishery. For more information see <http://www.fakr.noaa.gov/sustainablefisheries/seis/sslpm/default.htm>.

For those stocks where information is available, none are considered overfished or approaching an overfished condition and all are managed within the 2007 annual harvest specifications. The ABC, OFL, and TAC amounts for each target species or species group for 2007 and 2008 is specified in the *Federal Register* (72 FR 9451, March 2, 2007). Table 4.2 shows the 2007 and 2008 TAC and ABC amounts for the Central GOA groundfish fisheries and for several fisheries with GOA-wide specifications.

Further details about the affected environment are found in Section 4.0 which describes the resource components potentially affected by the proposed action.

4.0 Environmental and Economic Consequences

Environmental Components Potentially Affected

The issuance of the EFP is limited in scope and will likely not affect all environmental components of the GOA. This project involves the taking of 400 mt of groundfish species in the Central GOA using trawl gear and would result in some harvest beyond the annual TAC limits for some species. Table 4.1 shows the potentially affected environmental components. Because under Alternative 1 (no action) the EFP permit would not be issued, no effects beyond those described in the documents listed in Section 3.0 of this EA would occur.

Table 4.1 Resource components potentially affected by EFP alternatives

Alternatives	Potentially Affected Component							
	Physical	Benthic Comm.	Groundfish	Marine Mammals	Seabirds	Non-specified Species	Prohibited Species	Socio-economic
1	N	N	N	N	N	N	N	Y
2	N	Y	Y	Y	N	N	Y	Y

N = no impact beyond status quo anticipated by the option on the component

Y = an impact beyond status quo is possible if the option is implemented

Under Alternative 2, the gear type and method of harvest would not change from current practices. The increased amount of fishing effort (approximately a quarter of a percent) and any potential effects on the physical environment, seabirds, and non-specified species are likely not detectable. Therefore, no effects beyond those already identified are expected on the physical environment, non-specified and forage species, and seabird components of the environment (NMFS 2007). As illustrated in Table 4.1, the following five potential environmental components may be impacted under Alternative 2:

1. **Groundfish species:** Issuance of the EFP would permit the harvesting of target groundfish species and prohibited species (Pacific halibut) using trawl gear in the Central GOA. Potential effects on the environment can occur from direct removals of groundfish from the ocean through harvesting, bycatch of non-target species, and environmental impacts resulting from the use of the fishing gear. The EFP would exempt the applicant from TAC requirements which would result in harvest above the 2007 TAC and potentially the 2008 TAC if the permit is modified for an additional year. Therefore, because groundfish may be taken above the TAC, additional impacts on groundfish other than those identified in the groundfish harvest specifications EIS (NMFS 2007) may occur.
2. **Marine Mammals:** Steller sea lions in the project area may be impacted from the removal of certain groundfish species above their respective TACs as specified in the groundfish harvest specifications EIS (NMFS 2007). One species in particular, Pacific cod, is important prey for Steller sea lions. Because issuance of the EFP would allow the harvest of groundfish above the TAC level, the marine mammal component could have impacts beyond those described in the groundfish harvest specification EIS (NMFS 2007) and is thus considered a potential affect. The applicant would not be exempt from the Steller sea lions protection measures for the groundfish fisheries.

3. Halibut prohibited species catch (PSC): Issuance of this EFP would permit the taking of an estimated 12 mt of additional halibut PSC. Potential effects could occur from this additional halibut mortality.
4. Benthic community: This action may have impacts on the benthic environment and associated areas designated as essential fish habitat (EFH). Alternative 2 would allow for the harvest of an additional 400 mt of groundfish. Because this will result in a corresponding increase in the total amount of trawling during 2007 and potentially in 2008, there could be additional impacts to the benthic community beyond those analyzed in the groundfish harvest specification EIS (NMFS 2007). The applicant would not be exempt from EFH regulations.
5. Social and economic impacts: This action may also have socioeconomic impacts on the industry and the applicant. Issuance of this EFP would allow the applicant to generate revenue from the sale of groundfish caught during the course of the experiments. Thus, economic benefits may be accrued by the applicants. The successful development of an EM system may also impact the costs associated with observer coverage compliance in the rockfish fishery.

Table 4.1 shows the components of the human environment and the potential impacts beyond status quo (Alternative 1). The issuance of the EFP is limited in scope and will likely not affect all environmental components of the GOA. Analysis is included for those environmental components that may have an impact beyond those already described in previous NEPA analysis for status quo.

This section forms the scientific and analytical basis for the issue comparisons across alternatives. As a starting point, Alternative 2 is perceived as having the potential to affect one or more components of the human environment. Significance of effect is determined by considering the context in which the action will occur and the intensity of the action. The context in which the action will occur includes the specific resources, ecosystem, and the human environment affected. The intensity of the action includes the type of impact (beneficial versus adverse), duration of the impact (short versus long term), magnitude of impact (minor versus major), and degree of risk (high versus low level of probability of an impact occurring). Further tests of intensity include (1) the potential for compromising the sustainability of any target or nontarget species; (2) substantial damage to marine habitats and/or essential fish habitat; (3) impacts on public health or safety; (4) impacts on endangered or threatened species, or critical habitat of listed species; (5) cumulative adverse effects; (6) impacts on biodiversity and ecosystem function; (7) level of social or economic impacts; and (8) degree of controversy (NOAA Administrative Order 216-6, Section 6.02).

Differences between direct and indirect effects are primarily linked to the time and place of impact. Direct effects are caused by the action and occur at the same time and place. Indirect effects occur later in time and/or are further removed in distance from the direct effects (40 CFR 1508.27). For example, the direct effects of an alternative which lowers the harvest level of a target fish could include a beneficial impact to the targeted stock of fish, a neutral impact on the ecosystem, and an adverse impact on net revenues to fishermen, while the indirect effects of that same alternative could include beneficial impacts on the ability of Steller sea lions to forage for prey, neutral impacts on incidental levels of prohibited species catch, and adverse impacts in the form of economic distribution effects, for example, reducing employment and tax revenues to coastal fishing communities.

The section below contains an explanation of the significance criteria. The significance ratings are as follows: beneficial, adverse, insignificant, and unknown. Where sufficient information on direct and indirect effects is available, rating criteria are quantitative in nature. In other instances, where less information is available, the discussions and rating criteria used are qualitative. In instances where criteria to determine an aspect of significance (adverse, insignificant, or beneficial) do not logically exist, no criteria are noted. These situations are termed “not applicable” in the criteria tables. An example of an instance where criteria do not logically exist is the evaluation of the impact vector of incidental take on a declining stock of marine mammals. In that situation, an increase in take that caused a downward change in the population trajectory by greater than 10 percent is significantly adverse. Any level below that which would have an effect on population trajectories is insignificant because the stock is continuing to decline regardless of fishery effects. There is no logical significantly beneficial alternative (a reduction in take resulting in a beneficial effect on the population trajectory). Therefore, a criterion for significantly beneficial would not be applicable (NMFS 2004).

The rating terminology used to determine significance is the same for each resource, species, or issue being treated; however, the basic “perspective” or “reference point” differs depending on the resource, species, or issue being treated. The reference point relates to the biological environment. For each resource or issue evaluated, specific questions were considered in the analysis. In each case, the questions are fundamentally tied to the respective reference point. The generic definitions for the assigned ratings are as follows:

Significant beneficial effect in relation to the reference point; this determination is based on interpretations of available data and the judgment of the analysts who addressed the topic.

Insignificant effect in relation to the reference point; this determination is based upon interpretations of data, along with the judgment of analysts, which suggests that the effects are small and within the “normal variability” surrounding the reference point. When evaluating an economic or management issue it is used when there is evidence the alternative does not positively or negatively affect the respective factor.

Significant adverse effect in relation to the reference point and based on interpretations of data and the judgment of the analysts who addressed the topic.

Unknown effect in relation to the reference point; this determination is made in the absence of information or data suitable for interpretation with respect to the question of the impacts on the resource, species, or issue.

No effect is anticipated from implementation of the action.

4.1 *Groundfish*

Designated target groundfish species and species groups in the GOA are walleye pollock, Pacific cod, deep-water flatfish², rex sole, flathead sole, shallow-water flatfish³, arrowtooth flounder,

² The deep-water flatfish complex is composed of the following species: Dover sole, Greenland turbot, and deep-sea sole.

³ The shallow-water flatfish complex is composed of all flatfish excluding deepwater flatfish, flathead sole, rex sole, and arrowtooth flounder.

sablefish, Pacific ocean perch, shortraker rockfish, roughey rockfish, other rockfish, northern rockfish, pelagic shelf rockfish, thornyhead rockfish, big skates, longnose skates, other skates, demersal shelf rockfish, Atka mackerel, and other species⁴. This EA cross-references and summarizes the status of the stock information in the 2006 GOA SAFE report (NMFS 2007, appendix B). For detailed life history, ecology, and fishery management information regarding groundfish stocks in the GOA see Section 3.3 in the final PSEIS (NMFS 2004) and the groundfish harvest specifications EIS (NMFS 2007).

⁴ The other species complex is composed of all shark species, all octopus species, all sculpin species, and all species of squid.

Table 4.2 2005-2008 groundfish Central GOA and GOA-wide TACs and ABCs

Species	2006 Harvest	2006 TAC	2006 ABC	2007 TAC	2007 ABC	2008 TAC	2008 ABC
Central GOA							
Pacific cod	23,011	28,405	37,873	28,405	37,873	29,453	39,270
Deep-water flatfish	372	4,139	4,139	4,163	4,163	4,296	4,296
Rex sole	2944	5,506	5,506	5,446	5,446	5,327	5,327
Flathead sole	2671	5,000	25,195	5,000	26,054	5,000	27,382
Shallow-water flatfish	7401	13,000	24,258	13,000	24,258	13,000	24,258
Arrowtooth flounder	25,509	25,000	134,906	30,000	139,582	30,000	141,673
Sablefish (trawl)	844	1,247	6,370	1,238	1,238	6,159	6,159
Northern rockfish	3,984	3,608	3,608	3,499	3,499	3,365	3,365
Pacific ocean perch	8,282	7,418	7,418	7,612	7,612	7,694	7,694
Shortraker rockfish	299	353	353	353	353	353	353
Rougheye rockfish	134	608	608	611	611	614	614
Thornyhead rockfish	388	989	989	989	989	989	989
Pelagic shelf rockfish	1,713	3,262	3,262	3,325	3,325	3,973	3,973
Other rockfish	522	386	386	386	386	386	386
Big skate	1,198	2,250	2,250	2,250	2,250	2,250	2,250
Longnose skate	632	1,969	1,969	1,969	1,969	1,969	1,969
GOA-Wide							
Atka mackerel	876	1,500	4,700	1,500	4,700	1,500	4,700
Other species	3478	13,856	na	4,500	na	4,500	na
Other skates	1085	1,617	1,617	1,617	1,617	1,617	1,617

The reference point for significance determination for the effects on target groundfish species is the capacity of the stock to maintain benchmark population levels or harvest rate of subject

species as specified in 2006-2007 harvest specification EA (NMFS 2006). The 2006-2007 harvest specification EA sets benchmark harvest levels in accordance with requirements described by the Magnuson-Stevens Fishery Conservation and Management Act (MSA). Perhaps the most influential of these standards is MSA National Standard 1 which states: “Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimal yield from each fishery for the United States fishing industry” (16 U.S.C. 1851). These benchmarks include OFLs, ABCs, and TACs. The OFLs and ABC levels reflect sustainable harvest levels based on science and the GOA FMP. The annual TACs reflect policy choices for allowable catch levels and are always specified less than or equal to OFL and ABC benchmarks. Table 4.3 summarize the significance criteria for evaluating the effects of the alternatives on groundfish in accordance with harvest benchmarks described in the 2006-2007 harvest specification EA.

Table 4.3 Criteria used to estimate the significance of effects on stocks of groundfish in the GOA.

Effect	Significant Adverse	Insignificant	Significant Beneficial	Unknown
Harvest of Groundfish Species	Reasonably expected to jeopardize the capacity of the stock to maintain benchmark population levels	Reasonably not expected to jeopardize the capacity of the stock to maintain benchmark population levels	NA	Insufficient information available

For the purposes of this analysis, groundfish harvest above the OFL level has a significant adverse impact on the stock and can be reasonably expected to jeopardize the capacity of the stock to maintain benchmark population levels. Because the project is geographically and temporally limited, as well as being limited to a small portion of the overall groundfish population, harvest of groundfish below the OFL is reasonably not expected to jeopardize the capacity of the stock to maintain benchmark population levels.

Effects on Groundfish

Issuance of the EFP will allow for the removal of up to 400 mt of groundfish (primarily rockfish) that would be exempt from the TAC for the Central GOA for 2007 and potentially for 2008 if the permit is modified for an additional year of testing. Observer data from 2003 through 2006 Central GOA hauls were used to estimate the expected catch mix of groundfish for the EFP. Specifically, the applicant used observed hauls from trawl catcher vessels using nonpelagic trawl gear where greater than 50% of the catch was rockfish. This estimate may overestimate the amount of some non-rockfish groundfish that would be taken during this EFP. During 2003-2006, the rockfish fishery was managed as a license limitation program (LLP) fishery. Vessels that participated often “topped off” up to the MRA with species other than rockfish that had higher value, specifically Pacific cod and sablefish. While many vessels made specific “top off tows” to get their MRA amounts of Pacific cod and sablefish, other vessels simply attempted to fish for rockfish in a way that potentially increased bycatch of higher value species. Because all tows under the EFP would be directed specifically at rockfish, bycatch of these other species may be lower. Table 4.4 summarizes the expected groundfish removals under Alternative 2 and their relationship to TAC, ABC, and OFL for each species. Catch amounts associated with the 400mt

allocation to the EFP would be in addition to the normal harvest specifications process. These removals would be accounted for as fish allocated under an EFP.

In past years, the rockfish fisheries have generally been closed within 10 percent of TAC unless catch of halibut PSC limits the fishery. In general, when the trawl fisheries opened, most vessels targeted POP, shifting into northern rockfish and pelagic shelf rockfish only when POP closed. Thus, the POP fishery was only rarely constrained by halibut PSC while the northern rockfish fishery frequently was. NMFS attempted to close the fisheries in a timely fashion based on projections from preliminary data, but because effort and catch would change after a closing date had been established, it was not possible to close the rockfish fisheries precisely on TAC. During the final 10 years of the limited access fishery, for example, the POP fishery was only closed within plus or minus 145 mt of the TAC (the amount of POP proposed under Alternative 2) during two of those years. Under a rationalized fishery, cooperative managers will clearly seek to fully harvest their quotas. However, the vessels fishing for each cooperative will be forced to stop fishing when the quota for any one species is reached, which will inevitably result in some fraction of some quotas being unharvestable. Thus, it is almost impossible that 100 percent of the TAC for the rockfish species would be harvested. Estimating how close to the TAC the total harvest of rockfish will be during 2007 and 2008 is made more complex because vessels that choose not to join a cooperative may fish in a limited access fishery, and 5% of the quota of primary species is being made available to new "entry level" fixed gear and trawl fisheries. All of these fisheries will be closed when (or if) NMFS inseason managers believe that they are close to their allocations. Because of the unknowns surrounding the first year of this pilot program it is assumed, for purposes of this analysis, that 95% of the rockfish species quotas will be harvested in the Central GOA. However, unlike during past years, it is highly unlikely that TAC will be exceeded under the current regime.

The amount of rockfish catch that would be allocated to this EFP is a comparatively small percentage of the overall TAC, and well below the OFL. Further, this amount of catch is within the level of accuracy at which the fishery has been closed in the past. Thus, the impact of the preferred alternative on rockfish stocks is rated as insignificant.

In 2004 and 2005, harvest of Pacific cod was within 10 percent and 5 percent of the annual TAC for the Central GOA and Central GOA inshore allocations, respectively. Issuance of the EFP would likely result in an additional Pacific cod harvest of 42 mt, or less than 0.1% of the TAC and well below the ABC for either 2007 or 2008. These amounts would not exceed the ABC for the GOA or Central GOA. Because the issuance of this EFP would be highly unlikely to result in exceeding the GOA ABC, and the amount of catch is insignificant in relation to the overall TAC, the impact to Pacific cod would be rated insignificant.

The applicants for the EFP estimated that 26 mt of sablefish could be harvested under this EFP. As discussed above, this estimate was based on historical observer data from a fishery where there was an incentive to maximize (within the limits of the MRA regulations) the amount of sablefish harvested. The actual harvest of sablefish will probably be considerably less than this amount. However, 26 mt represents less than 0.5% of the total sablefish TAC (but 2.1% of the trawl allocation of sablefish TAC). Further, in past years, the trawl allocation of sablefish TAC has not been fully taken in the Central GOA, with between 430 and 457 mt of quota remaining at the end of the past three years. While it is not possible to predict the amount of the 2007 or 2008 sablefish TAC that may remain unharvested, it is clear that the quantity of sablefish allocated to this EFP would be minor and thus the impact to sablefish is rated as insignificant.

If approved, it is estimated that this EFP would also result in the harvest of some other species, specifically secondary rockfish species (shortraker, rougheye, and thornyhead rockfish) and arrowtooth flounder. The amounts of these species, however, are much less than the overall TAC. Thus, the impact to these species is rated as insignificant.

Table 4.4 Relationship between 2007 TAC, ABC and OFL and estimated groundfish harvest under Alternative 2. All values are in metric tons (mt). The percent removal over ABC assumes that 100% of the TAC for the species is harvested. 2008 TAC, ABC and OFL are similar to 2007 values (72 FR 9676, March 5, 2007).

Species	TAC	ABC	OFL	EFP estimated removal	Percent removal over ABC
POP	7,612	7,612	8,922	145	1.9%
Northern rockfish	3,499	3,499	5,890*	88	2.5%
Pelagic shelf rockfish	3,325	3,325	6,458*	52	1.6%
Pacific cod	28,405	37,873	97,600*	42	0
Arrowtooth flounder	30,000	139,582	214,828*	34	0
Sablefish	1,238	1,238	16,906*	26	2.1%
Thornyhead rockfish	989	989	2,945*	4	0.4%
Shortraker rockfish	353	353	1,124*	<1	<0.3%
Rougheye rockfish	611	611	1,148*	<1	<0.2%

* OFL for entire GOA. OFL for these species and species groups is not determined separately for the Central GOA.

4.2 Marine Mammals

Direct and indirect interactions between marine mammals and groundfish harvest may occur because of the overlap in the size and species of groundfish harvested in the fisheries that are also important marine mammal prey, and due to temporal and spatial overlap in marine mammal occurrence and commercial fishing activities.

Environmental impacts from the alternatives are analyzed by addressing the following three questions: (1) does the proposed harvest level of groundfish result in an increase in direct interactions with marine mammals (incidental take and entanglement in marine debris); (2) does the proposed harvest level remove prey species at levels or in areas that could compromise the foraging success of marine mammals (harvest of prey species); and (3) does the proposed harvest level modify marine mammal behavior (disturbance)?

Significant incidental take of marine mammals is determined by predicting whether the proposed harvest levels will result in a take that exceeds the potential biological removal (PBR). The PBR is the maximum number of animals that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population. The PBR is used for marine mammals because it is the value determined through the marine mammal stock

assessments (Angliss and Lodge 2004) to identify the level at which animals may be removed from the stocks while the stocks achieves sustainable populations. As long as take is maintained within the PBR, the take is considered not significant. Significance ratings for each question are summarized in Table 4.5.

Table 4.5 Criteria for determining significance of impacts to marine mammals.

	Incidental take and entanglement in marine debris	Harvest of prey species	Disturbance
No impact	No incidental take by fishing operations, and no entanglement in marine debris	No competition for key marine mammal prey species by the fishery	No disturbance of mammals or their prey
Adverse impact	Mammals are taken incidentally to fishing operations, or become entangled in marine debris	Fisheries reduce the availability of marine mammal prey	Fishing operations disturb marine mammals or the prey of marine mammals
Beneficial impact	There is no beneficial impact.	There is no beneficial impact.	There is no beneficial impact.
Significantly adverse impact	Incidental take is more than PBR	Competition for key prey species likely to constrain foraging success of marine mammal species causing population decline	Disturbance of mammal or prey field such that population is likely to decrease
Significantly beneficial impact	Not applicable	Not applicable	Not applicable
Unknown impact	Insufficient information available on take rates	Insufficient information as to what constitutes a key area or important time of year	Insufficient information as to what constitutes disturbance

Effects on Marine Mammals

Because of the type of gear and target fishery, the marine mammal species that may be impacted are limited. According to the List of Fisheries for 2007 (72 FR 14466, March 28, 2007), no marine mammals have been documented to be taken in the GOA rockfish trawl fishery. Therefore, no incidental take of marine mammals is expected during the EFP project.

The potential effects of the EFP project are limited to competition for prey and potential disturbance of marine mammals. Rockfish have not been identified as a principal prey species for marine mammals, including Steller sea lions (NMFS 2004). The proposed EFP would catch some fish species used as a food source for Steller sea lions, which are listed as an endangered species within the study areas. Table 4.6 shows the frequency of occurrence of prey species in scat samples collected from sites in the GOA. Of the fish species to be taken in the EFP listed in Table 4.4, only Pacific cod, halibut, and Arrowtooth flounder have been detected in the scat samples in the Central GOA. The summer collection of scat is limited to the months of May, June and July. Winter sampling occurred in February and March. Of these three species, only Pacific cod has been identified as a principal prey species for Steller sea lions, requiring management of the groundfish fisheries to reduce the potential for prey competition (NMFS 2001, appendix A). The EPF project would occur during a time period closer to the summer months (September-October) and is likely at a time when Steller sea lions appear to be less dependent on Pacific cod in their diet.

Table 4.6 Frequency of occurrence of prey in Steller sea lion scat samples. 1999 - 2005

Region	Eastern Gulf	Central Gulf		Western Gulf	
	Number of scats	85	204	184	42
Season	Summer	Summer	Winter	Summer	Winter
PACIFIC COD	5.26	2.35	43.14	36.41	30.95
ARROWTOOTH FLOUNDER	5.26	44.71	30.88	13.59	7.14
HALIBUT		3.53	12.25	4.35	4.76

National Marine Mammal Laboratory, unpublished data, April 2007

Summer= May-July, winter=February-March

Pacific cod harvest levels for the proposed EFP will be limited to an amount not to exceed the ABC specified in the 2007 and 2008 harvest specification (72 FR 9676, March 2, 2007). The 2007 Pacific cod ABC for the Central GOA is 37,873 mt and the TAC is 28,405 mt. The combination of the Central GOA Pacific cod fishery and the EFP harvest would be well below the ABC. GOA Pacific cod spawning biomass for 2007 is estimated at a value of 127,000 mt. This is approximately 23 percent above the B_{40%} value of 103,000 mt, which indicates that 40 percent of the equilibrium spawning biomass would be obtained in the absence of fishing (NMFS 2007, Appendix B). The 2008 TACs and ABCs are similar to 2007 (Table 4.2). Thus, the current equilibrium biomass is well above the biomass that requires the closure of the directed fishery based on Steller sea lion protection measures (50 CFR 679.20).

Figure 3 shows the locations of rockfish trawling in relation to Steller sea lion protection measures of the Pacific cod trawl fishery. The EPF project will be targeting rockfish, which is effectively harvested well outside of the areas protected from Pacific cod trawling. Even though Steller sea lion protection measures do not prevent the directed harvest of rockfish inside areas closed to Pacific cod trawl harvests, it is highly unlikely that any fishing activities under the EFP

would occur in Steller sea lion protection areas. The exemption to the MRA for Pacific cod under the EFP would not be likely to result in any harvest of Pacific cod inside foraging areas in the Central GOA. Because the EFP harvests would not occur in waters important to Steller sea lion foraging and because there is not likely a large dietary dependence on Pacific cod during the time period of the EFP project, no impact on the availability of prey species for Steller sea lions is expected during the EFP project. Moreover, no disturbance of marine mammals including Steller sea lions beyond what has already been analyzed in previous consultations (NMFS 2000, 2001) is expected during the EFP project because of the off shore location of fishing activities, short project duration, and the species targeted.

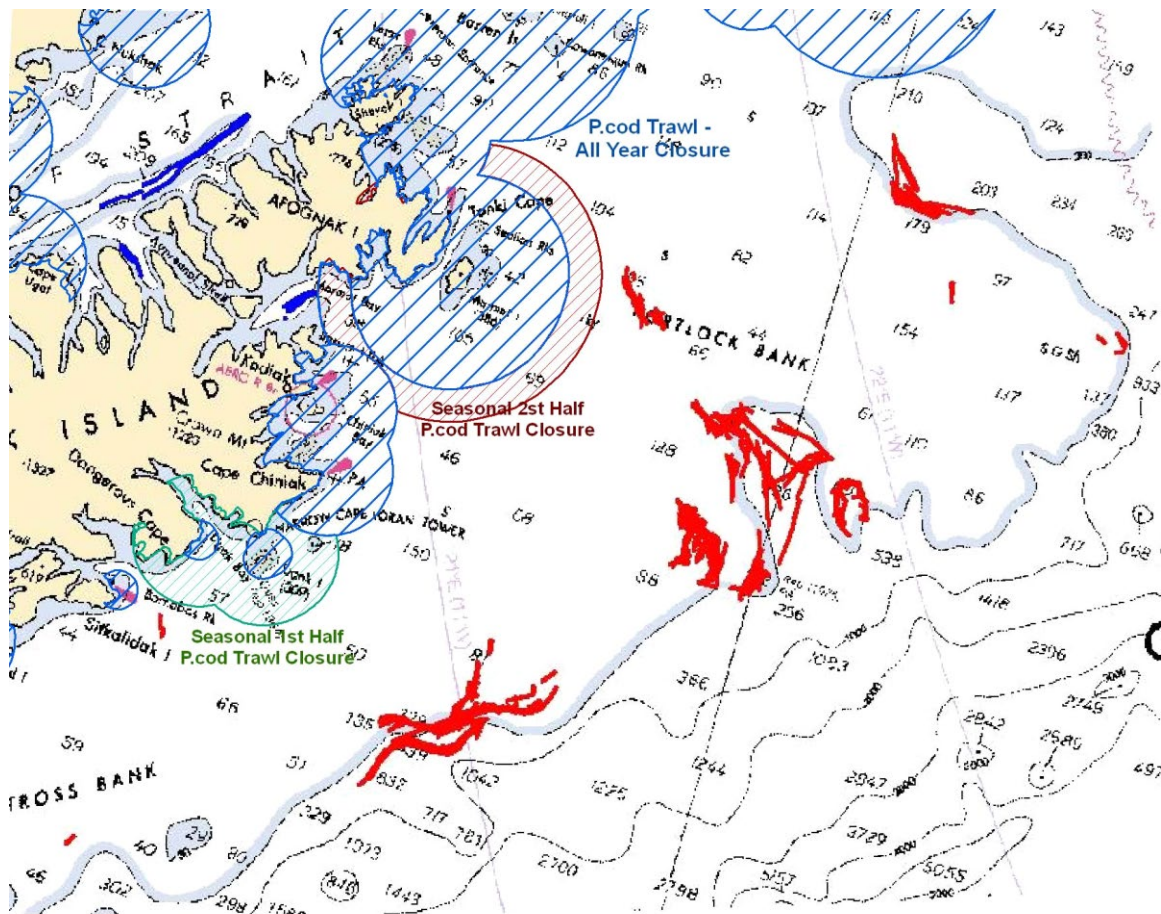


Figure 3 Rockfish harvest locations to the south and east of Kodiak Island are shown in red, relative to Steller sea lion protection areas for the Pacific cod trawl fishery

The GOA stock of harbor seals also may be resident in the area where fishing under the EFP may occur (Angliss and Lodge 2004). Disturbance is a possibility for this species but would not be likely to cause population level effects based on the type of fishing gear used, the limited amount of fishing during the project’s duration, and the amount of fish harvested. The fish that would be harvested under the EFP are not principal prey species for harbor seals in the GOA (NMFS 2004, page 4.9-271). The species and amounts of fish harvest, location of harvest, and temporal scale in which harvest will occur make competition between fishing under the EFP and harbor seals unlikely. Therefore, effects of the EFP on harbor seal populations in the Central GOA are expected to be insignificant for 2007 or 2008.

4.3 Prohibited Species

The only prohibited species managed in the groundfish fisheries in the GOA is Pacific halibut. Alternative 1 is the status quo and would have no additional effects on prohibited species that have not already been analyzed (NMFS 2007). Alternative 2 would allow for an estimated 12 mt of additional halibut mortality beyond the PSC limit established for the GOA trawl fisheries. This halibut mortality would be outside of the annual PSC limit for halibut, because application of halibut caught during the EFP to the annual PSC limit would further constrain harvest of target groundfish species in the GOA trawl fisheries. For this reason, the applicant would be exempt from applying halibut mortality from the EFP against the PSC limit for the GOA trawl fishery.

The reference point for significance determination for the effects on PSC is the capacity of the stock to maintain benchmark population levels. Table 4.6 summarizes the significance criteria for evaluating the effects of the alternatives on Pacific halibut.

Table 4.7 Criteria used to estimate the significance of effects on stocks of Pacific halibut in the GOA.

Effect	Significant Adverse	Insignificant	Significant Beneficial	Unknown
Incidental catch of halibut	Reasonably expected to jeopardize the capacity of the stock to maintain benchmark population levels	Reasonably not expected to jeopardize the capacity of the stock to maintain benchmark population levels	NA	Insufficient information available

Benchmarks: Pacific halibut - estimated long term constant exploitation yield (CEY),

NA: not applicable.

The IPHC is responsible for the conservation of the Pacific halibut resource. The International Pacific Halibut Commission (IPHC) uses a policy of harvest management based on a constant exploitation rate. The constant exploitation rate is applied annually to the estimated exploitable biomass to determine a total constant exploitation yield (total CEY). The total CEY represents the total allowable harvest within an IPHC statistical area and is calculated as the product of the exploitable biomass and the harvest rate (a stock assessment parameter defined by the IPHC). The total CEY is estimated using a variety of stock assessment inputs including hook-and-line survey data, reported sources of mortality from the commercial fishery, and demographic information. To obtain a harvest limit for the directed fishery, the IPHC adjusts the total CEY to account for the following sources of mortality: incidental catch in the groundfish fishery, wastage, personal use, and sport catch.

Incidental catch of halibut in the groundfish fisheries results in a decline in the standing stock biomass, a lowering of the reproductive potential of the stock by harvesting sub-adults and pre-recruits, and reduced short and long term yields to the directed hook-and-line fisheries. To compensate the halibut stock for these removals over the short term, halibut mortality in the groundfish fisheries is deducted on a pound for pound basis each year from the directed hook-and-line quota. Halibut incidentally taken in the groundfish fisheries are of smaller average size

than those taken in the directed fishery, this results in further impacts on the long term reproductive potential of the halibut stock.

The benchmark used to determine the significance of effects for Alternative 2 on the halibut stock is whether incidental catch of halibut during the project reasonably would be expected to lower the total CEY of the halibut stock in Area 3A. The total CEY is used as a benchmark measure because it represents a sustainable harvest limit within IPHC Area 3A.

Effects on Prohibited Species

The most recent stock assessment for Pacific halibut was conducted for Area 3A in 2006 and provided stock size estimates for the 2007 fishery. This stock assessment utilizes survey and harvest data to project the estimated total CEY and exploitable biomass. Results from the 2006 assessment show the halibut resource to be healthy with total catch near record levels. The 2007 total CEY for Area 3A is 37.2 million pounds (16,874 mt) which represents approximately a 15% increase over the 2006 CEY of 32.18 million pounds (14,597 mt).

The proposed EFP is estimated to result in 12 mt of halibut mortality. The requested halibut mortality is 0.05 percent of the total CEY for Area 3A and less than 0.01 percent of the exploitable biomass. This amount of halibut mortality is not expected to lower the total CEY of the stock. Therefore, the halibut mortality requested for the EFP is not expected to decrease the total CEY of the halibut stock and the impact on Pacific halibut is insignificant.

4.4 Benthic and Essential Fish Habitat

Benthic habitat is bottom living and non-living habitat between the shoreline and the 200-mile outer limit of the US Exclusive Economic Zone (EEZ). Benthic habitat is used synonymously with EFH in this analysis because the seafloor in the area where the EFP will be fished has been designated as EFH for at least one species. The 2005 EFH EIS (NMFS 2005) evaluates the long-term effects of fishing on benthic habitat features, as well as likely consequences of those habitat changes for each managed stock based on the best available scientific information.

EFH is defined in the MSA as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” For the purpose of interpreting the definition of EFH, the EFH regulations at 50 CFR 600.10 specify that “waters” include aquatic areas that are used by fish and their associated physical, chemical, and biological properties and may include areas historically used by fish where appropriate; “substrate” includes sediments, hard bottom, structures underlying the waters, and associated biological communities; “necessary” means the habitat required to support a sustainable fishery and a healthy ecosystem; and “spawning, breeding, feeding, or growth to maturity” covers a specie’s entire life cycle.

This analysis assumes that more than minimal and temporary impacts on EFH also would have adverse impacts on habitat-dependent species, including mammals, fish populations, seabirds, invertebrates, and living components of the habitat such as corals and sponges. Conversely, this analysis assumes that habitat modification that results in minimal or temporary effects on managed fish populations also would have negligible effects on other components of the ecosystem that rely upon the same habitats.

The criterion for significantly adverse effects on habitat is derived from the requirement at 50 CFR 600.815(a)(2)(ii) that NMFS must determine whether fishing adversely affects EFH in a manner that is more than minimal and temporary in nature. This standard determines whether

regional fishery management councils are required to take actions that prevent, mitigate, or minimize any adverse effects from fishing, to the extent practicable. Fishery impacts on benthic habitat are therefore rated insignificant if the fishery impacts are minimal or temporary in nature.

The final rule for EFH (67 FR 2343; January 17, 2002) does not define minimal and temporary, although the preamble to the rule states: “Temporary impacts are those that are limited in duration and that allow the particular environment to recover without measurable impact. Minimal impacts are those that may result in relatively small changes in the affected environment and insignificant changes in ecological functions.” This EA follows the usage and criteria used in the EFH EIS (NMFS 2005). This criterion is described in Table 4.7.

The 2006-2007 harvest specification EA (NMFS 2006a) describes the impacts on EFH for GOA managed species. The harvest specification EA concludes that although adverse effects from fishing may exist, the best available science does not identify adverse effects of fishing that are more than minimal and temporary in nature. Because the proposed EFP would allow the applicant to harvest above the 2007 and potentially 2008 TAC specifications for groundfish in the Central GOA, there could be additional impacts on EFH. Therefore, this analysis will determine if fishing as described under Alternative 2 will adversely impact EFH in a manner that is more than minimal or temporary in nature in 2007 and 2008.

Table 4.8 Significance criteria for essential fish habitat

Fishery Impact on EFH	
No impact	Fishing activity has no impact on EFH
Adverse impact	Fishing activity causes disruption or damage of EFH
Beneficial	Beneficial impacts of this action cannot be identified
Significantly adverse impact	Fishery induced disruption or damage of EFH that is more than minimal and not temporary
Significantly beneficial impact	No threshold can be identified
Unknown impact	No information is available regarding gear impact of EFH

Effects on Benthic and Essential Fish Habitat

The proposed EFP would use nonpelagic trawl gear in areas commonly fished by the Central GOA trawl fleet and would target POP and northern rockfish. Nonpelagic trawl gear is designed to target groundfish species occupying habitat at or near the ocean bottom. As a result, the gear is designed to contact the sea floor during normal fishing operations. Contact with the seafloor may occur from several parts of the trawl, including doors, sweeps, and footropes. Most of the trawl’s footprint results from the sweeps, followed by the footrope, with a relatively small area contacted by the doors (NMFS 2005). Because nonpelagic trawl gear is a mobile gear used in contact with the bottom, this gear types may disturb larger areas of bottom habitat compared to other gear types used in Alaska fisheries.

Fishing under the EFP would occur in areas traditionally utilized by the rockfish trawl fishery. In the GOA, most northern rockfish fishing takes place at depths between 75 and 150 m in a comparatively small number of discrete fishing areas, mostly located on shallow rises near the continental shelf edge. POP fishing also tends to take place near the shelf edge, often on or near gullies. However, unlike northern rockfish, POP are frequently encountered well off the bottom and may be harvested effectively with mid-water gear.

As discussed in Section 4.1 of this analysis, the applicant estimated that 400 mt of groundfish would be harvested during the experiment. Because rockfish TACs are fully allocated, NMFS estimates that the TACs will be almost fully harvested, and this EFP can reasonably be expected to result in these TACs being exceeded by a small margin, which may have impacts on EFH beyond those specified in the 2007-2008 harvest specifications (NMFS 2007). Assuming that the TACs for the three targeted species groups (POP, northern rockfish, and pelagic shelf rockfish) are fully utilized during 2007; that this EFP results in the additional harvest of 181 mt of these species; and that effort in the EFP fishery is proportional to the regular fishery; this EFP would result in approximately a 1.25% increase in effort. Similar increase in effort would be expected for 2008 if the permit is modified to extend the testing. However, the actual amount of increased bottom contact will be less the estimated amount described above. First, the majority of the effort will be devoted to fishing for POP, and minimal bottom contact may be expected even when nonpelagic gear is used. Second, while the primary effort in traditional rockfish trawling areas is devoted to the rockfish fishery, non-pelagic trawling for other species does occur in those areas. Thus, this EFP could reasonably be expected to increase bottom contact considerably less than 1%. This additional effort would occur over a comparatively short period with effort distributed over a relatively large geographical area as described in Section 1.2 of this analysis and would thus likely not have a significant impact on EFH.

In conclusion, issuance of this EFP would likely result in minimal and temporary impacts on the benthic environment because of the short duration of EFP fishing, small amount of potential TAC overage for Pacific cod, and large amount of unharvested flatfish TAC (and associated fishing effort). Therefore, issuance of the EFP would not likely have adverse impacts on EFH beyond the potential impacts described in the groundfish harvest specification EIS (NMFS 2007).

4.5 Effects on the Social and Economic Environment

Alternative 1 would not provide for the issuance of the EFP and would thus not change the social and economic environment effects from those described in the groundfish harvest specification EIS (NMFS 2007).

The social and economic effects of Alternative 2 are primarily related to the potential development of a new method for accounting for halibut bycatch in the rockfish trawl fishery and revenue generated during the project. Participants in the project will receive revenue from the sale of groundfish taken during the project, which will be delivered to a shoreside processor in Kodiak, Alaska.

Gross revenue from rockfish catches is based on an estimated \$0.15 per pound. While prices are higher for Pacific cod (approximately \$0.50 per pound) and sablefish (\$1.75-\$2.00 per pound depending on delivered form and condition), because the EFP vessel would not be topping off deliberately on Pacific cod and sablefish, they will not receive a premium price for these species. Thus, it is reasonable to assume that the ex-vessel value of the groundfish for this EFP would be based on the value of the rockfish themselves. Assuming that 400 mt of groundfish are landed, the expected gross revenue would be \$132,240.

Net revenue from the EFP fishing is not known due to the lack of cost data for the type of vessels that will participate in the EFP work.

New Information

The methods developed during this EFP will inform future development of EM monitoring techniques for the rockfish fishery specifically and groundfish fisheries in general. To the extent that EM is able to provide more precise estimates of discard at a lower cost to the fishing industry, this will be beneficial to the social and economic environment. Clearly EM technology is rapidly advancing while the costs for equipment and analysis are decreasing, while at the same time, the costs for observer coverage will likely continue to increase. However, it is unknown at this time whether or not the technology is at a sufficient state of development to allow its effective use in this application. The information collected during the EFP will provide a quantitative analysis of the ability of an EM system to accurately and precisely assess halibut discard at sea. To the extent that this EFP demonstrates that EM is effective for this application, NMFS may conduct a larger scale test of the methodology during the 2008 rockfish season.

5.0 Cumulative Effects

Analysis of the potential cumulative effects of a proposed action and its alternatives is a requirement of NEPA. An environmental assessment or environmental impact statement must consider cumulative effects when determining whether an action significantly affects environmental quality. The Council on Environmental Quality (CEQ) regulations for implementing NEPA define cumulative effects as:

“The impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR 1508.7).

The cumulative effects of the current harvest specifications are discussed in detail in the groundfish harvest specifications EIS (NMFS 2007) and are adopted here by reference. The Harvest Specifications EIS is a recent and broad examination of potential cumulative effects for fisheries throughout Alaskan waters. The findings can therefore be applied to the Central GOA groundfish fishery. That EIS concludes that the foreseeable future actions (ecosystem approaches to management, rationalization, traditional management tools, other government actions, and private actions) will all lead to a reduction in the adverse effects of fishing on target species. Harvest from fisheries in subsequent years will put continuing pressure on groundfish stocks. However, these fisheries are expected to be managed in a sustainable manner and are subject to tier-specific OFL and ABC levels. Therefore, the fishery will be conducted under regulations that are similar to those in place today. Future regulations may include ecosystem considerations. The EIS states that these considerations should be at least as precautionary as regulations in place today. Expansion of State of Alaska (State) fisheries will most likely result in a reduction in the Federal TAC, or a greater harvest of an existing Federal TAC within State waters. The EIS states that an expansion of State fisheries would not be expected to result in overfishing. However, predicting the actual impact depends on the actions taken by the State.

The groundfish harvest specifications EIS states that continued fishing and subsistence harvest are potentially the most important sources of additional adverse impacts on marine mammals, but

concludes that a number of factors will tend to reduce impacts in the future (such as a trend toward ecosystem-based management and fisheries rationalization).

The project may have several beneficial outcomes to the social and economic environment. Use of EM may allow for more precise estimation of halibut bycatch on a trip or vessel basis. This additional precision will increase the predictability of halibut bycatch estimates on a smaller scale which will enhance the ability of cooperative managers to fully harvest quota amounts while minimizing the risk of exceeding their PSC allocations. Further, to the extent that EM is able to gather at sea discard data at a lower cost than the use of human observers and reduced the need for 100% observer coverage, cost savings to the fishing industry could result.

In summary, the past, present, and reasonably foreseeable future actions do not appear to require a change in the direct-indirect significance determinations with regard to the environmental components considered in this EA, including PSC species, marine mammals, and benthic communities. Section 4.5 also identifies reasonably foreseeable future actions (RFFAs) for socioeconomic effects that are not analyzed for significance. Based on the harvest specifications' cumulative effects analysis and on the analysis in this EA, no additional past, present, or reasonably foreseeable future actions were identified. Thus, the direct, indirect, and cumulative effects for the proposed action are not likely to significantly impact the human environment.

6.0 Environmental Analysis Conclusions

Alternative 1 is the no action alternative. No EFP would be issued, and therefore, no additional effects would occur beyond those already identified and analyzed in the Final SEIS (NMFS 2004) and in the groundfish harvest specifications EIS (NMFS 2007). For this reason, impact analyses in this EA were exclusively for Alternative 2. In addition to the Final PSEIS and the groundfish harvest specifications EIS, the significance of impacts of the actions analyzed in this EA were determined through consideration of the following information as required by NEPA and 40 CFR 1508.27:

Context: For the issuance of the EFP, the setting of the proposed action is the Central GOA groundfish fisheries. The effects of the issuance of an EFP on society, within this area, are on individuals directly and indirectly participating in the trawl groundfish fisheries and on those who use the ocean resources. Because this action may allow for potential future use of an EM system for monitoring and quantifying specific types of at-sea discard, this action may have regional impacts on society.

Intensity: Listings of considerations to determine intensity of the impacts are in 40 CFR 1508.28(b) and in the NOAA Administrative Order 216-6, Section 6. Each consideration is addressed below in order as it appears in the regulations.

1. Can the proposed action be reasonably expected to jeopardize the sustainability of any target species that may be affected by the action? *No. No significant adverse impacts were identified for Alternative 2. All catches of groundfish will be accounted for and the amount of additional fishing pressure on groundfish stocks is de minimis (EA section 4.1).*
2. Can the proposed action be reasonably expected to jeopardize the sustainability of any non-target species or prohibited species? *No. Potential effects of Alternative 2 on non-target/prohibited species were limited to Pacific halibut, and those effects were determined to be not significant (EA Section 4.3).*

3. Can the proposed action be reasonably expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat as defined under the MSA and identified in FMPs? *No. While short term disruption of bottom habitat may be expected because of the use of non-pelagic trawl gear, no significant adverse impacts were identified for Alternative 2. No effects were expected on ocean or coastal habitat or EFH because of the short duration of fishing and minimal effort (EA section 4.4)*
4. Can the proposed action be reasonably expected to have a substantial adverse impact on public health or safety? *No. Public health and safety will not be affected in any way not evaluated under previous actions or disproportionately as a result of the EFP study. The EFP will not change fishing methods (including gear types) or timing of fishing and will only minimally increase the amount of GOA groundfish fishing during the project period.*
5. Can the proposed action be reasonably expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species? *No. The analysis found no effects on marine mammal, ESA-listed species or designated critical habitat. (EA section 4.2)*
6. Can the proposed action be expected to have a substantial impact on biodiversity and ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.)? *No significant adverse impacts were identified for Alternative 2. No effects were expected on biodiversity, the ecosystem, or seabirds (EA Section 4.0).*
7. Are social or economic impacts interrelated with significant natural or physical environmental effects? *Risks to the human environment by the Central GOA groundfish fishery are described in detail in the harvest specifications EIS. This action is limited in scope to a study that would last up to three years with limited amounts of groundfish and halibut harvest. Long term socioeconomic effects are unknown. However, to the extent that EM will provide more precise estimates of discard at a lower cost to the fishing industry, the EFP could be beneficial to the social and economic environment. (EA Section 4.5)*
8. Are the effects on the quality of the human environment likely to be highly controversial? *This action involves the permitting of a project to improve catch accounting through the use of EM technology. Because of the limited scope of this action and the potential for benefit to prohibited species, the fishing industry, and NMFS, the action is not controversial.*
9. Can the proposed action be reasonably expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers, essential fish habitat, or ecologically critical areas? *No. This action takes place well offshore from Kodiak Island so no impacts on cultural sites or other unique areas are expected. The EFP would authorize the use of nonpelagic trawl gear so disturbance of benthic habitat could be expected. However, because of the minimal amount of additional fishing effort and the localized nature of the disturbance, it is not expected to result in significant impact on essential fish habitat.*
10. Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks? *No, the potential effects of the action are well understood because of the fish species and harvest method involved and the limited duration, harvest amounts, and area of the activity.*
11. Is the proposed action related to other actions with individually insignificant, but cumulatively significant impacts? *Beyond the cumulative impact analysis in the Groundfish*

Harvest Specifications EIS (NMFS 2007) no additional cumulative effects are anticipated. Foreseeable future impacts include socioeconomic beneficial effects for this action, as described above and in Section 5.0 of the EA.

12. Is the proposed action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural or historical resources? *This action will have no effect on districts, sites, highways, structures, or objects listed or eligible for listing in the National Register of Historic Places, nor cause loss or destruction of significant scientific, cultural, or historical resources. Because this action would take place in offshore waters, this consideration is not applicable to this action (EA Section 1.0).*

13. Can the proposed action be reasonably expected to result in the introduction or spread of a nonindigenous species? *This action poses no effect on the introduction or spread of nonindigenous species into the GOA beyond those previously identified because it does not change fishing, processing, or shipping practices that may lead to the introduction of nonindigenous species.*

14. Will the proposed action likely establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration? *This action would allow for the development and testing of an EM system which may improve catch accounting for fish discarded at sea. To the extent that the EFP is effective, additional research into EM would be likely to occur. However, such actions are within the framework of evolutionary development of catch accounting methodologies. Any potential future change to fishery regulations would require additional NEPA analysis.*

15. Can the proposed action be reasonably expected to threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment? *This action poses no known violation of Federal, State, or local laws or requirements for the protection of the environment.*

16. Can the proposed action be reasonably expected to result in adverse impacts, not otherwise identified and described above? *Beyond the analysis in the 2007 harvest specifications EA and the draft Groundfish Harvest Specifications EIS (NMFS 2006, 2007), no additional direct, indirect, past or present impacts have been identified that would accrue from this action. Foreseeable future impacts are likely socioeconomic depending on the results of the experimental study. These potential benefits are described above and in Section 5.0 of the EA.*

Comparison of Alternatives and Selection of a Preferred Alternative

Alternative 1 is the no action alternative and does not provide for the issuance of an EFP. Alternative 2 would provide for an EFP. Alternative 2 had no significant impacts identified and socioeconomic and cumulative socioeconomic effects were not known. Alternative 1 had no additional environmental impacts beyond those already identified in previous analyses. Alternative 1 would not provide for the testing of an EM system; and therefore, would not meet the purpose and need of the action. Because Alternative 2 has no significant adverse impacts identified and provides the potential for more precisely estimating halibut bycatch in the rockfish fisheries, Alternative 2 is the preferred alternative.

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