



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
PROGRAM PLANNING AND INTEGRATION
Silver Spring, Maryland 20910

MAR - 3 2004

To All Interested Government Agencies and Public Groups:

Under the National Environmental Policy Act, an environmental review has been performed on the following action.

TITLE: Environmental Assessment of Amendment 63 to the Fishery Management Plan for Groundfish of the Gulf of Alaska

LOCATION: The Exclusive Economic Zone of Gulf of Alaska Waters.

SUMMARY: Amendment 63 to the Fishery Management Plan (FMP) for Groundfish of the Gulf of Alaska moves skates from the "other species" category to the target species category in the FMP. By placing skates in the target species category, management measures may be used to reduce the potential overharvest of skate species in the groundfish fisheries.

RESPONSIBLE

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The environmental review process led us to conclude that this action will not have a significant impact on the environment. Therefore, an environmental impact statement was not prepared. A copy of the finding of no significant impact, including the environmental assessment, is enclosed for your information.

Please send one copy of your comments to the NOAA Office of Strategic Planning, SSMC3, room 15723, 1315 East West Highway, Silver Spring, Maryland, 20910.

Sincerely,

Susan A. Kennedy
Deputy Director, Strategic Planning Office



DRAFT

ENVIRONMENTAL ASSESSMENT/INITIAL REGULATORY FLEXIBILITY ANALYSIS

**for a Revision to the Skate Harvest Specifications for the Year 2004,
Implemented Under the Authority of the
Fishery Management Plan for the Groundfish Fishery of the Gulf of Alaska**

January 2004

Lead Agency National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Alaska Regional Office
Juneau, Alaska

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Abstract: This document contains an Environmental Assessment (EA) and an Initial Regulatory Flexibility Analysis (IRFA) analyzing the potential impacts of revising the 2004 skate harvest specifications for the groundfish fisheries of the Gulf of Alaska. The analyses in this document address the requirements of the National Environmental Policy Act (NEPA) and the Regulatory Flexibility Act (RFA).

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List of Acronyms

| | |
|-----------|---|
| ABC | Allowable Biological Catch |
| ADCED | Alaska Department of Community and Economic Development |
| ADF&G | Alaska Department of Fish and Game |
| AFA | American Fisheries Act |
| AFSC | Alaska Fisheries Science Center |
| AKFIN | Alaska Fisheries Information Network |
| AP | Advisory Panel |
| APA | Administrative Procedures Act |
| B | Biomass |
| BiOp | Biological Opinion |
| BS | Bering Sea |
| AI | Aleutian Islands |
| BSAI | Bering Sea and Aleutian Islands |
| CDQ | Community Development Quota |
| CEQ | Council of Environmental Quality |
| CEY | Constant Exploitation Yield |
| CFEC | Alaska Commercial Fisheries Entry Commission |
| CFR | Code of Federal Regulations |
| CP | catcher-processor |
| CV | catcher vessel |
| DFA | Directed Fishing Allowance |
| DFL | Directed Fishing Level |
| EA | Environmental Assessment |
| EIS | Environmental Impact Statement |
| EEZ | Exclusive Economic Zone |
| EFH | Essential Fish Habitat |
| ESA | Endangered Species Act |
| F | Fishing mortality rate |
| FMP | Fishery Management Plan |
| FONSI | Finding of No Significant Impact |
| <i>FR</i> | <i>Federal Register</i> |
| FRFA | Final Regulatory Flexibility Analysis |
| GOA | Gulf of Alaska |
| FRFA | Final Regulatory Flexibility Analysis |
| HAPC | Habitat Area of Particular Concern |
| IFQ | Individual Fisherman's Quota |
| ITAC | Initial Total Allowable Catch |
| IRFA | Initial Regulatory Flexibility Analysis |
| MSST | Minimum Stock Size Threshold |
| MSY | Maximum Sustainable Yield |
| mt | metric ton |

| | |
|--------|--|
| NEPA | National Environmental Policy Act |
| nm | nautical mile |
| NMFS | National Marine Fishery Service |
| NOA | Notice of Availability |
| NOAA | National Oceanographic and Atmospheric Administration |
| OFL | Overfishing Level |
| OY | Optimum Yield |
| PSC | Prohibited Species Catch |
| PSQ | Prohibited Species Quota |
| PSEIS | Programmatic Supplemental Environmental Impact Statement |
| RFA | Regulatory Flexibility Act |
| RIR | Regulatory Impact Review |
| SAFE | Stock Assessment and Fishery Evaluation Report |
| SBREFA | Small Business Regulatory Enforcement Fairness Act |
| SEIS | Supplemental Environmental Impact Statement |
| SSC | Scientific and Statistical Committee |
| TAC | Total Allowable Catch |
| USFWS | United States Fish and Wildlife Service |

Executive Summary

The actions evaluated in this document

This document provides National Environmental Policy Act (NEPA) and Regulatory Flexibility Act (RFA) analyses for a revision to the specifications for Gulf of Alaska (GOA) skates

Purpose and Need

At its October 2003 meeting, the Council recommended that the GOA Fishery Management Plan (FMP) be changed to move skates from the “other species” category to the “target species” category. Because the Secretary of Commerce could not approve the FMP amendment before the start of the new fishing year, the Council (at its December 2003 meeting) recommended that the 2004 specifications continue to include skates in the other species category. However, the Council also recommended a set of GOA skate Overfishing levels (OFLs), Allowable Biological Catches (ABCs), and Total Allowable Catches (TACs) for implementation, contingent on Secretarial approval of the FMP amendment. The proposed action is the revisions of the 2004 harvest specifications as recommended by the Council for the directed fishery for skates, allowing for better management. The purpose of the action is to establish the tools to provide better management of skates through harvest specifications.

Environmental Assessment

An Environmental Assessment (EA) was prepared for the revision to the skate specifications to address the statutory requirements of the National Environmental Policy Act (NEPA). The purpose of the environmental assessment (EA) is to predict whether the impacts to the human environment resulting from setting skate specifications will be “significant,” as that term is defined under NEPA. If the predicted impacts from the preferred options are found not to be significant, and those options are chosen, no further analysis is necessary to comply with the requirements of NEPA.

This EA/IRFA evaluates the six options and two suboptions for treating skates as a target species, that were considered by the Council at its December 2003 meeting. Key issues differentiating the options are (1) whether or not to treat all skates as a group, or to break out separate species, and (2) whether to set OFL and ABC levels GOA-wide, or at the management area level within the GOA.

The options were:

Option 1: GOA-wide OFL and GOA-wide ABC for all skates (grouped together).

Option 2: GOA-wide OFL and GOA-wide ABC for Big skates, Longnose skates, and "Other" skates.

Option 3: Management area OFLs and ABCs for Big skates, Longnose skates, and for "Other" skates.

Option 4: Management area (Eastern, Central, and Western GOA) OFLs and ABCs for Big skates and Longnose skates, and GOA-wide OFL and ABC for "Other" skates. This is the assessment author's recommendation.

Option 5: A GOA-wide OFL would be established for all species combined. ABCs would be established in each management area in the GOA a Big/Longnose skate grouping. A GOA-wide ABC would be established for “Other” skates. In the Central GOA a TAC would be established for combined Big and

Longnose skate catch. This TAC will equal 10% of the estimated biomass of Big skates in the Central Area (this would have been the OFL for Big skates in this area if such an OFL had been promulgated) The Plan Team explicitly stated that this was meant to be a single year arrangement and that it should be reviewed during the 2005 specifications process. This was the recommendation of the GOA Plan Team at its November 2003 meetings.

Option 6: At its December 2003 meeting, the Council combined elements of Options 1 and 5 to form a sixth option. This sixth option is the Council's preferred option. A GOA-wide OFL would be established for all species combined. Big and Longnose skates in the Central GOA would be treated as a single group and given their own ABC and TAC. The TAC would be set at a low level. Big and Longnose skates in the Western and Eastern areas, and Other skates in all areas, would also be grouped together as a single group and managed with a single ABC and TAC. While a small, directed skate fishery may be allowed in 2004, the Council may not allow a directed fishery in 2005 without an approved data collection plan. The Council requested that staff work with industry to develop an adequate data collection plan, and that state and federal agencies also work together to enhance data collection and research to address the serious data gaps identified for these skate species.

The suboptions were:

Suboptions 1: Set TAC at the ABC or a lower level sufficient to meet anticipated incidental catch needs in other directed fisheries throughout the fishing year. The result would be that skates would be on bycatch status throughout the fishing year, skates could be retained up to the maximum retainable amount (20%) but there would be no directed fishing for skates.

Suboptions 2: Set TAC at the ABC level. The result would be the Regional Administrator would establish a directed fishing allowance for each applicable species group and management area adopted under the selected option. For the species and areas adopted under the selected option where the TAC amount exceeds the amount anticipated incidental catch needs in other directed fisheries throughout the fishing year a directed fishery for skates would be authorized.

Environmental Analysis

The skate options and suboptions were evaluated with respect to their impacts on groundfish, on prohibited species, and on the socioeconomic environment. The impact of prohibited species was determined to be insignificant and socioeconomic impacts were determined to be unknown. Significant adverse impacts were identified only for Option 1. Option 1 could potentially have significant impacts on fishing mortality for skate species. The groundfish impacts are summarized in the following table.

Significance of Direct Effects of Skate Specifications Options and Suboptions on Groundfish

| | Options and Suboptions | | | | | | | | | | | |
|---|------------------------|-----------------|----------------|----------------|----|----|----|----|----|----|----|----|
| | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | |
| Direct Effects | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| Fishing Mortality | S ⁻¹ | S ⁻¹ | I | I | I | I | I | I | I | I | I | I |
| Spatial and Temporal distribution of catch, genetic structure and reproduction ³ | U ² | U ² | U ² | U ² | U | U | U | U | U | U | U | U |
| Change in Prey availability | I | I | I | I | I | I | I | I | I | I | I | I |
| Habitat Changes | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |

¹Option 1 does not manage harvest at the species level or area level so there is potential to jeopardize the ability of the Big and Longnose skates stocks to produce MSY and potential for harvests to exceed the OY.

²Management is on a GOA-wide basis, making control of spatial harvest of skates unknown due to the lack of ability to close areas of skate bycatch under 50 CFR 679.20(d)(3).

³Little is known about the reproductive and genetic diversity of skate species so the effect of the options is unknown.

Initial Regulatory Flexibility Analysis

An Initial Regulatory Flexibility Analysis (IRFA) was prepared for the 2004 Specifications to address the statutory requirements of the Regulatory Flexibility Act of 1980, as amended by the Small Business Regulatory Fairness Act of 1996.

The universe of potentially affected small entities includes 665 small hook-and-line vessels fishing in the GOA, and 124 small trawlers. Pot vessels do not harvest skates. All of these vessels could target skates, and many take skates as incidental catch while they harvest other species. During the directed fishery for skates that emerged in 2003, the vessels targeting skates included 77 hook-and-line catcher vessels, 53 trawl catcher vessels, 13 hook-and-line catcher-processors and 10 trawl catcher-processors. The option could also impact fishing operations which target other species, but that take skates incidentally. This could include any operations harvesting groundfish in the GOA. This includes an estimated 619 small hook-and-line vessels, 13 small hook-and-line catcher-processors, 107 small trawl catcher vessels, and three small catcher-processors.

The Council's preferred alternative could have adverse impacts on vessels targeting skates in the Central GOA. The new skate ABC and TAC for Big and Longnose skates is likely to constrain 2004 targeted harvests to lower levels than in 2003. Fishing operations harvesting other species and taking skates incidentally could also be adversely impacted in the unlikely event that harvests approached OFL levels.

The action does not impose new recordkeeping or reporting requirements on small entities. The analysis did not reveal any Federal rules that duplicate, overlap or conflict with the proposed action.

Six options for skate harvest specifications were evaluated. Only Option 1, a single GOA-wide OFL, ABC and TAC for skates, appeared to have a smaller potential impact on small entities. However, this option did not provide species or spatial protection to skates. This option would have established a single OFL and ABC for all skate species throughout the GOA. This option was not chosen because it did not provide protection against local depletion of skates within management areas and did not provide protection for individual skate species. It provided little additional protection for skates, and particularly for the large animals that were the target of the fishery in the Central GOA.

Preferred Alternative

The Council's preferred action, contingent on Secretarial approval of GOA FMP amendment 63 (to move skates from the "other species" to the "target species" category) is Option 6 (described above). This option appeared to provide improved and adequate protection for skates, without unduly burdening fishing firms in the GOA. Until Secretarial approval is forthcoming, skates will be treated in the "other species" category as described in the 2004 Harvest Specifications.

1.0 Purpose and Need

This document contains an Environmental Assessment and an Initial Regulatory Flexibility Analysis (EA/IRFA) of revisions to the 2004 GOA skate specifications for the Gulf of Alaska (GOA) groundfish fisheries. These documents address the statutory requirements of the National Environmental Policy Act (NEPA) and the Regulatory Flexibility Act (RFA). The purpose of the environmental assessment (EA) is to predict whether the impacts to the human environment resulting from the proposed action will be significant. See Chapter 7.0 for the purpose of the IRFA. If the predicted impacts from the preferred alternatives are not significant, and those alternatives are chosen, no further analysis is necessary to comply with the requirements of NEPA.

Better management of the skate fishery in the GOA is needed to prevent the likelihood of overfishing in the rapidly developing skate fishery. The purpose of the proposed action is to provide the tools to allow for better management by revising the harvest specifications to specifically address skate harvest.

The following section describes the history of the skate fisheries and further explains the purpose and need for this change in 2004 GOA specifications.

BACKGROUND

The state skate fishery

Initial Alaska regulation of the skate fishery came in 1998, when the Alaska Board of Fisheries (Board) took action in response to concerns over the possibility of an emerging ‘shark’ fishery in Prince William Sound. Charter fishermen there had begun to target salmon sharks. The Board took preemptive action given concerns over the emergence of a fishery on this slow growing species with relatively low reproductive rates. The action took the form of heavy restrictions on shark harvests.¹

In conjunction with this action, the Board also arranged for the Alaska Department of Fish and Game (ADF&G) to issue Commissioner’s permits for commercial skate harvests (authorized at 5 ACC 28.083). The Board allowed ADF&G to impose a number of requirements on permit recipients, including seasonal, area, and other operational restrictions and logbook requirements. The Commissioner’s permits became effective in 1999. Permits were only available for longline gear since non-pelagic trawls were not allowed in state waters and pots are not effective gear for skates.²

Although the commissioner’s permit program was in place for 1999, the state did not issue any commissioner’s permits until 2002. The emergence of the state-waters fishery will be discussed below, in conjunction with the development of the fishery in federal waters. Since, the state did not want a fishery to emerge in its waters independently of the federal fishery, the commissioner’s permits contained conditions requiring fishermen to use legal federal gear and only to take species at times when it was legal to do so in federal regulations. These conditions essentially created a parallel fishery in state waters. Initial permits were

¹Personal communication from Michael Ruccio, Alaska Department of Fish and Game. Commercial Fisheries Division. Kodiak. 211 Mission Road Kodiak, AK 99615. September 10, 2003.

²Ruccio, *ibid.*

issued for 90 days at a time. However only a few were issued for that long; most have been issued for 60 days, making it easier for ADF&G to enforce logbook requirements.³

Background to the federal fishery

In 1998, the ADF&G, on behalf of the Board, requested complementary federal action to the Board's actions regulating directed commercial fishing of sharks, skates, and rays in territorial waters of Alaska. In response, the Council initiated GOA Plan Amendment 63 (and BSAI Plan Amendment 63, which is not part of this proposed action). Since 1998, NMFS Alaska Fisheries Science Center and Alaska Department of Fish and Game stock assessment authors, the BSAI and GOA Groundfish Plan Teams, SSC, and Council have been moving towards revising management of non-target species. However, the target fishery for skates in the Western and Central GOA, around Kodiak Island developed in 2003, while the protective measures were still under development.

There are active commercial skate fisheries elsewhere in the world, for example off of British Columbia (B.C.) and the east coast of the United State. There are Asian, European, and domestic U.S. markets for skate products. The current interest in skates in the GOA appears to stem from market development work by Kodiak entrepreneurs in 2001. At that time, individuals developed relationships with Korean firms interested in skate products. Efforts were also put into adapting trawl nets to incorporate features used in B.C. to target skates.⁴

Despite the work on market and gear development in 2001, significant targeted longline or trawl skate fisheries did not emerge in 2002. The rapid growth in the fishery came in 2003. In 2003 there was an early closure of the Pacific cod longline fishery. Prices for skates were more attractive in 2003 than in 2002. Anecdotal evidence indicates that skate ex-vessel prices rose by \$0.05 to \$0.10 per pound, between 2002 and 2003 (Spring 2003 ex-vessel prices reached the area of \$0.25/pound - they were apparently lower in Fall 2003). In the trawl fisheries, these skate price increases combined with lower prices on an alternative target species, shallow water flats. Prices for these flatfish may have dropped from about \$0.22 to about \$0.18 per pound. In 2003 trawl fishermen may also have responded to large incidental Pacific cod catches in the 2002 shallow water flat fishery by directing their efforts towards skates to a greater extent. The lag in development of the skate fishery may also have been a result of a failure by longline fishermen to view the "other species" complex as a target fishery.⁵

Expansion of the federal fishery in 2003

The longline and trawl fisheries for skates expanded considerably in 2003. Tables 1.0-1, 1.0-2, 1.0-3, and 1.0-4 below, show this for catcher-processors (CP) and for catcher vessels (CV). In summary:

1. The number of hook-and-line CPs delivering skates, and their retained incidental and targeted harvest rose modestly (from 8 to 13 vessels, and from 139 to 164 mt).

³Ruccio, *ibid.*

⁴Ruccio, *ibid.*; Personal communication with Robert Foy, Assistant Professor, University of Alaska Fairbanks School of Fisheries and Ocean Sciences. 118 Trident Way, Kodiak, AK 99615. September 10, 2003.

⁵Ruccio, *ibid.* Personal communication from Julie Bonnie. Alaska Groundfish Data Bank. P.O. Box 788, Kodiak, AK 99615. September 17, 2003.

2. The number of trawl CPs delivering skates stayed the same (at 10 vessels), but retained incidental and targeted harvest rose dramatically (from 137 to 405 mt).
3. The number of hook-and-line CVs delivering skates rose dramatically (from 23 to 77 vessels), as did their retained incidental and targeted harvest (from 33 mt to 1,309 mt). This was because of increases in retained incidental catch, but much more so because of increases in targeted harvest.
4. The number of trawl CVs delivering skates rose from 39 to 53. Total retained incidental and targeted harvests rose, as well, from 473 mt to 1,146 mt. Much of this was because of an increase in retained targeted harvest (from 2 mt to 490 mt), but part was also due to increased retained incidental catch.

Total hook-and-line and trawl catches in 2003 totaled 3,651 mt. Total retained catches (from the tables below) were 3,024 mt. Therefore, the fishery catch was 627 mt larger than retained catch. Because observer records are incomplete, this estimate of discarded skate catch is a conservative estimate of total discards. Total mortality would depend on the total level of discards and the mortality rate for discards, both presently unknown.

Table 1.0-1 Catcher-processor retained skate harvests (incidental), 2002-2003

| | Hook and line gear | | Non Pelagic Trawl gear | |
|---|--------------------|-----------------------|------------------------|-----------------------|
| | Number vessels | Volume of skates (mt) | Number vessels | Volume of skates (mt) |
| 2002 | 8 | 139 | 10 | 137 |
| 2003* | 13 | 164 | 10 | 405 |
| Source: NMFS AKR "Catch Accounting System". Small amounts of jig and pelagic trawl skate harvest not included. NMFS assigns CP targets by week. No CPs appear to have targeted skates on a weekly basis during this period. This does not preclude the possibility of occasional targeted hauls. *2003 data as of September. | | | | |

Table 1.0-2 Catcher vessel retained skate harvests (incidental and targeted), 2002-2003

| | Hook and line gear | | Non Pelagic Trawl gear | |
|---|--------------------|-----------------------|------------------------|-----------------------|
| | Number vessels | Volume of skates (mt) | Number vessels | Volume of skates (mt) |
| 2002 | 23 | 33 | 39 | 473 |
| 2003* | 77 | 1,309 | 53 | 1,146 |
| Source: NMFS AKR "Catch Accounting System". Small amounts of jig and pelagic trawl skate harvest not included. *2003 data as of September. | | | | |

Small amounts of jig and pelagic trawl skate harvests are not included in these tables. Combined harvests by these two gear types were 3.7 mt in 2002, and 46.7 mt in 2003.

Table 1.0-3 Catcher-vessel retained skate harvests (targeted), 2002-2003

| | Hook and line gear | | Non Pelagic Trawl gear | |
|---|--------------------|-----------------------|------------------------|-----------------------|
| | Number vessels | Volume of skates (mt) | Number vessels | Volume of skates (mt) |
| 2002 | 13 | 18 | 2 | 2 |
| 2003* | 45 | 1,183 | 12 | 490 |
| Source: NMFS AKR "Catch Accounting System". Small amounts of jig and pelagic trawl skate harvest not included. *2003 data as of September. | | | | |

Thirteen distinct processors accepted deliveries of skates from longline and trawl operations in 2002, and 23 accepted delivery in 2003. Anecdotal evidence suggests that a plausible ex-vessel price estimate for early 2003 is \$0.25/pound (prices may be from \$0.12 to \$0.20 now). At the higher price, the total ex-vessel value of the harvest would have been on the order of \$1.7 million. This is a very crude estimate and is only provided to give an indication of the approximate ex-vessel value of the fishery.⁶

The increase in catches took place largely in management areas 620 and 630. Table 1.0-4 shows catch increases by management area from 2002 to 2003.

Table 1.0-4 Retained skate harvests and at-sea skate discards, 2002-2003 (mt)

| Year | GOA Management areas | | |
|--|----------------------|---------|---------|
| | 610 | 620-630 | 640-659 |
| 2002 | 451 | 1,135 | 12 |
| 2003* | 459 | 3,131 | 61 |
| Source: NMFS AKR Notes: Includes retained catch and at-sea discards for vessels not delivering to shore. Tables 1.0-1 to 1.0-3 only included retained catch, since their focus was on the increase in delivered catch in response to the emergence of the fishery in 2003. *2003 data as of September. | | | |

⁶Bonnie, *ibid.* This estimate includes an "implicit" ex-vessel unprocessed valuation for fish harvested by catcher-processors.

The following table highlights the target species fisheries that have taken the largest amounts of skate bycatch during 2002 and 2003.

Table 1.0-5. GOA Target Fisheries with the largest Skate incidental catches, 2002-2003 (fisheries selected if total skate harvests exceeded 50 mt in a GOA management area in either year; catches over 50 mt shown in metric tons.)

| 2002 | | |
|---|------------|----------------|
| | 610 | 620-630 |
| Pacific cod | 304 | 185 |
| Shallow water flats | | 438 |
| Rockfish | | 60 |
| Flathead sole | | 59 |
| Arrowtooth flounder | 77 | 121 |
| Rex Sole | | 224 |
| 2003 | | |
| | 610 | 620-630 |
| Pacific cod | 268 | 299 |
| Shallow water flats | | 492 |
| Rockfish | | |
| Flathead sole | | 100 |
| Arrowtooth flounder | 70 | |
| Rex Sole | | 295 |
| Source: NMFS AKR "Catch Accounting System" | | |
| Notes: Fisheries selected if they harvested 50 mt or more of skate bycatch. The Eastern GOA management area is not shown in the table since none of the fisheries there took more than 50 mt in this time period. | | |

The sablefish and halibut IFQ fisheries do not appear in this table. Sablefish IFQ fishery skate catches in 2002 and 2003 were lower than those in 1997-99, as shown in Table 4 of the skate assessment in Appendix B. In the Catch Accounting System, skate harvests in halibut IFQ fisheries are recorded under a halibut target, or under the target of the species that made up the next highest retained catch other than halibut.

The Fall 2003 Council and Regulatory Process

At its October 2003 meeting, the Council approved an action under Gulf of Alaska (GOA) Plan Amendment 63 to separate GOA skates from the "other species" category and add them to the target category because of concern over the rapidly developing directed skate fishery in 2003. The Council determined that the current FMP does not offer sufficient protection for the skate resource. Currently, skates are managed under the

“other species” category TAC in combination with sharks, sculpin, octopus and squid. The GOA FMP does not authorize a separate ABC or TAC for the skate complex, nor for any of the individual skate species which make up that complex. Instead a TAC is calculated for the five taxonomic groups in the “other” species category as 5 percent of the total TACs for all of the combined GOA species TACs.

NMFS published a Notice of Availability (NOA) for Amendment 63 on December 2. The comment period for the NOA expires on February 2, 2004 (68 *FR* 67390). The Secretary has up to 30 days following the closure of the comment period to reach a decision. NMFS published a proposed rule to change the FMP to make skates a target fishery, contingent on the Secretarial decision, on January 6, 2004. The comment period for this proposed rule ends on February 20, 2004. (69 *FR* 614).

In December, the Council approved specifications that retained skates as one of the other species. The Council did this since GOA FMP Amendment 63 had not yet been approved by the Secretary of Commerce. Secretarial approval, if it came, was not expected until early 2004. Thus the GOA groundfish fisheries will begin in 2004 with skates treated as one of the “other species.”

However, the Council also recommended ABCs and TACs for GOA skate species, contingent upon approval of Secretarial approval of Amendment 63. Given Secretarial approval, these skate specifications would be implemented with separate proposed and final specifications.

The Council recommended treating Big and Longnose skates in the Central GOA as one species grouping, and all other skates, including Big and Longnose skates in the Eastern and Western GOA as a second grouping. Each grouping had its own ABC and TAC. All skates (in both groupings) were treated under a GOA-wide OFL. The ABCs and TAC recommendations are summarized in Table 1.0-6.

Table 1.0-6 Council’s December 2003 GOA Skate OFL, ABC and TAC Recommendations

| Species | Area | 2004 OFL | 2004 ABC | 2004 TAC |
|---|-------------|----------|----------|----------|
| Big and Longnose skates | Central GOA | 5,914 | 4,435 | 3,284 |
| All other skates | GOA-wide | 4,935 | 3,709 | 3,709 |
| Note: “All other skates” includes Big skates and Longnose skates in the Eastern and Western GOA management areas (but not in the Central GOA management area) and all Other skates species in all three management areas. | | | | |

While a small, directed skate fishery will be allowed in 2004, the Council may not allow a directed fishery in 2005 without an approved data collection plan. The Council requested that staff work with industry to develop an adequate data collection plan, and that state and federal agencies also work together to enhance data collection and research to address the serious data gaps identified for these skate species.

The Council’s recommendation reflected a balance of different fishery objectives: (1) the need to protect the skate resource, particularly the larger animals in the Central GOA that had become the subject of a targeted fishery; (2) the desire to provide an opportunity for at least some targeted harvest of skates by the fishermen who had earned income from the fishery in 2003; (3) the desire to avoid closures of valuable fisheries for

other species which took skates as an incidental harvest; (4) a recognition that the information on GOA skate biology, on the species composition of skate harvests, and on historical skate discards, was scanty.

It is the intent of NMFS to publish a proposed rule on skate specifications prior to Secretarial approval. The final rule would then follow Secretarial approval if that is given.

Potential future fishery

The targeted skate fishery is expected to persist in future years. As noted above, in the past, GOA fishermen may not have viewed the “other species” complex as a target. This point of view has changed with the 2003 fishery.⁷

Skate fishing can fill a seasonal gap for longline fishermen. Pacific cod fishing tends to close early in March, when halibut PSC caps are taken. At that time, fishermen currently can switch gear to jigs or pots to fish in the state managed Pacific cod fishery or fish for IFQ halibut and sablefish with longlines (assuming they hold QS). Longline fishermen do not target flatfish. A skate fishery may provide an additional income opportunity during this period for some. Some fishermen who hold halibut QS might continue to fish for skates, even after the PSC is harvested, by taking advantage of the MRAs associated with halibut IFQ fishing.

As suggested above, anecdotal information suggests the price reached \$0.25/pound round weight in early 2003, although prices were lower in the Fall. This was an attractive price. It was comparable to some prices paid for Pacific cod. An expectation of a price that could reach that level in 2004, may attract targeted skate fishing effort. Skate fishermen, fishing after the closure of the Pacific cod fishery, may retain a Pacific cod MRA of 20% of their skate harvest, assuming skates are set out as a “target” species in regulation, as proposed. This may be an added inducement to target skates.

2.0 Descriptions of Alternatives

This EA/IRFA provides the evaluations of the six options and two suboptions for incorporating skates into 2004 specifications as a target species with which the Council considered at its December meeting. Key issues differentiating the options are (1) whether or not to treat all skates as a group, or to break out separate species, and (2) whether to set OFL and ABC levels GOA-wide, or at the management area level within the GOA. The suboptions would provide further guidance to NMFS on how the skate directed fishery is to be managed under each option. A suboption may be adopted with any option. The analysis of the suboptions will provide information regarding the potential impacts of having or not having a skate directed fishery.

Options

Option 1: GOA-wide OFL and GOA-wide ABC for all skates (grouped together).

Option 2: GOA-wide OFL and GOA-wide ABC for Big skates, Longnose skates, and "Other" skates.

Option 3: Management area OFLs and ABCs for Big skates, Longnose skates, and for "Other" skates.

⁷This discussion is based on Ruccio, *ibid* and a personal communication from Tom Pearson, National Marine Fisheries Service, Kodiak 301 Research Court, RM. 212Kodiak, AK 99615, September 10, 2003.

Option 4: Management area (Eastern, Central and Western GOA) OFLs and ABCs for Big skates and Longnose skates, and GOA-wide OFL and ABC for "Other" skates. This is the assessment author's recommendation.

Option 5: A GOA-wide OFL would be established for all species combined. ABCs would be established in each management area in the GOA as Big/Longnose skate groupings. A GOA-wide ABC would be established for "Other" skates. In the Central GOA a TAC would be established for combined Big and Longnose skate catch. This TAC will equal 10% of the estimated biomass of Big skates in the Central Area (this would have been the OFL for Big skates in this area if such an OFL had been promulgated). The Plan Team explicitly stated that this was meant to be a single year arrangement and that it should be reviewed during the 2005 specifications process. This was the recommendation of the GOA Plan Team at its November 2003 meetings.

Option 6: At its December 2003 meeting, the Council combined elements of Options 1 and 5 to form a sixth option. This sixth option is the Council's preferred option. A GOA-wide OFL would be established for all species combined. Big and Longnose skates in the Central GOA would be treated as a single group and given their own ABC and TAC. The TAC would be set at a low level. Big and Longnose skates in the Western and Eastern areas, and Other skates in all areas, would also be grouped together as a single group and managed with a single ABC and TAC. While a small, directed skate fishery will be allowed in 2004, the Council may not allow a directed fishery in 2005 without an approved data collection plan. The Council requested that staff work with industry to develop an adequate data collection plan, and that state and federal agencies also work together to enhance data collection and research to address the serious data gaps identified for these skate species.

Suboptions

Suboption 1: Set TAC at the ABC or a lower level sufficient to meet anticipated incidental catch needs in other directed fisheries throughout the fishing year. This results in skates being on bycatch status throughout the fishing year. Skates could be retained up to the maximum retainable amount (20%), but there would be no directed fishing for skates.

Suboption 2: Set TAC at the ABC level. The result would be the Regional Administrator would establish a directed fishing allowance for each applicable species group and management area adopted under the selected option. For the species and areas adopted under the selected option where the TAC amount exceeds the amount of anticipated incidental catch needs in other directed fisheries throughout the fishing year, a directed fishery for skates would be authorized.

Detailed description of skate options

1 A single GOA wide OFL for the skate group, and a single GOA wide ABC for the skate group An OFL and ABC would be adopted for the entire GOA. Based on the average biomass in the last three GOA trawl surveys, and an estimated natural mortality rate (M) of 0.10 for skate species, the 2004 OFL would be set at 10,859 mt. The ABC would be set at 8,144 mt, as shown in Table 2.0-1. The TAC would be set equal to or less than the ABC.

Table 2.0-1 Option 1: skate OFL and ABC for 2004 (values in mt)

| | OFL ¹ | ABC ² |
|-----------------------|------------------|------------------|
| GOA wide Skates Total | 10,859 | 8,144 |

¹Average survey biomass*M

²OFL*0.75

2 Separate GOA-wide OFLs and GOA-wide ABCs for Big skates, Longnose skates, and “Other” skates OFLs and ABCs would be adopted for the entire GOA for Big skates, Longnose skates and “Other skates”. The Big skate OFL would be 5,332 and the ABC would be 3,999. The Longnose skate OFL would be 3,758 and the ABC would be 2,818. The “Other” skates OFL would be 1,769, and the ABC would be 1,327. The OFLs and ABCs are summarized in Table 2.0-2.

Table 2.0-2 Option 2 skate species specific GOA-wide OFL and ABC for 2004 (values in mt)

| Skates | OFL ¹ | ABC ² |
|----------------|------------------|------------------|
| Big skates | 5,332 | 3,999 |
| Longnose skate | 3,758 | 2,818 |
| “Other” skates | 1,769 | 1,327 |
| Total | 10,859 | 8,144 |

¹Average survey biomass*M

²OFL*0.75

3 Management area OFLs and ABCs for Big, Longnose, and “Other” skate species: This option would establish separate OFLs, ABCs, and TACs for the Longnose skates, Big skates, and the “Other” skate species group for each of the management areas (Western, Central, and Eastern) within the GOA. Table 2.0-3 shows the proposed area OFLs and ABCs under this option.

Table 2.0-3 Option 3: Management area OFLs and ABCs for Big, Longnose, and “Other” skate species for 2004 (values in mt)

| Skates | Western | | Central | | Eastern | |
|----------------|------------------|------------------|------------------|------------------|------------------|------------------|
| | OFL ¹ | ABC ² | OFL ¹ | ABC ² | OFL ¹ | ABC ² |
| Big skate | 969 | 727 | 3,284 | 2,463 | 1,079 | 809 |
| Longnose skate | 88 | 66 | 2,630 | 1,972 | 1,040 | 780 |
| Other skates | 345 | 97 | 1,294 | 971 | 130 | 259 |
| Total | 1,402 | 890 | 7,208 | 5,406 | 2,249 | 1,848 |

¹Average survey biomass*M

²OFL*0.75

4 Management area OFLs and ABCs for Big skates and Longnose skates, and a GOA-wide OFL and ABC for “Other” skates This is the assessment author’s recommendation. This is similar to Option 3, in that it creates separate OFLs and ABCs for the Longnose and Big skate species. This differs from Option 3 in that it sets the “Other” skates OFL and ABC at the GOA-wide level rather than at the management area level. Table 2.0-4 shows the proposed area OFLs and ABCs under this option.

Table 2.0.4 Option 4: Management area OFLs and ABCs for Big and Longnose skate species for 2004 (values in mt)

| | GOA-wide | | Western | | Central | | Eastern | |
|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| | OFL ¹ | ABC ² | OFL ¹ | ABC ² | OFL ¹ | ABC ² | OFL ¹ | ABC ² |
| Big skate | n.a. | n.a. | 969 | 727 | 3,284 | 2,463 | 1,079 | 809 |
| Longnose skate | n.a. | n.a. | 88 | 66 | 2,630 | 1,972 | 1,040 | 780 |
| Other skates | 1,769 | 1,327 | na | na | na | na | na | na |

¹Average survey biomass*M

²OFL*0.75

5 A single GOA wide OFL for skates, an ABC for a Big and Longnose skate grouping in each management area, a TAC for the combined harvest of Big and Longnose skates in the Central GOA, a single GOA-wide ABC for “Other skates”: A GOA-wide OFL would be established for all species combined. ABCs would be set for a Big/Longnose skate grouping in each management area. A GOA-wide ABC would be set for “Other” skates. In the Central GOA, a TAC would be established for the combined Big/ Longnose skate catch. This TAC will equal 10% of the estimated biomass of Big skates in the Central Area (this would have been the OFL for Big skates in this area if such an OFL had been promulgated) The Plan Team explicitly stated that this was meant to be a single year arrangement and that it should be reviewed during the 2005 specifications process. This was the recommendation of the GOA Plan Team at its November 2003 meetings.

Table 2.0-5 Option 5: A single GOA wide OFL for skates, ABCs for Big and Longnose skate species groupings in each management area, and a TAC for combined Big/Longnose skate harvests in the Central Gulf (values in mt)

| | Western | Central | Central | Eastern |
|-------------------------|------------------|------------------|------------------|------------------|
| Skates | ABC ² | ABC ² | TAC ¹ | ABC ² |
| Big and Longnose skates | 792 | 4,436 | 3,284 | 1,589 |
| Other skates | 1,327 | | | |
| GOA wide OFL | 10,859 | | | |

¹10 % of estimated Big skate biomass in Central GOA.

²OFL*0.75

6 A single GOA wide OFL for skates, an ABC and TAC for a Big and Longnose skate grouping in the Central GOA, an ABC and TAC for Big and Longnose skates in the Eastern and Western GOA and for Other skates in all areas: A GOA-wide OFL would be established for all species combined. ABCs would be set for a Big/Longnose skate grouping in the Central GOA. The TAC for the Central GOA Big/Longnose harvest would equal 10% of the estimated biomass of Big skates in the Central Area (this would have been the OFL for Big skates in this area if such an OFL had been promulgated) An ABC and TAC would also be established for a group including Big and Longnose skates in the Western and Eastern GOA management areas, and for Other skates in all management areas. The Council may not allow a directed fishery in 2005 without an approved data collection plan. The Council requested that staff work with industry to develop an adequate data collection plan, and that state and federal agencies also work together to enhance data collection and research to address the serious data gaps identified for these skate species.

Table 2.0-6 Council’s December Skate ABC and TAC Recommendations (in metric tons)

| Species | Area | 2004 OFL | 2004 ABC | 2004 TAC |
|-------------------------|-------------|----------|----------|----------|
| Big and Longnose skates | Central GOA | 5,914 | 4,435 | 3,284 |
| All other skates | GOA-wide | 4,935 | 3,709 | 3,709 |

Note: “All other skates” includes Big skates and Longnose skates in the Eastern and Western GOA management areas (but not in the Central GOA management area) and all Other skates species in all three management areas.

Other alternatives considered and rejected

The GOA Groundfish Plan Team recognized that the current TAC-setting formula in the GOA Groundfish FMP was not designed to prevent overfishing at the group or species level. In November 2000, the team adopted an approach for partitioning the combined other species TAC to the group level, based on the draft 1999 assessment estimates of assemblage ABCs. The subgroup ABCs were based on apportioning the recommended ABC for each major taxa by its proportionate share of the sum of ABCs for the major taxa in the assemblage (11,890 mt). The Plan Team endorsed this approach as an interim measure until an FMP

amendment could be considered by the Council. The Team considered it an interim approach to prevent overfishing of a particular component, in the event that a particular subtaxa became a fishery target. The team identified the following reasons for recommending this interim constraint of TAC for each “other species” group. This approach was adopted by the Council, in December 2000, but was not implemented by NMFS because it required a plan amendment.

Octopus and squid have been identified as preferred prey items of Steller sea lions. Changes to the distribution of groundfish fisheries as a result of Steller sea lion reasonable and prudent measures result in very different distributions of bycatch than previously observed in the GOA. This may result both from directed fishing on new species to replace lost opportunities for traditional target species, and from inadvertent bycatch due to fishing in non-traditional areas.

The Council also considered another approach to separate sharks and skates into an elasmobranch category, separate squid and octopus into a cephalopod category, and include sculpins and grenadiers as separate categories. This was proposed under a previous draft of GOA Plan Amendment 63.

The January 2001 draft of the PSEIS (NMFS 2001d) also examined other management alternatives for non-target species. The following is summarized from that draft analysis. Although there were no directed skate fisheries in the North Pacific Ocean until 2003, skates support directed fisheries in other parts of the world (Agnew et al. 2000, NMFS 2000b, Martin and Zorzi 1993); therefore they could be a potentially important fishery resource in the future. However, skate life cycles are similar to those of sharks, with relatively low fecundity, slow growth to large body sizes, and dependence of population size on high survival rates of a few well-developed offspring. Although little specific life history information exists for most skate species, they are generally thought to have limited reproductive capacity relative to gadids, pleuronectids, and other exploited groundfish and, thus, vulnerable to overfishing (Sosebee 1998). Large skate species with late maturation (11 or more years) are most vulnerable to heavy fishing pressure, with cases of near extinction reported in the North Atlantic for the common skate *Raja batis* and the barndoor skate *Raja laevis* (Brander 1981, Casey and Myers 1998). The management of skate species within aggregate complexes coupled with the apparent population stability for skate species in aggregate has masked the decline of individual skate species in European fisheries (Dulvy et al. 2000). In the North Atlantic, declines in barndoor skate abundance were concurrent with an increase in the biomass of skates as a group (Sosebee 1998). Although we cannot determine if any skate species have declined in the North Pacific during the timeframe of the FMPs (see discussion of available data in the next section), it is believed that there is adequate evidence that fisheries can have an impact on skate populations and that stable or rising aggregate skate biomass does not necessarily indicate that no impact is occurring at the species level. In addition, skates are currently the highest non-target catch biomass in the eastern Bering Sea (Table 4.1-15 in NMFS 2001d). Therefore, skates were given highest priority for management under this alternative policy to increase protection to non-target species.

The January 2001 draft PSEIS (NMFS 2001d) also examined setting a rarer species aggregate TAC. However, as discussed in Section 4.1.3.2 of that document, there is a potential problem with an aggregate TAC if species within the aggregate complex have different levels of productivity and vulnerability to overfishing, or if the catch of those species is not in proportion to their biomass within the complex. The catch accounting for skates at the aggregate level might still allow the less productive skate species to be harvested at disproportionately high levels relative to their biomass so that some species might be subject to overfishing even when the overall TAC for the skate complex is not exceeded.

Ideally, TACs should be set for individual skate species to avoid the potential problems with aggregate TACs. There is enough information (species biomass and proxy M) to set individual-species TACs for two skate species in the Bering Sea, up to three species in the Aleutian Islands, and possibly four species in the GOA

pending additional information. The biggest impediment to effective management using individual-species TACs is the lack of specific species identification of skates (and many other non-target groups) in the fishery. This means that the individual species TACs, once set, cannot be monitored either inseason or postseason and, therefore, cannot be used to limit catch by species. It could simply be assumed that observers will be trained to identify skate species in catch, and this would solve the problem. Realistically, skate identification can be difficult, and the demands of the status quo management system on observers are already high. Therefore, it was attempted to develop an interim solution for skate management in aggregate that would allow adequate time for phase-in of skate identification within the inseason management system. Setting aggregate TACs for skates or other non-target species might be necessary initially due to difficulties with identification in catch; however, aggregate TAC setting can include measures to minimize the potential for overfishing less productive stocks within the complex. The draft SEIS described three options for setting a rarer species aggregate TAC that would afford more protection to rarer or less-productive species within the complex. These are described in more detail in that document.

- set the aggregate TAC for the complex at the level of the smallest individual-species TAC.
- use available information or assume relative catch rates for the species to establish an aggregate TAC.
- sum all single-species TACs to get the aggregate TAC.

More complex options for TAC setting were unable to be analyzed in the draft PSEIS. One would be to set TAC by area/depth or gear strata, corresponding to the distribution of the rare and common species. For example, a spatially distributed skate TAC could be based on the high biomass of Alaska skates in shallower areas of the Bering Sea where the Bering skate is not found, according to survey data. In areas and depths of species range overlap, the skate TAC would be based on the lower biomass of the Bering skate, to afford it more protection. This spatial distribution of TAC would be most effective if it could be monitored at a higher spatial resolution than is done with current system of in-season management. If monitoring TACs of individual species proves too complex for the management system, then spatial allocation of TAC for aggregate species complexes may be a more feasible alternative. This is further discussed in the next section with respect to grenadier management, because grenadier species have more distinct depth distributions than skates.

3.0 Affected Environment

For purposes of analyzing the effects of skate specifications, the PSEIS (NMFS 2003b) contains the following descriptions that are incorporated by reference in this analysis:

Section 3.9.2.4 contains sector profiles including GOA trawl (Tables 3.9-11 and 3.9-12) and GOA longline (Tables 3.9-14, 3.9-15, and 3.9-16).

Section 3.9.3.2 contains descriptions of the regions and communities involved in the groundfish fisheries, including the Kodiak Island Region on page 3.9-65.

Section 3.5.3 contains descriptions of other species management, trophic interactions, past and present effects analysis, comparative baseline and cumulative effects analysis.

Section 3.5.3.4 contains skate life history and distribution, trophic interactions, management, past and present effects analysis, comparative baseline and cumulative effects analysis. (Tables 3.5-130 through 3.5-136)

The reader is referred to the first annual SAFE document prepared for skates, which is attached to this EA/IRFA as an appendix, for information on the biology of GOA skates and for details on the management of the skate fishery. The targeted skate fishery emerged in the GOA in 2003. The emergence of this fishery is described in Chapter 1.0 of this EA.

4.0 Environmental Effects

4.1 Significance Criteria

This section forms the scientific and analytic basis for the comparisons across the options. Each option and suboption under consideration is perceived as having the potential to affect one or more components of the human environment. Significance of the 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 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 non-target 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) significant social or economic impacts; and (8) degree of controversy (NAO 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 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 intent of TAC setting deliberations is to strike an informed balance between amounts of fish taken by these fisheries during fishing year 2004, and amounts left swimming in the water. The effects of the options are evaluated for all resources, species, and issues that may directly or indirectly interact with these fisheries within the action area as a result of TAC levels set. The direction of impact intensity applies to the particular resource, species, or issue being evaluated (as opposed to always applying to the target species).

The following ratings for significance are used; beneficial significance, adverse significance, 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 nature. In instances where criteria to determine an aspect of significance (significant adverse, insignificant, or significant beneficial) do not logically exist, no criteria are noted. These situations are termed “not applicable” in the criteria tables.

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. Table 4.1-1 summarizes the reference points for the topics addressed in this analysis. The first four reference points relate to the biological environment, while the latter two are associated with the human 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:

- S+ Significant beneficial effect in relation to the reference point; this determination is based on interpretations of available data and the judgement of the analysts who addressed the topic.
- I Insignificant effect in relation to the reference point; this determination is based upon interpretations of data, along with the judgement 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 status quo does not positively or negatively affect the respective factor.
- S- Significant adverse effect in relation to the reference point and based on interpretations of data and the judgement of the analysts who addressed the topic.
- U 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.
- NE No effect is anticipated from implementation of the action.

Table 4.1-1 Reference points for significance determinations

| Reference Point | Application |
|---|--|
| Current population trajectory or harvest rate of subject species | (1) Marine mammals (2) Target commercial fish species (3) Incidental catch of non-specified species (4) Forage species (5) Prohibited species bycatch (6) ESA list Pacific salmon (7) Seabirds |
| Global harvest of prey species. Temporal dispersion of harvest of prey species. | Steller sea lions |
| Current size and quality of marine benthic habitat and other essential fish habitat | Marine benthic habitat and other essential fish habitat |
| Application of principles of ecosystem management | Ecosystem |
| Current management and enforcement activities | (1) State of Alaska managed fisheries (2) Management complexity and enforcement |
| Current rates of fishing accidents | Human safety and private property (vessels) |

4.2 GOA skate specifications analysis

Environmental Components Potentially Affected

The choice of an approach to skate specifications is limited in scope and will not likely affect all environmental components of the GOA. Table 4.2-1 shows the potentially affected components. Under groundfish, the effects are primarily limited to the “target” species category which may be taken in a skate directed fishery, such as Pacific cod. The TAC for the “Other species” complex is also potentially affected by the action, because the amount of “Other species” harvest will increase based on the formula used to set the “Other species” TAC (i.e., 5 percent of the combined TAC amounts for target species, as specified in the FMP). Halibut may be affected, for example, as a result of PSC bycatch, given that they are taken incidentally in the skate fishery. The way skates are managed may have socioeconomic effects on the participants in the skate fisheries and on participants in other directed fisheries that take skates incidentally.

Table 4.2-1 Resources potentially affected by Skate Options

| Option | Potentially Affected Component | | | | | | | |
|--------|--------------------------------|---------------|------------|----------------|----------|-----------------------|--------------------|---------------|
| | Physical | Benthic Comm. | Groundfish | Marine Mammals | Seabirds | Non specified Species | Prohibited Species | Socioeconomic |
| 1 | N | N | Y | N | N | N | Y | Y |
| 2 | N | N | Y | N | N | N | Y | Y |
| 3 | N | N | Y | N | N | N | Y | Y |
| 4 | N | N | Y | N | N | N | Y | Y |
| 5 | N | N | Y | N | 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.

Table 4.2-1 suggests that there are three potential environmental sectors that may be impacted. These would be:

- Groundfish target species impacts, including skates, “Other species”, and species harvested in fisheries taking skates as incidental catch
- Halibut PSC
- Social and Economic

Six options and two suboptions were described in Chapter 2.0 of the EA. Each option with the two suboptions is analyzed in detail below. This section ends with a description of the preferred option adopted by the Council at its December 2003 meeting and with a discussion of its significance. The Council’s preferred option was a combination of elements analyzed under Options 1 and 5. The potential impacts are evaluated below.

Groundfish Target Species Impacts

The greatest protection to a targeted fishery comes from management at the TAC level. TACs are often set at or near ABC levels for the most valuable fisheries, such as pollock, Pacific cod, and sablefish, after a consideration of limits placed on the permissible range of optimal yields (OYs) by regulation. Once a TAC has been established, fisheries managers estimate the anticipated incidental catch (both retained and discarded) in other directed fisheries throughout the year. This amount is deducted from the TAC and the resulting amount is a directed fishing allowance (DFA).

If the DFA has been harvested, fishery managers close the directed fishery and place the species on bycatch status, where only the maximum retained amount (MRA) may be retained and the remainder must be discarded. This protects against incidental and directed harvests that together exceed the established TAC.

If the TAC has been harvested, fishery managers place the target on prohibited status where none of the fish may be retained. If an OFL is approached, fishery managers look for additional ways to reduce catch through the fishing year. This may result in the closure of other directed fisheries which experience incidental catches of the species which is approaching an OFL. Actually reaching an OFL is a rare event because fishery managers strive to keep annual harvests at or below TAC levels. It is most likely to occur in a fishery very conservatively managed (with Tier 5 or 6 OFLs) and with relatively low estimates of stock biomass, resulting in less distance between the TAC and the OFL.

The significance criteria for effects on groundfish species is found in Table 4.2-2.

Table 4.2-2 Criteria used to estimate the significance of effects on targeted groundfish stocks in the Bering Sea, Aleutian Islands, and Gulf of Alaska

| Intensity of the Effects | | | | |
|--|--|---|---|--|
| Direct Effects | Significant Adverse | Unknown | Insignificant Impact | Significant Beneficial |
| Fishing mortality | Reasonably expected to jeopardize the capacity of the stock to produce MSY on a continuing basis: mean F2001-2006>FOFL | Unknown fishing mortality rate | Reasonably <i>not</i> expected to jeopardize the capacity of the stock to produce MSY on a continuing basis: mean F2001-2006<=FOFL | Action allows the stock to return to its unfished biomass |
| Spatial/temporal distribution of catch | | | | |
| Leads to change in genetic structure of population | Evidence of genetic sub-population structure and evidence that the distribution of harvest leads to a detectable reduction in genetic diversity such that it jeopardizes the ability of the stock to sustain itself at or above the MSST | MSST and genetic structure is unknown, therefore no information to evaluate whether distribution of the catch changes the genetic structure of the population such that it jeopardizes <i>or</i> enhances the ability of the stock to sustain itself at or above the MSST | Evidence that the distribution of harvest is <i>not</i> sufficient to alter the genetic sub-population structure such that it jeopardizes the ability of the stock to sustain itself at or above the MSST | Evidence of genetic sub-population structure and evidence that the distribution of harvest leads to a detectable increase in genetic diversity such that it enhances the ability of the stock to sustain itself at or above the MSST |
| Change in reproductive success | Evidence that the distribution of harvest leads to a detectable decrease in reproductive success such that it jeopardizes the ability of the stock to sustain itself at or above MSST | MSST is unknown therefore no information regarding the potential impact of the distribution of the catch on reproductive success such that it jeopardizes <i>or</i> enhances the ability of the stock to sustain itself at or above the MSST | Evidence that the distribution of harvest will <i>not</i> change reproductive success such that it jeopardizes the ability of the stock to sustain itself at or above the MSST | Evidence that the distribution of harvest leads to a detectable increase in reproductive success such that it enhances the ability of the stock to sustain itself at or above MSST |

| Intensity of the Effects | | | | |
|---|--|---|---|---|
| Direct Effects | Significant Adverse | Unknown | Insignificant Impact | Significant Beneficial |
| Change in prey availability | Evidence that current harvest levels and distribution of harvest lead to a change prey availability such that it jeopardizes the ability of the stock to sustain itself at or above the MSST | MSST is unknown therefore no information that current harvest levels and distribution of harvest lead to a change in prey availability such that it enhances or jeopardizes the ability of the stock to sustain itself at or above the MSST | Evidence that current harvest levels and distribution of harvest do <i>not</i> lead to a change in prey availability such that it jeopardizes the ability of the stock to sustain itself at or above the MSST | Evidence that current harvest levels and distribution of harvest lead to a change prey availability such that it enhances the ability of the stock to sustain itself at or above the MSST |
| Habitat: Change in suitability of spawning, nursery, or settlement habitat, etc. due to fishing | Evidence that current levels of habitat disturbance are sufficient to lead to a decrease in spawning or rearing success such that it jeopardizes the ability of the stock to sustain itself at or above the MSST | MSST is unknown therefore no information that current levels of habitat disturbance are sufficient to lead to a detectable change in spawning or rearing success such that it enhances or jeopardizes the ability of the stock to sustain itself at or above the MSST | Evidence that current levels of habitat disturbance are not sufficient to lead to a detectable change in spawning or rearing success such that it jeopardizes the ability of the stock to sustain itself at or above the MSST | Evidence that current levels of habitat disturbance are sufficient to lead to an increase in spawning or rearing success such that it enhances the ability of the stock to sustain itself at or above |

None of the options change the method or location of harvest of skates which may lead to changes in habitat for groundfish species. Therefore, the options have no effect on the habitat of groundfish. Little is known about predation by and on skate species within the groundfish stocks. Because all of the options place a control on the amount of harvest of skate species without having major effects on the harvest of other groundfish species, and there is no information to determine the effect on groundfish species to sustain themselves at or above MSST in relation to prey availability, the changes in prey availability under all of the options is likely to be insignificant. None of the options control the amounts of seasonal harvest of skates, so there is no difference in temporal effects between the options.

Under each option, the impacts of skate harvest specifications on groundfish target species will likely be limited to skates, “other species” complex, and Pacific cod. The majority of the skate incidental take in the GOA is in the Pacific cod directed fishery (Gaichas and DiCosimo 2001). Likewise, a significant amount

of bycatch taken in the “other species” directed fishery is Pacific cod, as fishers target skates in the “other species” complex. The “other species” management category comprises multiple species groups: sharks, skates, squids, octopus, and sculpins. “Other species” are considered ecologically important and may have future economic potential; therefore an aggregate annual quota is used to limit their catch. Information on distribution, stock structure, and life history characteristics is extremely limited for “other species”. There is currently very little (if any) directed fishing for species in this category in the Gulf of Alaska. “Other species” are taken incidentally in target fisheries for groundfish, and aggregate catches of “other species” are tracked inseason by the Alaska Regional Office.

Catches of “other species” have been very small compared to those of target species (Gaichas et al. 1999). It is unlikely that the observed bycatch of “other species” is having a negative effect on abundance at the species group level, according to the limited trawl survey data available. However, data limitations are severe, and further investigation is necessary to ensure that all species components are not adversely affected by groundfish fisheries.

Groundfish target species impacts may occur if skate fishermen take advantage of their skate fishing activity to harvest their Pacific cod maximum retainable amounts (MRA)s. Skate fishermen would be able to retain Pacific cod up to 20 percent of the weight of their retained groundfish harvest that is open to a directed fishery, while targeting skates, as provided for in 50 CFR 679.20(e) and Table 10 to 50 CFR part 679. For example, if the skate TAC were 5,000 metric tons, and this was completely harvested by longliners and trawlers in directed skate fisheries, these fishermen could retain up to 1,000 metric tons of Pacific cod, in aggregate. They could retain even more, if their groundfish catch was not composed purely of skates (e.g., if it also contained arrowtooth if open to directed fishing, etc.). The additional harvest of Pacific cod will not have a significant impact on Pacific cod stocks because the harvest is conducted within the MRA limits and is subtracted from the annual TAC specified for Pacific cod.

The separate management of skates will lead to increases in the size of the “other species” complex TAC. Skates are part of the “other species” FMP management category, meaning that their catch is reported in aggregate along with catches of shark, sculpin, octopus, and squid. In the GOA FMP, the “other species” TAC has been established as 5 percent of the sum of the TACs for all other assessed target species in the GOA. If skates are taken out of the complex and given their own OFL, ABC, and TAC, their TAC will be added to the total TACs of all species for the purpose of calculating the “other species” TAC. Since the new skate TAC will be 6,993 mt, the increase in the other species TAC will be 350 mt (5% of 6,993). The “other species” complex TAC has been set over 10,000 metric tons in the last four years, and fishermen have not harvested even 50 percent of that amount in any of those years. The highest harvest took place in 2003, when fishermen harvested almost 50 percent of the TAC. Approximately 63 percent of the “other species” harvest in 2003 was skates (NMFS inseason data). In light of this, all options have been given a “not significant” rating for “other species” impacts. The modest increase in the “other species” TAC will (marginally) increase the potential for overfishing of the species in the remaining groups in the complex (i. e., sharks, squids, sculpins, and octopus). This situation is intended to be temporary as the Council attempts to resolve biological and management issues of revising management of all non-target groundfish species.

The following analysis by option will focus on the effects of fishing mortality and the spatial harvest of skates.

Option 1

Under Option 1, a GOA-wide OFL and a GOA-wide ABC would be established for all skates as a group (That is, there would be a single OFL and a single ABC for Big, Longnose, and "Other" skates.)

The actual management of skates would depend on the TAC suboption chosen by the Council. Under

Suboption 1, a GOA-wide TAC would be set equal to, or less than, the ABC at a level sufficient to meet anticipated incidental catch needs in other directed fisheries through the fishing year. Fishing operations could retain skates up to the MRA, which would be 0 to 20 percent of retained species open for directed fishing. Once the TAC was harvested, the skates group would become a prohibited species; if subsequent harvests approached the OFL level, NMFS in-season managers might have to close fisheries taking skates as incidental catches.

Alternatively, under Suboption 2, the skate TAC would be set at the ABC level. Under this suboption, the regional administrator would estimate likely incidental skate catches in other directed fisheries throughout the fishing year. These would be subtracted from the TAC to calculate the directed fishing allowance (DFA). If the DFA were sufficiently large, fishery managers would permit a directed skate fishery. Under Option 1, the ABC would be 8,144 mt. The Skate SAFE report estimates a mean incidental catch of 4,933 mt over the period 1997 to 2002 (Skate SAFE Table 16). This suggests a DFA under this suboption of about 3,200 mt. The Skate SAFE estimates directed fishery harvest (retained and discarded) in 2003 at about 2,700 mt (Skates SAFE, Table 16, page 24). Therefore, it is likely that this suboption would permit a directed fishery for skates in 2004. Under suboption 2, the targeted fishery would be closed if the DFA was reached and retention of incidental skate harvests in other fisheries would be prohibited if the skate TAC were harvested.

Option 1 would provide protection to skates at the GOA-wide level. Conservative management would be very likely to prevent overall GOA skate harvests from approaching the GOA-wide OFL. It would provide an incrementally heightened level of protection, while better information on the biology of, and fishery for, GOA skates was gathered.

This option would provide less protection against localized depletion of skates than options that incorporate management area allocations. The 2003 target fishery was concentrated in the Central Gulf management area. Under this alternative, the entire GOA-wide ABC for skates could be taken within the Central Gulf. This would be a harvest of 8,144 mt. The estimated OFL for all species in the Central Gulf is 7,208 mt. The significance of this potential is difficult to determine. First, the entire harvest of skates would only take place in the Central GOA if no skates were harvested elsewhere in the GOA. Secondly, information about skate movement and migration within the GOA is limited. The extent to which, and the time frame within which, harvest depletion in the Central GOA would be offset by in-migration from the Eastern GOA or Western GOA is unknown.

This option would also provide less protection against the depletion of individual species than other options. Excessive harvest of Big skates is a particular concern. As the Skates SAFE document indicates, the fishery may have a tendency to harvest larger skates (Skate SAFE, page 9). Big skates tend to be larger than Longnose skates, and female Big skates tend to be larger than males. Female Big skates are believed to make up a disproportionate part of the catch. Moreover, as the Skates SAFE indicates, the overharvest of particular skate species within a species group has been a problem in other skate fisheries in New England (Appendix B skate assessment, page 3).

Because Option 1 does not establish separate OFLs or ABCs by species, it does not require historical information about the proportions of the different species of skates in the harvest for the determination of TACs and DFAs. Our knowledge of these proportions is currently limited. Most of the harvest is delivered by small unobserved vessels. These vessels have not been required to report the species of the skates they are delivering. Prior to 2003, the Observer Program did not report skates by species. A program to gather this information was partially implemented in 2003. Considerably more information on the numbers of the different species of skates in the harvest should become available during 2004. The State of Alaska and NMFS have modified their species codes to gather more species information on skate deliveries. The

Observer Program will begin to systematically gather information on skate species being delivered and discarded.

Suboption 1 (bycatch only, with a 20 percent MRA) would meet the needs of fisheries targeting other species which take skates incidentally, but would preclude a directed fishery for skates in 2004. As noted in Section 3.2 of this EA, 45 hook-and-line vessels and 12 trawl vessels delivered about 1,700 mt of skates with an ex-vessel value of about \$1.7 million in the 2003 directed skate fishery in the Central Gulf. Twenty-three distinct processors accepted deliveries of skates in 2003.

Directed skate fisheries would be possible under Suboption 2. Given incidental catch levels reported in the Skates SAFE, a targeted fishery would be possible. There is probably not a high likelihood of closure of fisheries harvesting skates incidentally given high level of aggregation and the conservative management to TAC that would be practiced.

Because this method of management does not provide the ability to prevent harvests beyond the OFL on an area or species basis, the effect is considered significantly adverse for fishing mortality on skate species. Concentration of harvest in certain areas may or may not have an effect on the genetic diversity or reproductive success depending on spawning and migration behavior which is unknown at this time, therefore, the effects of the spatial distribution of harvest on skates regarding genetic diversity or reproductive success is unknown.

Option 2

Option 1 manages skates at the “group” level, however the group would contain 12 to 14 different species. These species have different characteristics with differing implications for management. Option 2 attempts to address the distinctiveness of skate species.

As noted in the Skate SAFE, different skate species have different life cycle parameters, with different growth rates, average weights at age, ages at sexual maturity, life spans, and fecundities. In other parts of the world, “the mixture of life history traits between smaller and larger skate species has led to apparent population stability for the aggregated “skate” group...where fisheries occur, and this combined with the common practice of managing skate species within aggregate complexes has masked the decline of individual skate species in European fisheries...similarly, in the Atlantic off new England, declines in barndoor skate abundance were concurrent with an increase in the biomass of skates as a group...” (Skate SAFE, page 3).

GOA Skates differ in average weight at age, and there is some evidence that fishing operations tend to harvest larger animals. This suggests that within the skate complex, fishermen will tend to put more pressure on the larger Big skate species than on other species. Moreover, female Big skates tend to be larger than males, and there is concern that fishing operations might harvest females disproportionately. Larger skates tend to be less resilient to fishing pressure, “this is most often attributed to the long juvenile stage during which relatively large yet immature skates are exposed to fishing mortality...” This relative lack of resilience in larger skates, “explains the mechanism for the shift in species composition to smaller skate species in heavily fished areas.”

Little is known about skate characteristics in general, compared to other species. This is especially true for the skate populations in the waters off of Alaska. Operation in this “information-poor” environment argues for a precautionary approach to management.

Option 2 partially addresses these concerns about harvesting a group of skate species with varying life cycle parameters under a single quota, by providing separate GOA-wide ABCs for Big skates, Longnose skates and

“Other” skates (*Bathyraja* sp.). In addition, GOA-wide OFLs would be established for each species. This option provides a GOA-wide OFL of 5,332 mt and an ABC of 3,999 mt for Big skates, an OFL of 3,758 mt and an ABC of 2,818 mt for Longnose skates, and an OFL of 1,769 mt and an ABC of 1,327 mt for “Other” skates.

Trawl survey research indicates that Big and Longnose skates dominate the GOA skate biomass, and they are believed to dominate skate harvests as well. Both of these species tend to be larger than the species included in the “Other” species category. As noted above, it is believed that the fishery tends to disproportionately harvest larger skates. The species categories under this option have been designed to provide more protection to Big and Longnose skate species which are most vulnerable to fishing pressure and which appear to be harvested disproportionately by the fleet.

Management for each of these species would depend on the suboption chosen. Under Suboption 1, each of these species would be managed as an incidental catch fishery under a 20 percent MRA. The TAC would be set equal the sum of the estimated incidental harvests of each species in the different fisheries that take skates incidentally. A skate species would be made a prohibited species when the species TAC was harvested, and if the species OFL was approached, target fisheries for other species that take skates incidentally could be closed. This suboption would preclude a directed fishery for skates.

Under Suboption 2, TAC would be set equal to ABC for each species, and estimated incidental harvests by species would be deducted from TAC to determine species-specific DFAs. If DFAs were large enough, a targeted fishery could be allowed. Harvest of the TAC would lead to prohibited species status for skates; harvests approaching OFL could lead to closures of targeted fisheries harvesting skates. Under Suboption 2, the ABC for Big skates is 3,999 mt; the Skates SAFE document reports an estimated mean incidental catch of 1,210 mt over the period 1997 to 2002; this suggests a DFA under this option of 2,789 mt. The estimated directed Big skate harvest in 2003 was 2,400 mt, so this Suboption is likely to allow a directed Big skate fishery in 2004. The ABC for Longnose skates is 2,818 mt and the mean incidental harvest from 1997 to 2002 is estimated to be 2,164 mt, suggesting a DFA of about 654 mt. Estimated directed Longnose harvests in 2003 were 300 mt, so a directed Longnose fishery may be possible in 2004 under this Suboption. However, this is not as likely as a directed fishery for Big skates. As noted below, the procedures used to make estimates of the species composition of skate catch are believed to produce estimates of species catches that have a large margin for error. In the face of the uncertainty this causes, in-season managers may have to be conservative. The “Other species” category is not believed to be the object of a directed fishery.

Option 2 requires more detailed data than Option 1. Historical data on incidental harvest by species are required to estimate the TAC under Suboption 1 and the DFA under Suboption 2. However, only limited harvest data is available at the species level. Federal and state harvest record systems have not been collecting skate data at the species level. Some information is available from observer data, particularly for 2003. However observers have only recently begun to collect species level data; a time series covering several years is unavailable.

The authors of the Skate SAFE document have made estimates of the skate composition of the catch using data from annual summer trawl surveys of the biomass to project species composition on observer and fish ticket records of aggregate skate harvests. The SAFE is explicit about some of the concerns raised by this approach. (Skate SAFE, page 7-8) The data from trawl surveys are being applied to fisheries using other gears (and hook-and-lines are a particularly important source of skate harvests) and to fish caught for other purposes (for commercial harvest as opposed to biological sampling). Trawl data from the summer and selected years is being extrapolated to harvests from other seasons and years. Despite the shortcomings of this method, it or a very similar approach would have to be used to estimate incidental skate catches in the fisheries harvesting skates, in order to implement Option 2 in 2004.

In addition to the historical data for determination of TAC or DFA levels (depending on the suboption), Option 2 requires species level data for in-season monitoring of harvests. It is likely that this requirement will be met during 2004. The State of Alaska has added species codes to its fish ticket landings information system, in order to gather species level data. NMFS is conducting rulemaking to elaborate the skate species codes used in its recordkeeping system. The observer program has trained its observers in skate identification, and will be collecting species information in 2004.

Species specific OFLs are a concern to some fishermen because they increase the potential for closure of valuable target fisheries that take skates incidentally. Pacific cod is one of these target species. If an OFL is set at the single species level, a fishery harvest of the 1,769 mt “Other” skates OFL could lead to the shut down of an extremely valuable fishery like Pacific cod in order to protect the “Other” skates stock. An “Other” skate shutdown is much less likely when other skates are included with Big and Longnose skates in a single OFL. The potential for problems with species specific specifications is exacerbated when the OFLs and ABCs are based on limited historical information and extrapolations from summer trawl surveys.

Suboption 2 may lead to targeted fisheries for more than one skate species. It is unlikely that these target fisheries would close together. If fishermen, tending to harvest larger animals, caught the Big skate TAC before the Longnose TAC, Big skates would be placed on prohibited status, while the Longnose fishery might remain open. Fishermen might be in the position of being required to discard Big skates taken incidentally to targeted fishing for Longnose skates, if they are over the MRA for skates or if Big skates are on PSC status.

This option provides more protection to individual skate species than Option 1 by providing separate TACs for Big and Longnose skates. It is likely the amount of harvests can be maintained under the OFLs for Big and Longnose skates, and therefore, the harvest of groundfish species under this alternative is insignificant. As under Option 1, there is no spatial control of the harvest of skates and little is known about the genetic diversity or reproductive characteristics so the effects on the reproduction and genetic diversity of skate species is unknown.

Option 3

Under Option 3, area OFLs and ABCs would be established for each of the species groups in Option 2 (Big, Longnose and Other) in each of the major management areas in the GOA (Western, Central and Eastern). This option adds protection against localized depletion to Option 2. This option is the most restrictive of the five, and raises the most concerns for industry.

Not much is known about the habitat requirements or migration patterns of skates, either in the GOA or elsewhere in the world. The Skates SAFE notes that “the observed catch and landings of skates have shown consistent spatial patterns between 1997 and 2002, suggesting that skates are associated with certain areas and or habitats in the GOA and may be found there predictably...” (Skates SAFE, page 7) Skate SAFE figures suggest that from 1997-2002 incidental skate catches, and 2003 targeted catches within the Central GOA tended to come from the same locations. (Skates SAFE, Figures 3 to 9). Walker and Hislop found evidence of spatial segregation of species in the North Sea, suggestive of species specific habitat requirements. (Walker and Hislop, 1998, page 392).

Given the evidence suggestive of localized harvests and species specific habitat requirements, and in the absence of more detailed information on skate habitat requirements and migration patterns, a precautionary approach to management may be appropriate. Option 3 provides a precautionary approach, by setting separate OFLs and ABCs for each of the Option 2 species or species groups (Big, Longnose, and Other skates) in each of the main management areas in the GOA (Western, Central, and Eastern).

The areas chosen are large with respect to the areas from which skates are taken. They represent a compromise with an ideal of much more specific spatial management and the practical needs of fisheries management. The areas are consistent with the areas used for management of other GOA fisheries.

Management for each of these species would depend on the suboption chosen. Under Suboption 1, each of these species would be managed as an incidental catch fishery within one of the management areas under a 20 percent MRA. The TAC would be set equal the sum of the estimated incidental harvests of each species in the different fisheries that take skates incidentally within that management area. A skate species would be made a prohibited species when the species TAC in the area was harvested, and if the species OFL in the area were approached, target fisheries for other species that take skates incidentally could be closed. This suboption would preclude a directed fishery for skates in any area.

Under Suboption 2, TAC would be set equal to ABC for each species, and estimated incidental harvests by species would be deducted from TAC to determine species-specific DFAs. If DFAs were large enough, a targeted fishery could be allowed. Harvest of the TAC would lead to prohibited species status for skates; harvests approaching OFL could lead to closures of other targeted fisheries incidentally harvesting skates. The estimates of ABC and incidental catch in the Skates SAFE suggest that directed fisheries may be more likely for Big skates than for Longnose or for "Other" skate species. In the Central GOA, the Big skate ABC is 2,463 mt, while the estimated incidental catch is 811 mt. In the Eastern GOA, the Big skate ABC is 809 mt, while the estimated incidental catch is 131 mt. In the Western GOA the Big skate ABC is 727 mt while the estimated incidental catch is 268 mt. ABCs and estimated incidental catches are closer together for Longnose skates. In the Central GOA, the ABC is 1,972 mt and the estimated incidental catch is 1,403 mt. In the Eastern GOA, the ABC is 780 and the estimated incidental catch is 726 mt. In the Western GOA, the ABC is 66, while the estimated incidental catch is 35 mt. (Skate SAFE, Table 16 on page 24).

It is unusual, but not unprecedented, for a GOA species to be protected in harvest specifications with area specific OFLs. Pacific ocean perch has three area OFLs in the GOA, and pollock has two. The other GOA species each has a GOA-wide OFL.

While Option 3 provides some additional protection to the targeted stocks from being overfished, it also increases the possibility that fisheries for other species, that harvest skates incidentally, will be closed if one of the skate species and area specific OFLs were reached. The likelihood that an OFL could be reached for a particular skate target in a given area is increased by the greater number of skate targets, nine in this option compared to one in Option 1 (resulting in lower OFLs, ABCs, and TACs for individual skate targets). Fisheries known to harvest skates incidentally include hook-and-line and trawl fisheries for Pacific cod and rockfish, hook-and-line fisheries for sablefish and halibut, and flatfish trawl fisheries. (Skates SAFE, Table 4, page 16) Some of these are among the most valuable fisheries in the GOA.

Because the management of skate species under Options 3 would be to the TAC level under either of the suboptions, the addition of area specific OFLs may not add much protection for the skates. It is rare to reach OFL levels in a fishery. If this is the case, it would also suggest that closure of a fishery taking skates incidentally would be unlikely.

The effect on fishing mortality under this option for skate and other groundfish species is not likely to jeopardize the capacity of the stocks to produce MSY, and therefore is insignificant. This option provides for area specific control of harvest that may or may not protect the genetic diversity and reproductive capability of the skate species. Because little is known about the genetic diversity and the reproduction of skates, the effects on reproduction and genetic diversity from this option are unknown.

Option 4

Management area (Eastern, Central and Western GOA) OFLs and ABCs for Big skates and Longnose skates, and Gulf-wide OFL and ABC for "Other" skates. This is the assessment author's recommendation.

Option 4 combines the elements of Option 3 for Big and Longnose skates with the Option 2 approach for "Other" skate species. As such, it has been fully analyzed in the analyses for those two options.

Option 4 provides the highest level of protection to Big and Longnose skates, while providing a lesser level of protection for "Other" skates. However, it is less restrictive than Option 3. Under Option 3, the creation of OFLs and ABCs for "Other" skates in each management area created small "Other" skate quotas that increased the potential for fishery closures, without providing proportionate protection to "Other" skates. "Other" skates do not tend to be targeted by the directed skate fisheries and thus pose fewer concerns.

Option 5

Option 5 was designed during the November 2003 GOA Plan Team meeting in an explicit effort to provide incremental protection for skate species, and protecting industry from closures caused by limited information on the skate resource and past skate harvests.

This option would establish a GOA-wide OFL for the skate species group. ABCs would be established in each management area in the GOA for a joint Big/Longnose skate grouping. That is, Big and Longnose skates would be treated together under a single ABC in each management area. A GOA-wide ABC would be established for "Other" skates. In the Central GOA a TAC would be established for combined Big and Longnose skate catch. This TAC will equal 10 percent of the estimated biomass of Big skates in the Central GOA (this would have been the OFL for Big skates in this area if such an OFL had been promulgated). The Plan Team explicitly stated that this was meant to be a single year arrangement and that it should be reviewed during the 2005 harvest specifications process.

The grouping of species for the ABCs at the management area level takes account of three main factors: (1) the Big and Longnose skate species are targeted while the "Other" skates category is still believed to only be harvested incidentally - this justifies separate treatment for these categories; (2) the grouping of Big and Longnose skate species together reflects a concern that limited information on the species composition of catch makes it hard to determine in advance the appropriate ABCs for these species if they were treated separately; (3) separate Big and Longnose ABCs raise the possibility that fishermen, targeting Longnose after the closure of a Big skate directed fishery (which may happen given the tendency of the fishery to harvest larger skates) might be taking and discarding large bycatch amounts of Big skates - with consequent mortality.

The OFL set for all species together at the GOA-wide level reflects concerns that smaller OFLs, at the species or at the management area level, increase the risks of triggering the closures of fisheries taking skates incidentally to other fisheries. As noted in the discussion of Option 2, this is especially a concern at the species level given the relative lack of skate by species landings information. This also reflects a sense that careful management to TACs and ABCs will provide most protection to species. Since OFLs are rarely approached given TAC management, more disaggregate OFLs provide a modest increment in species protection. Managers rarely approached species OFLs because of their care to not exceed TACs and ABCs. This approach also reflects the customary approach in the GOA: most species are managed with a GOA-wide OFL and area ABCs.

The skate fishery appears to harvest larger than average skates. The TAC set for the Big/Longnose grouping in the Central GOA (and only in the Central Area) reflects concerns that directed skate fishermen, harvesting

a joint Big/Longnose skate TAC, might concentrate their harvest on the larger Big skates, and especially on the female Big skates, which are larger than the male Big skates. This TAC is being established only in the Central GOA since that is where the targeted fishery is occurring. The TAC is being set equal to what the Big skate OFL would have been, if there were one for the Central GOA. In the absence of this TAC, theoretically a targeted fishery could harvest the full Big/Longnose TAC with female Big skates.

The desire to revisit the harvest specifications after a year reflects the compromise between objectives built into these harvest specifications. To protect skate species, it would be desirable to manage at the individual species level, especially for Big and Longnose skates which provide a large portion of the total skate species biomass estimates. However, concerns with accuracy of the data, and the potential to disrupt fishing activity based on inaccurate data led to grouping the species. Better species specific data will become available during 2004. Of particular importance will be species specific landing data. This may allow us to take a second incremental step towards protection of these species in 2005.

Either suboption could be implemented with Option 5. Under Suboption 1, TACs would be set equal to estimated incidental catch needs for the Big/Longnose grouping in the Eastern and Western areas, and for Other skates GOA-wide. The Big/Longnose TAC in the Central area is explicitly set using different criteria under this alternative. This suboption would preclude directed skate fisheries for Big/Longnose skates in the Eastern and Western areas, and for "Other" skates GOA-wide. Unlike Options 1 to 4, however, this Option does not preclude a directed fishery for Big/Longnose skates in the Central GOA.

Under Suboption 2, Western GOA and Eastern GOA Big/Longnose TACs and the GOA-wide "Other" species TAC would be equal to the ABCs for those species in those areas. The DFAs would be calculated by subtracting estimated incidental catches. The Big/Longnose TAC in the Central GOA is explicitly set using different criteria, and a DFA would be calculated for these species by deducting incidental catches of the species in the Central GOA.

This option pulls together elements from other options already analyzed. The GOA-wide OFL for all species is found in Option 1. The GOA-wide ABC for "Other" skates is found in Option 2. Separate GOA-wide ABCs for Big and Longnose skates are also reviewed in Option 2. Option 5 combines these, reducing both the protections for individual skates, and the potential for problems caused under Suboption 2 by the closure of a directed fishery for one of these skate species while the other remains open. The one new component is the TAC for Big/Longnose skates in the Central area. This TAC provides protection for Big skates, in the face of a tendency of fishermen to harvest larger skates in preference to smaller skates. Fishermen would not be able to exceed a harvest rate equal to 10 percent of the Big skate biomass (estimated natural mortality) under this alternative.

This option provides for area control of harvests but because of the lack of genetic and reproductive information, the effect of the spatial control of harvest is unknown. The amounts of harvest will be primarily limited by the TAC and ABC amounts for Big/Longnose skates and for other skate species. The effect of this option on fishing mortality for skate and other groundfish species is not expected to jeopardize the capacity of the stocks to produce MSY and is therefore insignificant.

Option 6 (Council's preferred option)

This option (the Council's preferred option) would establish a GOA-wide OFL for the skate species group. An ABC and TAC would be established in the Central GOA management area for a joint Big/Longnose skate grouping. That is, Big and Longnose skates would be treated together under a single ABC. A single ABC and TAC would be established for "Other" skates, and Big and Longnose skates in the Eastern and Western management areas. The Central GOA Big/Longnose TAC will equal 10 percent of the estimated biomass of Big skates in the Central GOA (this would have been the OFL for Big skates in this area if such an OFL had

been promulgated). The Council indicated that specifications for a targeted skate fishery in 2005 may be contingent on an approved data collection plan. The Council requested that staff work with industry to develop an adequate data collection plan, and that state and federal agencies also work together to enhance data collection and research to address the serious data gaps identified for these skate species.

In crafting this preferred option, the Council took elements of Option 1 and Option 5. Both of these options have been analyzed in this EA. From Option 1, the Council chose a GOA-wide OFL. From Option 5, the Council chose a Big skate/Longnose skate ABC and TAC for the Central-GOA, and set the TAC equal to what would have been the Big Skate OFL under Option 3. Finally, the Council chose to place all remaining skate harvest in the GOA, including the harvest of Big skates and Longnose skates in the Eastern and Western GOA, into a single GOA-wide ABC, with a single GOA-wide TAC. This provision was similar to the provision adopted in Option 1.

In taking this action, the Council focused on the biological management issues raised by a fishery that focused on Big and Longnose skates in the Central GOA. Targeted fishing took place there and has not been identified elsewhere. The Council chose to impose a conservative TAC on this fishing. A targeted fishery for skates may be possible in 2004 under this option, but it is likely to be restricted relative to that in 2003. The GOA-wide OFL, and relatively small number of separate ABCs and TACs created, reduces the potential for closures of fisheries that take skates incidental to harvest of other species. The grouping of skate species into the two ABCs recognizes the shortcomings of species specific data on skate harvests. Because of the additional protection provided to the Big and Longnose skates in the Central GOA, where the targeted fishery is taking place, this option is given the groundfish target species significance ratings (insignificant) associated with Option 5 for fishing mortality, providing similar protections to this key element of the fishery.

Groundfish Effects Summary

The skate specification options include a range of levels of management depending on species and area application of ABCs and OFLs. Option 1 would manage skates with a single GOA wide OFL and ABC. This option would still allow for a disproportionately high level of harvest of a single species within a narrow geographic range and is considered the least protective. Option 2 manages skates with species specific ABCs and OFLs, providing some management over the amount of a single skate species taken on a GOA wide basis. Option 3 is the most protective alternative for the skate stocks because it establishes species and area specific ABCs and OFLs, but there is a paucity of data available to support the management of the skate fishery to this level of detail. The resultant OFLs would be smaller than a GOA wide OFL, leading to a greater likelihood of closure of other directed species fisheries that take skate as incidental catch or closure of areas of high skate bycatch under 50 CFR 679.20(d)(3), if OFL levels were approached. Option 4 uses species and area specific ABCs and OFLs for Big and Longnose skates and GOA-wide OFL and ABC for "Other" skates. This is slightly less protective than Option 3. Option 5 provides less protection than Options 3 and 4, but more management protection than Options 1 and 2, by using grouped Big and Longnose skate, area specific ABCs and GOA-wide OFLs and "Other" skates ABC. Option 6 provides less protection than Option 5, but protects the Big/Longnose skates in the Central GOA, which are the object of the targeted fishery.

Because Option 1 would not protect against the possibility of overfishing an individual species of skate, the impact of Option 1 may be significantly adverse for Big or Longnose skate species. Option 2 provides the ability to control skate harvest to avoid the likelihood of overfishing an individual species on a GOA-wide level and Options 3 through 5 give further protection to skate species by establishing the area specific OFLs. Because the management of skates under Option 5 would be to the area TAC level, the addition of area specific OFLs under Options 3 and 4 is not likely to add much more protection. Options 2 through 5 are not expected to jeopardize the capacity of the stock to produce MSY on a continuing basis and therefore the impacts of Options 2 through 5 on skate stocks is insignificant. Option 6 protects the Big and Longnose skates which are the object of the targeted fishery and the source of biological concern. This protection is

the same as that provided under Option 5. Therefore, the impact of Option 6 on skate stocks fishing mortality is insignificant. The options are not likely to have effects on the prey availability for groundfish species to the extent that the species lose the ability to maintain a stock level at or above MSST, and therefore effects on prey availability are insignificant. No changes in fishing practices that may affect habitat are expected under each option, and therefore, no effects on groundfish habitat is expected with each option.

Table 4.2-3 provides a summary of the significance of groundfish target effects expected from the options and suboptions.

Table 4.2-3 Significance of Direct Effects of Skate Specifications Options and Suboptions on Groundfish

| | Options and Suboptions | | | | | | | | | | | |
|---|------------------------|-----------------|----------------|----------------|----|----|----|----|----|----|----|----|
| | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | |
| Direct Effects | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| Fishing Mortality | S ⁻¹ | S ⁻¹ | I | I | I | I | I | I | I | I | I | I |
| Spatial and Temporal distribution of catch, genetic structure and reproduction ³ | U ² | U ² | U ² | U ² | U | U | U | U | U | U | U | U |
| Change in Prey availability | I | I | I | I | I | I | I | I | I | I | I | I |
| Habitat Changes | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |

¹Option 1 does not manage harvest at the species level or area level so there is potential to jeopardize the ability of the Big and Longnose skates stocks to produce MSY and potential for harvests to exceed the OY.

²Management is on a GOA-wide basis, making control of spatial harvest of skates unknown due to the lack of ability to close areas of skate bycatch under 50 CFR 679.20(d)(3).

³Little is known about the reproductive and genetic diversity of skate species so the effect of the options is unknown.

Prohibited Species Impacts

The effects of the groundfish fisheries in the GOA on prohibited species are primarily managed by conservation measures developed and recommended by the Council over the entire history of the FMP for the GOA and implemented by federal regulation. These measures can be found at 50 CFR part 679.21 and include prohibited species catch (PSC) limitations on a year round and seasonal basis, year round and seasonal area closures, gear restrictions, and an incentive plan to reduce the incidental catch of prohibited species by individual fishing vessels. These management measures are discussed in Section 3.5 of the Steller Sea Lion SEIS (NMFS 2001b) and in a review paper by Witherell and Pautzke (1997).

This analysis focuses on the effects of the options on three aspects of prohibited species management measures; 1) effects of PSC limitations and other management measures in the groundfish fisheries on the

stocks of prohibited species; 2) effects of PSC limitations and other management measures in the groundfish fisheries on harvest levels in the directed fisheries for state managed fisheries; and 3) effects of PSC limitations and other management measures on recent levels of incidental catch of PSC in the groundfish fisheries. The only PSC species that may be affected by the options is halibut, which likely will be taken in the skate fishery. Halibut is the only PSC species with a limit in the GOA.

The following tables summarize the significance criteria for evaluating the effects of the options on halibut.

Table 4.4-4 Criteria used to estimate the significance of effects on stocks of 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 CEY level,
NA: not applicable.

Table 4.4-5 Criteria used to estimate the significance of effects on harvest levels in state managed directed fisheries targeting stocks of halibut in the GOA

| Effect | Significant Adverse | Insignificant | Significant Beneficial | Unknown |
|---|---|---|--|------------------------------------|
| Harvest levels in directed fisheries targeting catch of halibut | Substantial decrease in harvest levels in directed fisheries targeting halibut (>20%) | No substantial increase or decrease (<20%) in harvest levels in directed fisheries targeting prohibited species | Substantial increase in harvest levels in directed fisheries targeting prohibited species (>20%) | Insufficient information available |

Table 4.4-6 Criteria used to estimate the significance of effects on bycatch levels of halibut species in directed groundfish fisheries in the GOA

| Effect | Significantly Adverse | Insignificant | Significant Beneficial | Unknown |
|--|---|--|---|------------------------------------|
| Harvest levels of halibut in directed fisheries targeting groundfish species | Substantial increase in harvest levels of halibut in directed fisheries targeting groundfish species (>50%) | No substantial increase or decrease (<50%) in harvest levels of halibut in directed fisheries targeting groundfish species | Substantial decrease in harvest levels of halibut in directed fisheries targeting groundfish species (>50%) | Insufficient information available |

1) Criteria used to estimate effects of the Options on stocks of halibut in the GOA.

The International Pacific Halibut Commission (IPHC) is responsible for the conservation of Pacific halibut resource. The IPHC uses a policy of harvest management based on a constant exploitation rates. The constant exploitation rate is applied annually to the estimated exploitable biomass to determine a constant exploitation yield (CEY). The CEY is adjusted for removals that occur outside the commercial directed hook-and-line harvest (incidental catch in the groundfish fisheries, wastage in halibut fisheries, sport harvest, and personal use) to determine the commercial directed hook-and-line quota. 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, 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, this impact on average is estimated to reduce the reproductive potential of the halibut stock by 1.7 pounds for each 1 pound of halibut mortality in the groundfish fisheries. These impacts are discussed by Sullivan *et. al.* (1994). The benchmark used to determine the significance of effects under each option on the halibut stock was whether or not incidental catch of halibut in the groundfish fisheries would reasonably expected to lower the total CEY of the halibut stock below the long term estimated yield of 80 million pounds. If the option was reasonably not expected to decrease the total CEY of the halibut stock below the long term estimated yield of 80 million pounds it was rated insignificant. If the option was reasonably expected to lower the total CEY of the halibut stock below the long term estimated yield of 80 million pounds it was rated significantly adverse, where insufficient information exists to make such conclusions the options' effects are rated unknown.

2) Criteria used to estimate effects of the options on harvest levels of halibut state managed directed fisheries in the GOA.

If under the option considered, the catch in the directed fisheries for halibut was expected to increase or decrease by more than 20 % from 2001 levels the effect was rated significantly beneficial or adverse, respectively. 2002 was chosen as the benchmark year for purpose of comparison as it is the most recent year for which total catch amounts are available and because management measures in 2002 are similar to those for 2004. If under the option considered, the catch in the directed fisheries for those species was not expected to increase or decrease by more than 20 % from 2002 levels, the effect was rated insignificant as harvest levels based on stock conditions often vary over this range from year to year. If under the option considered, insufficient information exists to estimate changes in harvest levels, the effect was rated as unknown. The authors acknowledge that individual fishing operations with substantial reliance upon participation in these state fisheries may experience adverse or beneficial effects at changes in harvest levels below the 20% level.

3) Criteria used to estimate effects of the options on bycatch levels of prohibited species in the directed groundfish fisheries in the GOA.

The establishment by the Council of annual halibut PSC limits in the directed fisheries of the GOA and the annual and seasonal apportionments thereof of all halibut limits to gear types and targets in the GOA is of critical importance each year in both minimizing the incidental catch of halibut and in maximizing the optimum yield from the groundfish resources to the fishing industry. In section 4.5 of the Steller Sea Lion Protection Measures SEIS (NMFS 2001b) the effects of alternatives to provide protection to the endangered western population Steller sea lions on prohibited species incidental catch levels in the pollock, Pacific cod, and Atka mackerel fisheries were examined using average catch for the period 1997 through 1999.

Under the Magnuson-Stevens Act, National Standard 9 directs that when a regional council prepares an FMP, they shall to the extent practicable minimize bycatch and to the extent bycatch cannot be avoided, minimize the mortality of such bycatch. Over the years since the enactment of the Magnuson-Stevens Act in 1976, over 30 FMP amendments designed to help minimize the incidental catch and mortality of prohibited species have

been implemented. Levels of incidental catch of prohibited species in each fishery in 2002 were used to estimate the effects TAC levels set for each fishery on incidental catch levels of prohibited species under each alternative in the 2003 harvest specifications EA (NMFS 2003a). It was assumed for each fishery that an increase or decrease in TAC would result in a proportional increase or decrease in incidental catch, increases were not assumed to exceed PSC limitations where applicable. For all prohibited species if under the alternative considered the incidental catch of prohibited species in the directed fisheries for groundfish was expected to increase or decrease by more than 50% from 2002 levels (chosen as the benchmark year for purpose of comparison) the effect was rated significantly beneficial or adverse respectively. If under the alternative considered the incidental catch in the directed fisheries for groundfish was not expected to increase or decrease by more than 50% from 2002 levels the effect was rated insignificant as incidental catch of prohibited species in the directed groundfish fisheries often vary over this range from year to year. If under the alternative considered insufficient information exists to estimate changes in harvest levels the effect was rated as unknown.

The annual halibut PSC limit is apportioned to trawl (2,000 mt) and hook-and-line (300 mt) gear by fishing period (reference tables). The trawl PSC apportionment is further divided between the shallow-water species complex and the deep-water species complex through September 30 each year. The “other species” complex is part of the shallow-water complex, and skates would be placed under that complex under all skate specifications options. Halibut bycatch will occur on trawl and hook-and-line vessels targeting skates. Many of these vessels are less than 60 ft LOA and are unobserved. Data from the 2003 skate fishery has not been evaluated to determine the amount of halibut caught by vessels targeting skates. However, an industry member expressed concern that halibut catch in the skate fishery counted against the PSC limit may preempt the directed Pacific cod fishery, particularly in the latter half of the year, given both target fisheries would operate under the same aggregate PSC limit⁸.

Because the amount of halibut taken in a directed skate fishery will be limited by the annual harvest specifications PSC limits for the shallow water complex, the take of halibut is not expected to jeopardize the capacity of the stock to maintain benchmark population levels and is not likely to substantially increase or decrease the amount of harvest of halibut in the state sport halibut fishery or taken as bycatch in the groundfish fisheries. Therefore, the effects of the skate specifications options on halibut are insignificant.

Socioeconomic Impacts

Two classes of fishing operations may be affected: vessels targeting on skates and vessels catching skates incidentally while fishing for other targets. Impacts would vary by combination of options and suboptions. Suboptions which preclude or restrict the harvest of the directed skate fishery would reduce revenues for operations targeting skates. The options aggregate skate species and species groups in different ways to create skate fishery overfishing levels (OFLs). If skate overfishing levels are approached, in-season fishery managers may have to take steps to restrict fisheries harvesting skates incidentally. These restrictions could take the form of prohibition of fishing in areas with high incidental skate harvests or, more seriously, closure of a directed fishery in a management area. Several of the fisheries that take skates incidentally are among the most important in the GOA, including fisheries for Pacific cod, sablefish, and halibut. While in-season managers manage to the TAC level and rarely allow a fishery to approach the OFL, this is a concern. The concern is increased when OFLs are disaggregated to provide separate OFLs for species, species-groups, or management areas.

⁸Gerry Merrigan, personal communication, September 18, 2003, Prowler Fisheries P.O. box 1364, Petersburg, AK 99883.

However, the options may also create long-run benefits for the fishing industry if they prevent skate stocks from being driven down by overfishing and preserve fishing opportunities. Overfishing has taken place in skate fisheries elsewhere. Skates are believed to have relatively slow growth rates, a high age of sexual maturity, and low fecundity. These characteristics imply slow recovery for stocks that are fished down.

Given the uncertainties about future Council TAC recommendations, and with respect to industry’s valuation of the trade off between potential short run restrictions and long run sustainability, the significance of socio-economic impacts of the skate specifications options has been designated, “unknown.”

5.0 Cumulative Effects

Analysis of the potential cumulative effects of a proposed action and its alternatives is a requirement of the NEPA. An environmental assessment or environmental impact statement must consider cumulative effects when determining whether an action significantly affects environmental quality. The 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).

Cumulative effects are thoroughly analyzed for the groundfish fisheries in the revised Draft PSEIS in Chapter 4.0 (NMFS 2003b). Section 4.1.4 describes the methodology used to do the cumulative effects analysis. In section 4.5 and the accompanying tables in Appendix A, the current groundfish management regime is analyzed for effects on the environment, including cumulative effects for each component of the environment. See section 4.5 of the Draft PSEIS for further details on the cumulative effects.

The action to revise the 2004 harvest specifications to allow for separate skate management, is within the scope of alternatives analyzed in the Draft PSEIS, and therefore, the cumulative effects analysis in the Draft PSEIS is incorporated this EA by reference. The areas of the environment identified in section 4 that may be impacted are target species, prohibited species and social economic components. A summary of the cumulative effects of Alternative 1 of the Draft PSEIS related to this action are in Table 5.0-1

Table 5.0-1 Cumulative Effects Summary for Alternative 1 from Draft PSEIS

| Environmental Component | Cumulative Effects |
|-------------------------|--------------------|
| Target Species | I and U |
| Prohibited Species | CS-, U, and I |
| Socioeconomic | I and CS- |

I = insignificant effect

U = unknown significance of effect

S = significant

CS= conditionally significant

- = adverse

+ = beneficial

The cumulative effects of the skate options will be similar to those seen for the 2004 harvest specifications under target species (other species and Pacific cod), prohibited species (halibut in the GOA), and socioeconomic effects (NMFS 2004). Foreseeable future actions include further development of a skate

fishery. The skate fishery is likely to have socioeconomic cumulative impacts on the participants in the directed skate fishery, and in other fisheries where the targeted species will be taken as incidental catch in a directed skate fishery. Also affected are fisheries that will rely on the same halibut PSC limits as the directed skate fishery. The biological impacts are limited by the groundfish management and PSC management strategies currently in place. No information is available to predict the significance of potential impacts and therefore the cumulative effects of the action are unknown .

6.0 Environmental Analysis Conclusions

The direct, indirect, and cumulative impacts of skate specification options are assessed in Chapters 4 and 5 of this EA. The environmental components identified that may be affected by the action were the groundfish resources, halibut resources, and the social economic aspects of the groundfish fisheries. In addition to the Draft PSEIS and Steller Sea Lion Protection Measures SEIS, the significance of impacts of the actions analyzed in this EA were determined through consideration of the following information as required by NEPA and 50 CFR Section 1508.27:

Context: For the establishing the skate specifications, the setting of the proposed action is the groundfish fisheries of the GOA. Any effects of this action are limited to this area. The effects of the skate specifications on society, within the GOA, is on individuals directly and indirectly participating in the groundfish fisheries and on those who use the ocean resources. Because this action is limited to the method of managing skates in the GOA, this action may have impacts on society regionally.

Intensity: Listings of considerations to determine intensity of the impacts are in 50 CFR § 1508.27 (b) and in the NOAA Administrative Order 216-6, Section 6. Each consideration is addressed below in order as it appears in the regulations.

- 6.1 **Adverse or beneficial impact determinations for marine resources, including sustainability of target and nontarget species, damage to ocean or coastal habitat or essential fish habitat, effects on biodiversity and ecosystems, and marine mammals:** The potential effects of the action on marine resources were narrowed to effects on target species and halibut. No significant adverse impacts were identified for the preferred option (Option 6).
- 6.2 **Public health and safety** will not be affected in any way not evaluated under previous actions or disproportionately. The skate specifications will not change fishing methods, timing of fishing or quota assignments to gear groups which are based on previously established seasons and allocation formulas in regulations.
- 6.3 **Cultural resources and ecologically critical areas:** This actions take place in the geographic area of the Gulf of Alaska, generally from 3 nm to 200 nm offshore. The land adjacent to this area contains cultural resources and ecologically critical areas. The marine waters where the fisheries occur contain ecologically critical areas. Effects on the unique characteristics of this area are not anticipated to occur with this action.
- 6.4 **Controversiality:** NMFS scientist, the State of Alaska, and members of the fishing industry have encouraged the development of management measures for a skate directed fishery. There is no known opposition to this action.
- 6.5 **Risks to the human environment, including social and economic effects:** No significant adverse impacts were identified for the preferred skate specifications option.
- 6.6 **Future actions** related to this action may result in impacts. Impacts of a future developing skate fishery on other fisheries are unknown.
- 6.7 **Cumulatively significant effects, including those on target and nontarget species:** The cumulative effects of the skate options will be similar to those seen for the 2004 harvest specifications under target species (other species and Pacific cod), prohibited species (halibut in the GOA), and socioeconomic effects. Because the future development of a commercial skate fishery

is difficult to predict, the cumulative effect of this foreseeable future action is unknown. See section 5.0 of this EA for more information.

- 6.8 **Districts, sites, highways, structures, or objects listed or eligible for listing in the National Register of Historic Places:** 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 is 3 to 200 nm at sea, this consideration is not applicable to this action.
- 6.9 **Impact on ESA listed species and their critical habitat:** No effects on ESA listed endangered or threatened species were identified with this action.
- 6.10 These actions pose **no known violation of Federal, State, or local laws or requirements for the protection of the environment.** Revision of the skate specifications would be conducted in a manner consistent, to the maximum extent practicable, with the enforceable provisions of the Alaska Coastal Management Program within the meaning of section 30(c)(1) of the Coastal Zone Management Act of 1972, and its implementing regulations.
- 6.11 This action poses **no effect on the introduction or spread of nonindigenous species** into the GOA, because it does not change fishing, processing or shipping practices that may lead to the introduction of nonindigenous species.
- 6.12 **Comparison of Options and Selection of a Preferred Option** The skate options and suboptions were evaluated with respect to their impacts on groundfish, on prohibited species, and on the socioeconomic environment. The impact of prohibited species was determined to be insignificant and socioeconomic impacts were determined to be unknown. The groundfish impacts are summarized in the following table. Only option 1 was identified to potentially have significant adverse effects on the human environment through potential excessive harvest of skate species.

Table 6.0-1 Significance of Direct Effects of Skate Specifications Options and Suboptions on Groundfish

| | Options and Suboptions | | | | | | | | | | | |
|---|------------------------|-----------------|----------------|----------------|---|---|---|---|---|---|---|---|
| | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | |
| Direct Effects | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
| Fishing Mortality | S ⁻¹ | S ⁻¹ | I | I | I | I | I | I | I | I | I | I |
| Spatial and Temporal distribution of catch, genetic structure and reproduction ³ | U ² | U ² | U ² | U ² | U | U | U | U | U | U | U | U |
| Change in Prey availability | I | I | I | I | I | I | I | I | I | I | I | I |

| | | | | | | | | | | | | |
|-----------------|----|----|----|----|----|----|----|----|----|----|----|----|
| Habitat Changes | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE | NE |
|-----------------|----|----|----|----|----|----|----|----|----|----|----|----|

¹Option 1 does not manage harvest at the species level or area level so there is potential to jeopardize the ability of the Big and Longnose skates stocks to produce MSY and potential for harvests to exceed the OY.

²Management is on a GOA-wide basis, making control of spatial harvest of skates unknown due to the lack of ability to close areas of skate bycatch under 50 CFR 679.20(d)(3).

³Little is known about the reproductive and genetic diversity of skate species so the effect of the options is unknown.

7.0 Initial Regulatory Flexibility Analysis

7.1 Introduction

This Initial Regulatory Flexibility Analysis (IRFA) evaluates the options available for implementing skate management in specifications, should the Secretary of Commerce approve Amendment 63. This IRFA meets the statutory requirements of the Regulatory Flexibility Act of 1980, as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996 (5 U.S.C. 601-612).

7.2 The purpose of an IRFA

The Regulatory Flexibility Act, first enacted in 1980, was designed to place the burden on the government to review all regulations to ensure that, while accomplishing their intended purposes, they do not unduly inhibit the ability of small entities to compete. The RFA recognizes that the size of a business, unit of government, or nonprofit organization frequently has a bearing on its ability to comply with a Federal regulation. Major goals of the RFA are: (1) to increase agency awareness and understanding of the impact of their regulations on small business, (2) to require that agencies communicate and explain their findings to the public, and (3) to encourage agencies to use flexibility and to provide regulatory relief to small entities. The RFA emphasizes predicting impacts on small entities as a group distinct from other entities and on the consideration of alternatives that may minimize the impacts while still achieving the stated objective of the action.

On March 29, 1996, President Clinton signed the Small Business Regulatory Enforcement Fairness Act. Among other things, the new law amended the RFA to allow judicial review of an agency’s compliance with the RFA. The 1996 amendments also updated the requirements for a final regulatory flexibility analysis, including a description of the steps an agency must take to minimize the significant (adverse) economic impacts on small entities. Finally, the 1996 amendments expanded the authority of the Chief Counsel for Advocacy of the Small Business Administration (SBA) to file *amicus* briefs in court proceedings involving an agency’s alleged violation of the RFA.

In determining the scope, or ‘universe’, of the entities to be considered in an IRFA, NMFS generally includes only those entities that can reasonably be expected to be directly regulated by the proposed action. If the effects of the rule fall primarily on a distinct segment, or portion thereof, of the industry (e.g., user group, gear type, geographic area), that segment would be considered the universe for the purpose of this analysis. NMFS interprets the intent of the RFA to address negative economic impacts, not beneficial impacts, and thus such a focus exists in analyses that are designed to address RFA compliance.

Data on cost structure, affiliation, and operational procedures and strategies in the fishing sectors subject to the proposed regulatory action are insufficient, at present, to permit preparation of a “factual basis” upon which to certify that the preferred alternative does not have the potential to result in “significant adverse impacts on a substantial number of small entities” (as those terms are defined under RFA).

Because, based on all available information, it is not possible to ‘certify’ this outcome, should the proposed action be adopted, a formal IRFA has been prepared and is included in this package for Secretarial review.

7.3 What is required in an IRFA?

Under 5 U.S.C., Section 603(b) of the RFA, each IRFA is required to contain:

- A description of the reasons why action by the agency is being considered;
- A succinct statement of the objectives of, and the legal basis for, the proposed rule;
- A description of and, where feasible, an estimate of the number of small entities to which the proposed rule will apply (including a profile of the industry divided into industry segments, if appropriate);
- A description of the projected reporting, record keeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities that will be subject to the requirement and the type of professional skills necessary for preparation of the report or record;
- An identification, to the extent practicable, of all relevant Federal rules that may duplicate, overlap or conflict with the proposed rule;
- A description of any significant alternatives to the proposed rule that accomplish the stated objectives of the proposed action, consistent with applicable statutes, and that would minimize any significant economic impact of the proposed rule on small entities. Consistent with the stated objectives of applicable statutes, the analysis shall discuss significant alternatives, such as:
 1. The establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities;
 2. The clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities;
 3. The use of performance rather than design standards;
 4. An exemption from coverage of the rule, or any part thereof, for such small entities.

7.4 What is a small entity?

The RFA recognizes and defines three kinds of small entities: (1) small businesses, (2) small non-profit organizations, and (3) small government jurisdictions.

Small businesses. Section 601(3) of the RFA defines a ‘small business’ as having the same meaning as ‘small business concern’ which is defined under Section 3 of the Small Business Act. ‘Small business’ or ‘small business concern’ includes any firm that is independently owned and operated and not dominant in its field of operation. The SBA has further defined a “small business concern” as one “organized for profit, with a place of business located in the United States, and which operates primarily within the United States or which makes a significant contribution to the U.S. economy through payment of taxes or use of American products, materials or labor...A small business concern may be in the legal form of an individual proprietorship, partnership, limited liability company, corporation, joint venture, association, trust or cooperative, except that where the firm is a joint venture there can be no more than 49 percent participation by foreign business entities in the joint venture.”

The SBA has established size criteria for all major industry sectors in the United States, including fish harvesting and fish processing businesses. A business involved in fish harvesting is a small business if it is independently owned and operated and not dominant in its field of operation (including its affiliates) and if it has combined annual receipts not in excess of \$3.5 million for all its affiliated operations worldwide. A

seafood processor is a small business if it is independently owned and operated, not dominant in its field of operation, and employs 500 or fewer persons on a full-time, part-time, temporary, or other basis, at all its affiliated operations worldwide. A business involved in both the harvesting and processing of seafood products is a small business if it meets the \$3.5 million criterion for fish harvesting operations. Finally a wholesale business servicing the fishing industry is a small businesses if it employs 100 or fewer persons on a full-time, part-time, temporary, or other basis, at all its affiliated operations worldwide.

The SBA has established “principles of affiliation” to determine whether a business concern is “independently owned and operated.” In general, business concerns are affiliates of each other when one concern controls or has the power to control the other, or a third party controls or has the power to control both. The SBA considers factors such as ownership, management, previous relationships with or ties to another concern, and contractual relationships, in determining whether affiliation exists. Individuals or firms that have identical or substantially identical business or economic interests, such as family members, persons with common investments, or firms that are economically dependent through contractual or other relationships, are treated as one party with such interests aggregated when measuring the size of the concern in question. The SBA counts the receipts or employees of the concern whose size is at issue and those of all its domestic and foreign affiliates, regardless of whether the affiliates are organized for profit, in determining the concern’s size. However, business concerns owned and controlled by Indian Tribes, Alaska Regional or Village Corporations organized pursuant to the Alaska Native Claims Settlement Act (43 U.S.C. 1601), Native Hawaiian Organizations, or Community Development Corporations authorized by 42 U.S.C. 9805 are not considered affiliates of such entities, or with other concerns owned by these entities solely because of their common ownership.

Affiliation may be based on stock ownership when (1) A person is an affiliate of a concern if the person owns or controls, or has the power to control 50 percent or more of its voting stock, or a block of stock which affords control because it is large compared to other outstanding blocks of stock, or (2) If two or more persons each owns, controls or has the power to control less than 50 percent of the voting stock of a concern, with minority holdings that are equal or approximately equal in size, but the aggregate of these minority holdings is large as compared with any other stock holding, each such person is presumed to be an affiliate of the concern.

Affiliation may be based on common management or joint venture arrangements. Affiliation arises where one or more officers, directors or general partners controls the board of directors and/or the management of another concern. Parties to a joint venture also may be affiliates. A contractor and subcontractor are treated as joint venturers if the ostensible subcontractor will perform primary and vital requirements of a contract or if the prime contractor is unusually reliant upon the ostensible subcontractor. All requirements of the contract are considered in reviewing such relationship, including contract management, technical responsibilities, and the percentage of subcontracted work.

Small organizations The RFA defines “small organizations” as any not-for-profit enterprise that is independently owned and operated and is not dominant in its field.

Small governmental jurisdictions The RFA defines small governmental jurisdictions as governments of cities, counties, towns, townships, villages, school districts, or special districts with populations of fewer than 50,000.

7.5 What is this action?

At its December 2003 meetings, the Council recommended ABCs and TACs for GOA skate species, contingent upon Secretarial approval of GOA FMP Amendment 63 (69 FR 614, January 6, 2004). Given

Secretarial approval, these skate specifications would be implemented with separate proposed and final specifications.

Table 7.5-1 Council’s December Skate ABC and TAC Recommendations (in metric tons)

| Species | Area | 2004 OFL | 2004 ABC | 2004 TAC |
|-------------------------|-------------|----------|----------|----------|
| Big and Longnose skates | Central GOA | 5,914 | 4,435 | 3,284 |
| All other skates | GOA-wide | 4,935 | 3,709 | 3,709 |

Note: “All other skates” includes Big skates and Longnose skates in the Eastern and Western GOA management areas (but not in the Central GOA management area) and all Other skates species in all three management areas.

The Council stated that it may not allow a directed fishery in 2005 without an approved data collection plan. The Council requested that staff work with industry to develop an adequate data collection plan, and that state and federal agencies also work together to enhance data collection and research to address the serious data gaps identified for these skate species.

7.6 Reason for considering the proposed action

The reason for considering the proposed action was discussed in detail in Section 1.3 of the EA. In summary, in 2003, a new targeted skate fishery emerged that raised concerns over the ability of NMFS to continue to manage the stock so as to avoid overfishing. Skate harvests are counted against the “other species” complex TAC, and this is large enough so that it does not protect the skate stock against overfishing. The Council has adopted an FMP amendment that moves skates from the GOA FMP’s “other species” category to its “target species” category. The Council must now decide how to implement skate OFL, ABC, and TAC levels.

7.7 Objectives of, and legal basis for the action

The objective of this action is to increase the control managers have over skate removals, in order to prevent overfishing, maintain healthy stocks of skate species, and make a sustainable fishery more likely.

The National Marine Fisheries Service manages the U.S. groundfish fisheries of the Gulf of Alaska management area of the Exclusive Economic Zone, under the Fishery Management Plan (FMP) for that area. The North Pacific Fishery Management Council prepared the FMP under the authority of the Magnuson-Stevens Fishery Conservation and Management Act. Regulations implement the FMP at 50 CFR part 679. General regulations that also pertain to U.S. fisheries appear at subpart H of 50 CFR part 600.

7.8 Number and description of small entities directly regulated by the proposal

The entities directly regulated by this action, if adopted, would be the fishing operations harvesting species in the “other species” complex in the GOA, using hook-and-line gear or trawls. These vessels may be targeting skates (the only species in the “other species” category currently fished as a target), or they may be

harvesting skates and other species in the “other species” category incidentally to other targeted fishing operations; (e.g., fishing for Pacific cod or shallow water flatfish). Since any hook-and-line or trawl operation in the GOA may harvest the other species complex, the universe of potentially affected operations includes all GOA hook-and-line and trawl vessels.

In 2001, the universe of potentially directly regulated small entities included 665 hook-and-line vessels and 124 trawlers. Of these, 650 were small hook-and-line catcher vessels, 15 were small hook-and-line catcher/processors, 120 were small trawl catcher vessels, and 4 were small trawl catcher/processors.⁹ This size determination is based on operation revenues from groundfish fishing in Alaska. Moreover, the data is not available to take account of affiliations between fishing operations and associated processors, or other associated fishing operations. For these reasons, these counts may overstate the numbers of small entities potentially directly regulated by the proposed action. Average Alaska groundfish revenues, in 2001, for these small entities were \$100,000 for hook-and-line catcher vessels, \$1.82 million for hook-and-line catcher processors, \$370,000 for trawl catcher vessels, and \$1.80 million for trawl catcher-processors. (NMFS, 2003d).

The directed skate fishery that emerged in 2003 is described in Section 1.0 of the EA. As noted there, 77 hook-and-line catcher vessels, 53 trawl catcher-vessels, 13 hook-and-line catcher-processors, and 10 trawl catcher-processors, took part in the fishery in 2003, producing an estimated ex-vessel gross revenue of about \$1.7 million. This suggests average revenues for these vessels were about \$11,000.

7.9 Impacts on directly regulated small entities

If skates become a directed fishery, NMFS in-season fishery managers will first estimate expected incidental harvests of skates in fisheries targeting on other species, but taking skates incidentally. These estimates would be subtracted from the Council determined TAC to calculate a directed fishery allowance (DFA). If the DFA were sufficiently high (high enough to take into account managers uncertainty over their incidental catch estimates) a directed fishery for skates might be allowed.

As skate incidental and targeted harvests increase during the year, harvest levels may approach the TAC level, the ABC level, or the OFL level. As harvests approach each of these levels, successively more restrictive measures will be taken to limit harvesting activity. If the harvest level reaches the TAC, directed fishing for skates would be stopped, and fisheries taking skates incidentally would be limited to a maximum retainable amount (MRA) of 20% of the weight of their targeted species. If the fishery were to reach the ABC, retention of skates in fisheries taking them incidentally would be prohibited. These fishing operations would have to discard all skates taken. If the estimated incidental catch approached the OFL, managers might close certain “hot-spots” to fishing, or might close fisheries taking skates incidentally. This could affect some of the most important fisheries in the GOA; however, it is rare for managers to let harvests of a species approach OFL.

The Council’s proposed specifications could thus adversely affect small entities harvesting skates in the fishery that has begun to target Big and Longnose skates in the Central GOA, and could adversely affect small entities in the fisheries harvesting skates incidentally in the Central GOA. There is currently no targeted skate fishery outside the Central GOA, but the measures might adversely affect small entities in fisheries harvesting skates incidentally outside of the Central GOA.

⁹The counts of small and large entities in this paragraph are based on estimates from Appendix D (the Economic SAFE report) of the 2003 Specifications EA/IRFA. As noted earlier in this analysis, these counts are based on revenues from groundfish fishing in the BSAI and GOA.

This preferred option would not necessarily eliminate the directed skate fishery in the Central GOA. A directed fishery could occur if estimated incidental catch needs were sufficiently smaller than the TAC. The Skates SAFE document estimates suggest that this would be the case. The Big/Longnose TAC would be 3,284 mt, and estimated bycatch needs are 2,214 mt (estimated bycatch needs are taken from Table 16 of the Skates SAFE, page 742). This leaves a residual of 1,070 mt for a directed fishery. This, however, is significantly below the 1,700 mt estimated to have been caught in the directed fishery in 2003 (estimated directed harvest from Table 1.0-3 in this EA/IRFA).¹⁰ Thus, the Council's preferred option is likely to adversely affect the small entities that began to target skates in 2003.

Skates are also taken incidentally in fisheries for other species. Incidental skate catches appear to be relatively important (over 300 mt in total during the years 1997-2002) in the trawl fisheries arrowtooth flounder, flathead sole, Pacific cod, rex sole, rockfish and shallow water flats, and in the longline fisheries for rockfish, sablefish, Pacific cod, and halibut. If estimated targeted and incidental catches of skates reached TAC levels, skates would become a prohibited species, and retention of incidental skate catches would be prohibited. If estimated catches approached OFL levels, fisheries taking skates incidentally may be closed, or restricted in regions with high incidental skate catches, in order to protect the skate stocks.

Fishing in fisheries targeting other species, but harvesting skates incidentally, could be stopped if estimated skate catches approached the OFL level. This is an unlikely outcome. Fishery managers manage stocks to stay within TACs, and rarely approach OFLs. In addition to actually closing a fishery, managers may also have the option of restricting its operations in regions where incidental skate catches are relatively high. Moreover, the high level of species aggregation in this option reduces the likelihood of this. Although this outcome appears unlikely, it remains a concern.

7.10 Recordkeeping and reporting requirements

An IRFA should include “a description of the projected reporting, record keeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities that will be subject to the requirement and the type of professional skills necessary for preparation of the report or record...”¹¹

This action does not impose new recordkeeping or reporting requirements on the regulated small entities.

7.11 Duplication, overlap and conflict with other federal regulations

An IRFA should include, “An identification, to the extent practicable, of all relevant Federal rules that may duplicate, overlap or conflict with the proposed rule.”

¹⁰Information on whether or not skate deliveries were directed or incidental catches are not shown on landings records. Moreover, little information on the type of skate species harvested is available on the records. The proportion of skates taken in a directed fishery, and the species composition of harvest, must both be estimated. The Skates SAFE document offers an alternative estimate of Big/Longnose harvests in the Central GOA: 2,700 mt (see Table 16). If this estimate is correct, the adverse impacts of this action might be worse than suggested above.

¹¹Certain options that might be implemented under this action might require greater information on the species composition of skate catch (although options that do not require individual skate species OFLs and ABCs would not). The Alaska Department of Fish and Game is implementing a change in species codes to gather more detailed information. Observers are collecting more skate species information. NMFS is preparing a regulatory amendment to make several changes to its species codes, including the addition of a skate species code. These actions are being implemented independently of the current FMP amendment. Therefore, the FMP amendment will not change paperwork requirements. The IRFA for the skate species codes addresses the paperwork requirements.

NMFS did not identify any duplication, overlap, or conflict with other Federal rules.

7.12 Description of significant alternatives

An IRFA should include “a description of any significant alternatives to the proposed rule that accomplish the stated objectives of the proposed action, consistent with applicable statutes, and that would minimize any significant economic impact of the proposed rule on small entities.”

At its December meeting, the Council reviewed six ways of specifying OFL, ABC and TAC levels for GOA skates. In its deliberations, the Council sought to balance potential impacts on small entities (of each of the types described above) with the need to protect the skate resource. It recognized that this balance had to be sought in an environment in which information about GOA skate biology, about the species composition of the harvest, and about the nature of incidental harvests, was very poor.

The five significant alternatives that were considered but not adopted are described in Tables 7.12-1 to 7-12-5 below. This table describes the likely impacts on small entities of these alternatives, compared to those of the preferred alternative, and describes why each was not selected.

The five options impose different levels of restrictions on fishing operations. Section 4.2 in the EA included with this document provides a more detailed review of the implications of these options. The start of that section reviews the use of OFL, ABC, TAC, and DFA restrictions in GOA in-season management.

Table 7.12-1. Summary of Option 1 small entity considerations

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|---|--|
| Overview | Option 1 creates a single GOA-wide OFL for all skate species, and a single GOA-wide ABC for all skate species. This option imposes the fewest restrictions on small fishing entities. |
| Suboption 1 | Option 1, Suboption 1 would make skates a bycatch-only species. This would eliminate the directed fishery for skates that emerged in 2003 and would have an adverse impact on the vessels that participated in that fishery, or that planned to enter that fishery. |
| Suboption 2 | Option 1, Suboption 2 would permit a directed fishery if estimated incidental catch needs could be met. The ABCs projected for this alternative, and the estimated incidental catch needs reported in the Skates SAFE document suggest that this would be the case. |
| Other fisheries | Fishing in fisheries targeting other species, but harvesting skates incidentally, could be stopped if estimated skate catches approached the OFL level. This is an unlikely outcome. In addition to actually closing a fishery, managers may also have the option of restricting its operations in regions where incidental skate catches are relatively high. Fishery managers manage stocks to stay within TAC levels, and rarely approach OFLs. Moreover, the high level of species aggregation in this option reduces the likelihood of this. Although this outcome appears unlikely, it remains a concern. This concern is greater for options 2, 3, and 4. |
| Data source: Information on OFLs, ABCs, 2003 harvest, and estimated incidental catches is from Table 16 on page 24 of the Skates SAFE (Appendix B). | |

Table 7.12-2. Summary of Option 2 small entity considerations

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| Overview | Option 2 creates three GOA-wide OFLs for skate species or species groups (Big skates, Longnose skates, and Other skates) and three GOA-wide ABCs for the same species or species groups. |
| Suboption 1 | Suboption 1 makes skates a bycatch-only species. This would eliminate the directed fishery for skates and would have an adverse impact on the vessels in that fishery. |
| Suboption 2 | Option 2, Suboption 2 would only allow a directed fishery if TAC (set equal to ABC) was sufficiently greater than estimated incidental catch needs to permit a directed fishery. This is likely to be the case for Big skates. The 2004 ABC for Big skates is 3,999 mt. The preliminary estimate of incidental catch needs in the Skates SAFE is 1,210 mt. The excess of 2,789 mt is slightly larger than the estimated directed fishery catch in 2003. This may not be the case for Longnose skates, or for Other skates. The difference between TAC and estimated incidental catch needs for Longnose skates is 654 mt and the difference for Other skates is -233 mt. Other skates, however, are not the target of the directed skate fishery. Note also, that these incidental catch estimates are based in part on extrapolations to commercial longline and trawl fishing based on catch composition in the summer trawl survey, and in part on an analysis of halibut data incorporating many assumptions. These estimates have a large margin for error. This may encourage more conservative management by in-season managers. This consideration applies to this option and to Options 3 to 5, each of which incorporates species specific restrictions. |
| Other fisheries | Option 2 creates species specific OFLs in the GOA. These OFLs are smaller than the OFL that would be created under Option 1. The possibility that one or more of these may be approached, and a fishery for another species, taking skates incidentally, shut down, is somewhat larger. It is still unlikely however, given in-season management to stay within TACs, and that managers may also have the option of restricting fishing operations in relatively small areas where incidental skate catches may be high. |
| Data source: Information on OFLs, ABCs, 2003 harvest, and estimated incidental catches is from Table 16 on page 24 of the Skates SAFE (Appendix B). | |

Table 7.12-3. Summary of Option 3 small entity considerations

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| Overview | Option 3 creates a separate OFL and a separate ABC for each of the species and species groups defined under Option 2, in each of the three management areas in the GOA (the Western, Central and Eastern management areas). This is the most restrictive of the options, and is the most likely to create adverse impacts for small entities. |
| Suboption 1 | Option 3, Suboption 1 makes skates a bycatch-only species. This would eliminate the directed fishery for skates and would have an adverse impact on the vessels in that fishery. |
| Suboption 2 | Option 3, Suboption 2 would allow directed skate fishing similar to that in 2003, if the TACs for Big skates and Longnose skates in the Central area were sufficiently larger than the estimated incidental catch requirements. This appears to be the case for Big skates, which would have a 2004 Central area TAC of 2,463 mt and estimated incidental catch requirements of 811 mt. It might also be the case for Longnose skates, which have a Central area TAC of 1,972 mt, and an estimated incidental catch requirement of 1,403 mt. However, the margin is much smaller in the case of Longnose skates. |

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| Other fisheries | The creation of OFLs for each skate species or species group in each management area will create OFLs that are often small. As noted above, incidental catch estimates are extrapolations to commercial longline and trawl fishing based on catch composition in the summer trawl survey, and have a large margin for error. This may encourage more conservative management by in-season managers. The possibility that one or more of these may be approached, and that a fishery for another species, taking skates incidentally, might be shut down, is largest for this alternative. |
| Data source: Information on OFLs, ABCS, 2003 harvest, and estimated incidental catches is from Table 16 on page 24 of the Skates SAFE (Appendix B). | |

Table 7.12-4. Summary of Option 4 small entity considerations

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| Overview | Option 4 combines the Big skate and Longnose skate management area specific OFLs and ABCs of Option 3, with the GOA-wide OFL and ABC for Other skates in Option 2. It therefore falls between these in terms of its adverse impacts on small entities. The relevant analyses for those options applies to this. |
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Table 7.12-5. Summary of Option 5 small entity considerations

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| Overview | Option 5 provides a GOA-wide OFL would be established for all species combined. ABCs would be established in each management area in the GOA for a Big/Longnose skate grouping. A GOA-wide ABC would be established for "Other" skates. In the Central GOA a TAC would be established for combined Big and Longnose skate catch. This TAC will equal 10% of the estimated biomass of Big skates in the Central Area (this would have been the OFL for Big skates in this area if such an OFL had been promulgated) This option is meant to be in place for one year, and to be reviewed at the end of 2004, in light of species-specific harvest data to be collected in 2004. |
| Suboption 1 | Option 5, Suboption 1 makes skates a bycatch-only species, except for the Big/Longnose skate group in the Central area. The directed fishery in 2003 was a fishery for these species in this area. This alternative, therefore, would not necessarily eliminate the directed fishery. A directed fishery could occur if estimated incidental catch needs were sufficiently smaller than the TAC. The Skates SAFE document estimates suggest that this would be the case. The Big/Longnose TAC would be 3,284 mt, and estimated bycatch needs are 2,214 mt. This leaves a residual of 1,070 mt for a directed fishery. This, however, is significantly below the 2,700 mt estimated to have been caught in the directed fishery in 2003. Thus, this Suboption is likely to adversely affect small entities. The adverse impact is likely to be less than under this Suboption in Options 1 to 4, where a directed skate fishery is precluded. |
| Suboption 2 | The directed fishery discussion in the cell just above this one applies to this suboption as well. It appears likely that this suboption would permit a directed fishery for skates in 2004. The DFA, however, might restrict the size of this fishery compared to the 2003 level, imposing adverse impacts on fishermen in the directed skate fishery. A GOA-wide ABC for Other skates is unlikely to permit a directed fishery for this species; estimated incidental Other skate catches exceed the proposed ABC for Other skates. However, this is unlikely to create an adverse impact for small entities, since the directed skate fishery is targeted on Big and Longnose skates. |

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| Other fisheries | This option creates a highly aggregated GOA-wide OFL, as was done in Option 1. The Option 1 considerations therefore apply to this option. Fishing in fisheries targeting other species, but harvesting skates incidentally, could be stopped if estimated skate catches approached the OFL level, but this is unlikely. Fishery managers manage stocks to stay within TAC levels, and rarely approach OFLs. Moreover, the high level of species aggregation in this option reduces the likelihood of this. Nevertheless, this is a concern. This concern is greater for options 2, 3, and 4. |
| Data source: Information on OFLs, ABCS, 2003 harvest, and estimated incidental catches is from Table 16 on page 24 of the Skates SAFE (Appendix B). | |

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9.0 References

- Agnew, D.J., C.P. Nolan, J.R. Beddington, and R. Baranowski, 2000. Approaches to the assessment and management of multispecies skate and ray fisheries using the Falkland Islands fishery as an example. *Can. J. Fish. Aquat. Sci.* 57: 429-440.
- Alverson, D.L., and W.T. Pereyra, 1969. Demersal fish explorations in the northeastern Pacific Ocean An evaluation of exploratory fishing methods and analytical approaches to stock size and yield forecasts. *J. Fish. Res. Bd. Canada* 26: 1985-2001.
- Brander, K., 1981. Disappearance of common skate *Raja batis* from Irish Sea. *Nature* 290: 48-49.
- Casey, J.M. and R.A. Myers, 1998. Near extinction of a large, widely distributed fish. *Science* 281(5377):690-692.
- Clark, W.G., 1991. Groundfish exploitation rates based on life history parameters. *Can. J. Fish. Aquat. Sci.* 48: 734-750.
- Dulvy, N.K., J.D. Metcalfe, J. Glanville, M.G. Pawson, and J.D. Reynolds, 2000. Fishery stability, local extinctions, and shifts in community structure in skates. *Conservation Biology* 14(1): 283-293.
- Eschmeyer, W.N., E.S. Herald, and H. Hammann, 1983. A field guide to Pacific coast fishes of North America. Houghton Mifflin Co., Boston: 336 pp.
- Gaichas, S., J. Ianelli, and L. Fritz, 1999. Other species considerations for the Gulf of Alaska.
- Gaichas, S. and J. DiCosimo. 2001. Discussion paper for Groundfish Plan Amendments 63/63 To Revise Management of "Other Species" Category. Version prepared for Council SSC review. September 14, 2001.
- Guttormsen, M. A., C. D. Wilson, and S. Stienessen. 2003. Draft Results of the February and March 2003 Echo Integration-Trawl Surveys of Walleye Pollock (*Theragra chalcogramma*) Conducted in the Gulf of Alaska, Cruises MF2003-01 and MF2003-05. August 2003. Midwater Assessment and Conservation Engineering Program. AFSC. 7600 Sand Point Way, Seattle, WA 98115.
- Hiatt, T., R. Felthoven and J. Terry. (2002) "Stock Assessment and Fishery Evaluation Report for the Groundfish Fisheries of the Gulf of Alaska and Bering Sea/Aleutian Island Area: Economic Status of the Groundfish Fisheries off Alaska, 2001." November 2002. Socioeconomic Assessments Program. Resource Ecology and Fisheries Management Division, Alaska Fisheries Science Center, NMFS. 7600 Sand Point Way, Seattle, WA 98115.
- Ishihara, H. and R. Ishiyama, 1985. Two new North Pacific skates (Rajidae) and a revised key to *Bathyraja* in the area. *Jpn. J. Ichthyol.* 32(2): 143-179.
- Karp, W. 2003. Memorandum for Observer Program Staff regarding Species Identification Policy Changes. September 10, 2003. Alaska Fisheries Science Center. Resource Ecology and Fisheries Management Division, Alaska Fisheries Science Center, NMFS. 7600 Sand Point Way, Seattle, WA 98115.
- Kruse, G. H., Funk, F. C., Geiger, H. J., Mabry, K. R., Savikko, H. M., and Siddeek, S. M. (2000). "Overview of State-managed Marine Fisheries in the Central and Western Gulf of Alaska, Aleutian

- Islands, and the Southeastern Bering Sea, with Reference to Steller Sea Lions.”, Alaska Department of Fish and Game, Division of Commercial Fisheries, P.O. Box 25526, Juneau, AK 99802.
- Lincoln, J.M., and G. A. Conway. (1999). “Preventing commercial fishing deaths in Alaska.” *Occup. Environ. Med.*, 56, pp 691-695.
- Lowry, L. F. (1982). “Documentation and assessment of marine mammal-fishery interactions in the Bering Sea.” *Trans. 47th North American Wildlife and Natural Resource Conference*, Portland, Oregon, pp. 300-311.
- Martin, L. and G.D. Zorzi, 1993. Status and review of the California skate fishery. In *Conservation biology of elasmobranchs* (S. Branstetter, ed.), p. 39-52. NOAA Technical Report NMFS 115.
- McElderry, H., J. Schrader, D. McCullough, J. Illingworth, S.M. Fitzgerald, and S. Davis. In Prep. A Pilot Test of Video Monitoring to Assess Seabird Interactions with Trawl Third-Wire Cables on Trawl Vessels. NOAA Technical Memorandum Series, Alaska Fisheries Science Center.
- Melvin, E.F., J.K. Parrish, K.S. Dietrich, and O.S. Hamel. 2001. Solutions to seabird bycatch in Alaska’s demersal longline fisheries. Washington Sea Grant Program. Project A/FP-7. Available on loan from the National Sea Grant Library, and from publisher. WSG-AS 01-01
- National Marine Fisheries Service (NMFS). (1992). Endangered Species Act-Section 7 Consultation Biological Opinion: Fishing conducted under the Pacific Coast Groundfish Fishery Management Plan for the California, Oregon, and Washington Groundfish Fishery. August 28, 1992. Northwest Region, 7600 Sand Point Way N. E. BIN C15700, Seattle, WA. 53 pp.
- NMFS. (1993). Section 7 Consultation-Biological Opinion: 1992/1993 and 1993/1994 Winter Season, Regulations Under the Fishery Management Plan for Salmon Fisheries off the Coast of Alaska and other activities. May 28, 1993. Northwest Region, 7600 Sand Point Way N. E. BIN C15700, Seattle, WA. 74 pp.
- NMFS. (1998). Final Supplemental Environmental Impact Statement: Groundfish Total Allowable Catch Specifications and Prohibited Species Catch Limits Under the Authority of the Fishery Management Plans for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area and Groundfish of the Gulf of Alaska. December 1998. DOC, NOAA, National Marine Fisheries Service, AK Region, P.O. Box 21668, Juneau, AK 99802-1668. p. 692 + Appendices and Comments.
- NMFS. (1999). Environmental Assessment for the Total Allowable Catch Specifications for the Year 2000 Alaska Groundfish Fisheries. Appendix C, NMFS P.O. Box 21668, Juneau, AK 99801.
- NMFS. (2000a). Section 7 consultation of the authorization of the Bering Sea and Aleutian Islands groundfish fishery under the BSAI FMP and the authorization of the Gulf of Alaska groundfish fishery under the GOA FMP. Office of Protected Resources, NMFS. November 30, 2000. p.352.
- NMFS. (2000b). Skate complex. In Draft 30th Northeast Regional Stock Assessment Workshop (30th SAW), Stock assessment review committee (SARC) consensus summary of assessments, National Marine Fisheries Service, AK Region, P.O. Box 21668, Juneau, AK 99802-1668 p. 7-173.
- NMFS. (2001a). “EA/RIR for the Extension and Revisions of the Emergency Interim Rule for 2001 Harvest Specifications for the Alaska Groundfish Fisheries and for Steller Sea Lion Protective Fisheries

- Management Measures.” No FONSI. EA transmittal letter dated July 20, 2001, DOC, NOAA, National Marine Fisheries Service, AK Region, P.O. Box 21668, Juneau, AK 99802-1668. p. 306.
- NMFS. (2001b). Steller sea lion protection measures supplemental environmental impact statement. November 2001. DOC, NOAA, National Marine Fisheries Service, AK Region, P.O. Box 21668, Juneau, AK 99802-1668.
- NMFS. (2001c). Environmental Assessment for the Total Allowable Catch Specifications for the Year 2002 Alaska Groundfish Fisheries. NMFS P.O. Box 21668, Juneau, AK 99801. 72pp.
- NMFS. (2001d). Alaska Groundfish Fisheries Draft Programmatic Supplemental Environmental Impact Statement. January 2001. DOC, NOAA, National Marine Fisheries Service, AK Region, P.O. Box 21668, Juneau, AK 99802-1668.
- NMFS. (2002a). Environmental Impact Statement for the American Fisheries Act Amendments 61/61/13/8. February 2002. P.O. Box 21668, Juneau, AK 99801.
- NMFS. (2002b). Still in planning phases as of November 2002 — Essential Fish Habitat Consultation on the 2002 Steller Sea Lion Protection Measures to be implemented off Alaska under the FMPs for groundfish in the GOA and BSAI. Memorandum from Jon Kurland to Sue Salveson, date P.O. Box 21668, Juneau, AK 99801. _pp.
- NMFS. (2003a). Environmental Assessment for the Total Allowable Catch Specifications for the Year 2003 Alaska Groundfish Fisheries. P.O. Box 21668, Juneau, AK 99801. 95 pp., Appendices A-D.
- NMFS. (2003b). Alaska Groundfish Fisheries Revised Draft Programmatic Supplemental Environmental Impact Statement. September 2003. DOC, NOAA, National Marine Fisheries Service, AK Region, P.O. Box 21668, Juneau, AK 99802-1668. pp. Volumes I-VIII approx 3300.
- NMFS. (2003c). Preliminary Draft for Council Review EIS for Essential Fish Habitat Identification and Conservation. September 2003. DOC, NOAA, National Marine Fisheries Service, AK Region, P.O. Box 21668, Juneau, AK 99802-1668
- NMFS. (2003d). Stock Assessment and Fishery Evaluation Report for the Groudnfish Fisheries of the Gulf of Alaska and Bering Sea/Aleutian Island Area: Economic Stateus of the Groundfish Fisheries off Alaska, 2002.” AFSC, 7600 Sand Point Way N.E., Seattle, Washington 98115-6349. November 7, 2003.
- NMFS. (2004). Environmental Assessment/Regulatory Flexibility Analysis for the Harvest Specifications for the Year 2004 Alaska Groundfish Fisheries Implemented Under the Authority of the Fishery Management Plans for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area and Groundfish of the Gulf of Alaska.” P.O. Box 21668, Juneau, AK 99801. 134 pp., Appendices A-D.
- North Pacific Fishery Management Council (Council) 1999. EA/RIR/IRFA for Amendments 63/63 to the Fishery Management Plans for the Groundfish Fisheries of the Bering Sea/Aleutian Islands and Gulf of Alaska to Revise Management of Sharks and Skates. Council, 605 W. 4th Ave, #306, Anchorage, AK 99501.
- Council. 2002. Stock assessment and fishery evaluation report for the king and Tanner crab fisheries of the Bering Sea and Aleutian Islands regions. Council, 605 W. 4th Ave, #306, Anchorage, AK 99501.

- Council. In Prep. Ecosystem Considerations. In: Stock Assessment and Fishery Evaluation Report for 2004 Fisheries.
- Northern Economics (2002). *Assessment of Changes in IRIU Flatfish Requirements. Public Review Draft.* Prepared for the North Pacific Fishery Management Council by Northern Economics. Anchorage: September 2002. Available on the Internet at <http://www.fakr.noaa.gov/npfmc/IRIU.pdf>. Accessed November 13, 2002.
- Sosebee, K., 1998. Skates. In Status of Fishery Resources off the Northeastern United States for 1998 (Stephen H. Clark, ed.), p. 114-115. NOAA Technical Memorandum NMFS-NE-115.
- Sullivan, P. J., R. L. Trumble, and S. A. Adlersen. (1994). Pacific halibut bycatch in the groundfish fisheries: effects on and management implications for the halibut fishery. IPHC Sci. Rpt. No. 78: 28 p.
- USFWS 2003a. Biological Opinion on the effects of the Total Allowable Catch (TAC)-setting process for the Gulf of Alaska (GOA) and Bering Sea/Aleutian Islands (BSAI) groundfish fisheries to the endangered short-tailed albatross (*Phoebastria albatrus*) and threatened Steller's eider (*Polysticta stelleri*). USFWS, Ecological Services, Anchorage, Alaska, September 2003. <http://www.fakr.noaa.gov/protectedresources/seabirds/section7/biop.htm>
- USFWS 2003b. Programmatic Biological Opinion on the effects of the Fishery Management Plans (FMPs) for the Gulf of Alaska (GOA) and Bering Sea/Aleutian Islands (BSAI) groundfish fisheries on the endangered short-tailed albatross (*Phoebastria albatrus*) and threatened Steller's eider (*Polysticta stelleri*). USFWS, Ecological Services, Anchorage, Alaska, September 2003.
- USFWS. (2001). Endangered Species Act Formal Consultation for the 2001-2004 Total Allowable Catch Specifications for the Gulf of Alaska and Bering Sea/Aleutian Island Groundfish Fisheries. Letter from Ann G. Rappoport to James W. Balsiger. 1011 E. Tudor Road, Suite 219, Anchorage, AK 99503. FWS Log No. WAES-01016.
- Walker, P.A. and R.G. Hislop. (1998). Sensitive skates or resilient rays? Spatial and temporal shifts in ray species composition in the central and north-western North Sea between 1930 and the present day. ICES J. Mar. Sci., 55: 392-402.
- Witherell D. and G. Harrington. (1996). Evaluation of alternative management measures to reduce the impacts of trawling and dredging on Bering Sea crab stocks. In High latitude crabs: biology, management, and economics, p 41-58. Alaska Sea Grant Coll. Rep. AK-SG-96-02, Univ. Alaska, Fairbanks.
- Witherell, D. and C. Pautzke. (1997). A brief history of bycatch management measures for eastern Bering Sea groundfish fisheries. Mar. Fish. Rev. 59(4): 15-22.

Appendix: 2004 Skates SAFE Document