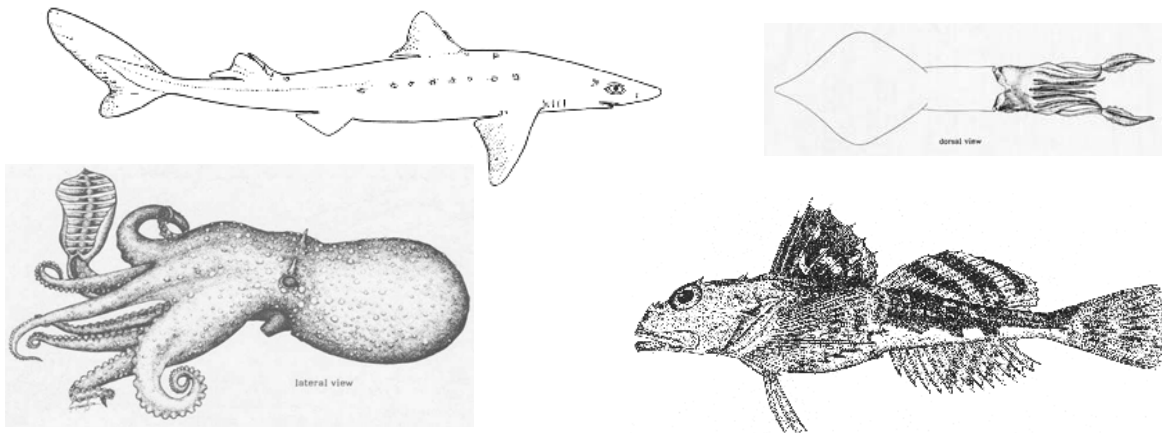


## SECRETARIAL REVIEW DRAFT

Proposed Amendment 79 to the Fishery Management Plan for Groundfish of the Gulf of Alaska

### **Set Overfishing and Acceptable Biological Catch Specifications for the “Other Species” Category in the Gulf of Alaska**

#### Environmental Assessment



Abstract: The proposed action would amend the Fishery Management Plan for Groundfish of the Gulf of Alaska (GOA FMP) to require the Council to annually set an aggregate overfishing limit (OFL) and acceptable biological catch level (ABC) for the “other species” category. Currently, the Council only sets total allowable catch (TAC) for the “other species” category, according to a formula specified in the FMP. Under the proposed action, the “other species” category would be subject to the harvest specifications procedure laid out in the FMP for target groundfish species.

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# 1 PURPOSE AND NEED

## 1.1 Introduction

The proposed action would amend the Fishery Management Plan for Groundfish of the Gulf of Alaska (GOA FMP) to require the Council to annually set an aggregate overfishing limit (OFL) and acceptable biological catch level (ABC) for the “other species” category. Currently, the Council only sets total allowable catch (TAC) for the “other species” category, according to a formula specified in the FMP. Under the proposed action, the “other species” category would be subject to the harvest specifications procedure laid out in the FMP for target groundfish species.

Actions taken to amend the FMP must meet the requirements of Federal laws and regulations, including the Magnuson-Stevens Fishery Conservation and Management Act and the National Environmental Policy Act. The proposed amendment requires an environmental assessment, for which there are four required components. The need for the proposal is described in Chapter 1, and the alternatives in Chapter 2. Chapter 3 discusses the environmental impacts of the proposed action and alternatives. A list of agencies and persons consulted is included in Chapter 4.

Amendment 79 will also make a non-substantive technical change to the FMP, to include a brief summary of a previous amendment. The proposed amendment text is included in Chapter 1.

## 1.2 Purpose and Need

The Council currently sets TAC for the “other species” category based on a formula in the FMP that is intended to accommodate incidental catch needs in the directed groundfish fisheries. All other GOA groundfish TACs are set using the harvest specifications procedure that is laid out in the FMP. This procedure requires an annual or biennial stock assessment, which is reviewed by the Council’s GOA Groundfish Fishery Management Plan Team and the Council’s Scientific and Statistical Committee (SSC), who use it to recommend an OFL and ABC for the species or category. The Council then sets OFL and ABC based on the SSC’s recommendations, and sets TAC at no greater than ABC. The purpose of this amendment is to provide a sound biological basis for the setting of TAC for the “other species” category, in line with other GOA and BSAI groundfish species and species complexes.

The Council has developed the following problem statement for this analysis:

The GOA Groundfish FMP requires that an annual total allowable catch (TAC) be set for the “other species” category. The four groups that comprise the category are sharks, squids, sculpins, and octopus. The TAC is currently set at or below 5% of the combined TACs for the GOA target species. However, the FMP does not authorize the specification of an overfishing level (OFL) or acceptable biological catch (ABC) for the category. The proposed action is intended to comply with the Magnuson-Stevens Act’s National Standard 1, and Sections 302(h)(6) and 302(a) that specify annual catch limits, and Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 Section 104(b)(1)(B) requirements that annual catch limits be implemented in 2011, and other applicable laws.

## 1.3 Background and history of the “other species” category

The “other species” category in the GOA FMP has evolved through a series of amendments.

The original FMP, implemented in 1978, identified three separate species categories: 1) prohibited species; 2) specific species or species complexes; and 3) “other species”. Under the original FMP, “other species” had a Maximum Sustained Yield/Optimum Yield (MSY/OY) of 16,200 mt, as a whole, based upon historic foreign catch.

Amendment 5 to the FMP removed grenadiers from the “other species” category and established them as their own category with a separate MSY/OY of 13,200 mt based upon the recorded average grenadier catch from 1967-1979. Grenadiers were removed from the “other species” category given concerns that catches of grenadiers (specifically unforeseen bycatch in the hook-and-line sablefish fishery) would exceed the MSY/OY for the “other species” category and close directed fishing for target species. Because the population of grenadiers was not included in the development of the OY for “other species”, the MSY/OY for the “other species” category remained unchanged following the removal of grenadiers.

Amendment 8 to the FMP was implemented in November 1980 (45 FR 73486). Under this amendment, the grenadiers category was re-named “non-specified species” and all non-target catches from directed fishing (other than the species named in the “other species” category) were reported to that category. This was intended to alleviate operational problems with fishermen reporting non-target species in the “other species” category. “Other species” were defined as species that have *“only slight economic value and are not generally targeted upon, but which are either significant components of the ecosystem or have economic potential”* (45 FR 73486). The OY for the “other species” category was established as 5% of the combined OYs for all target species. The “other species” category included sculpins, sharks, skates, eulachon, smelts, capelin, and octopus. At that time, squid were managed as a separate target fishery with a separate MSY and OY. Under Amendment 8, OY for the “other species” category (as well as squid, other rockfish, and thornyhead rockfish) was modified to be managed GOA-wide, rather than allocated by management area.

The “non-specified species” category was defined as a *“residual category of species and species groups of no current or foreseeable economic value or ecological importance, which are taken in the groundfish fishery as an accidental bycatch and are in no apparent danger of depletion”* (45 FR 73486). Grenadiers were included under the non-specified category.

Amendment 14 to the FMP was implemented November 18, 1985 (50 FR 43193). As a by-product of changing the OYs for pollock (western and central), Pacific ocean perch, Atka mackerel, and “other rockfish,” the OY for the “other species” category decreased, given the specification in the FMP that OY for the “other species” category be established as equal to 5% of the total OY for all of the target groundfish species.

In 1987, the FMP was amended (Amendment 15) such that the TAC calculation for the “other species” category was fixed in regulation as equal to 5% of the total TACs for all GOA target groundfish species. This percentage was consistent with previous approaches for OY for the “other species” category, and was determined as “ample to provide for the anticipated incidental catch of those species” (NPFMC 2008).

In 1988, Atka mackerel were combined into the “other species” category due to low abundance, and the absence of a directed fishery for several years. However, high landings in 1992, and a directed fishery in 1993, led to the development of Amendment 31 to the GOA FMP, which removed Atka mackerel from the “other species” category and placed them back into a target species category. In 1988, under Amendment 16, squid were moved into the “other species” category. Previously they had been listed as a separate target fishery.

Amendment 39, implemented in 1998, defined a forage fish category in the FMP. Important prey species were included in this category. Regulations were implemented which prohibited directed fishing on this category, placed limitations on allowable bycatch retention, and on the sale, barter, trade, or other commercial exchange, and prohibited the processing of forage fish in a commercial processing facility. The forage fish category contains species that were formerly included in the “other species” category, including species of eulachon, capelin, and smelts. The full list of species included in this category is in the GOA groundfish FMP (NPFMC 2008).

Conservation concerns were raised in 2003, regarding a developing skate fishery, and the inability of NMFS Inseason Management to allow for some directed fishing, and still adequately protect skate stocks, while these species were within the larger “other species” category. In 2004, Amendment 63 to the GOA FMP removed skates from the “other species” category and placed them in a target category. Currently OFL, ABC, and TACs are specified for big skates, longnose skates, and the remaining skates in the *Bathyraja* (or other skate) complex. This has resulted in the closure of directed fishing on skates until such a time as additional data allow for adequate stock assessment and monitoring of these species to ensure their continued health and viability.

In 2006, Amendment 69 to the FMP was implemented, which changed the language of the FMP to allow TAC for the “other species” category to be set at or below 5% of the combined TACs for the GOA target species. This amendment was prompted by the fact that the removal of skates from the “other species” category could result in increased harvest of the remaining species in the category. Given the configuration of the category, it was possible to target one member of the category up to the full category-level TAC, inhibiting in-season management’s ability to control directed fishing within the category, and raising concerns given the lack of available stock information on most members of the category. The Council’s intent with Amendment 69 was to provide themselves with the flexibility to set TAC at a level that would allow for incidental catch of “other species” in the directed groundfish fisheries, and allow a limited directed fishery for stocks in the “other species” category, while preventing excessive harvest of a single targeted species or of the category a whole.

The “other species” category currently contains the following species: squids, sculpins, sharks, and octopus. The Council’s non-target species committee has been considering initiatives to break out the component groups, and develop individual harvest specifications (OFL, ABC, TAC) for each group. This initiative is a longer term effort. In the interim, the current action has been proposed, to set an aggregate OFL and ABC for the “other species” category, which would allow the harvest specifications for this category to be directly related to biologically-based characteristics of the species in this category.

In State waters, there is no closed season for the “other species” category. Instead, they are managed as a parallel fishery where openings and closing are made concurrently with federal actions. Directed fishing for sharks, squid, and octopus requires a Commissioner’s permit. The permit is for a specific time period (generally 30 days), specifies the type of gear which may be used, and requires that a logbook be filled out by the vessel operator describing the fishing location, effort, and harvest.

## 2 ALTERNATIVES

Alternative 1: No Action

Alternative 2: **PREFERRED.** Set aggregate overfishing level (OFL) and acceptable biological catch (ABC) for the GOA “other species” category.

Alternative 1 would maintain the status quo. Currently, the FMP specifies that a total allowable catch level (TAC) be set for the “other species” category at “less than or equal to 5 percent of the combined TACs for target species” (NPFMC 2008). This means that no stock assessment is annually required for the other species category, as is the case for the GOA target species, although the Council has received such assessments in recent years as an appendix to the annual GOA Stock Assessment and Fishery Evaluation (SAFE) Report. Until the implementation of Amendment 69 to the GOA FMP in 2006, the TAC for the “other species” category was automatically set at 5% of the combined TACs for the target species. Amendment 69 gave the Council the flexibility to set the TAC at or below 5%. Since implementation in 2006, the Council’s Plan Team, Scientific and Statistical Committee (SSC), and Advisory Panel (AP) have recommended, and the Council has adopted, lower TACs. The Council’s intent, expressed in the analysis for Amendment 69, is to set TAC at a level that accounts for incidental catch in directed groundfish fisheries, and allows for limited development of target fisheries on stocks in the “other species” category, but is low enough to prevent excessive harvest of a single targeted species or of the category as a whole.

Under Alternative 2 (the preferred alternative), the FMP would be amended to require the “other species” category to undergo the identical harvest level specifications procedure to which other groundfish species or species groups are subject. Effectively, this alternative would require the Council to set an aggregate OFL and ABC annually for the “other species” category, in addition to the TAC. Implementing this alternative would result in managing the “other species” category in the GOA groundfish FMP in the same manner as is currently required for the “other species” category under the Bering Sea and Aleutian Islands groundfish FMP. An annual stock assessment for the “other species” category would be required, upon which the Plan Teams, SSC, AP, and Council would base their recommendations for harvest specifications.

Table 1 provides a comparison of the harvest specifications for the “other species” category between Alternatives 1 and 2, using 2007 data. To determine the aggregate ABC and OFL for the BSAI FMP “other species” category, the SSC generally considers ABC and OFL recommendations for each of the four component assemblages, and then sums both the ABCs and the OFLs to achieve an aggregate. It is likely that the SSC would continue this practice for the GOA FMP should this alternative be adopted, and consider OFL/ABC recommendations for the shark, squid, sculpin, and octopus assemblages in arriving at an aggregate OFL and ABC for the “other species” category as a whole. This analysis assumes that the SSC would use this method to arrive at an aggregate ABC and OFL. In 2006 and 2007, the Plan Teams and SSC reviewed stock assessments for the component species groups of the “other species” category, and recommended ABCs and OFLs solely to provide additional information for this analysis.

**Table 1 Comparison of harvest specifications for the “other species” category under the alternatives, illustrated using 2007 available data**

	<b>Alternative 1 (status quo)</b>	<b>PREFERRED Alternative 2 (set ABC and OFL)</b>
ABC and OFL	none	ABC = 7,943 mt; OFL = 10,588 mt <sup>a</sup> Sum of recommended Plan Team/ SSC ABCs and OFLs for component species groups (only recommended for purposes of this analysis)
Maximum permissible TAC	13,271 mt Council may set TAC at ≤ 5% of combined TACs for target species	7,943 mt Council may set TAC ≤ ABC
Actual TAC	4,500 mt Council reduces TAC from maximum, to allow for incidental catch and limited directed fisheries, but reduce risk of excessive harvest on a single stock or the complex as a whole	≤ 7,943 mt Council would retain prerogative to reduce TAC as in Alternative 1

<sup>a</sup> Further explanation of the origin of these numbers may be found in Section 3.1.

### 3 PROBABLE ENVIRONMENTAL IMPACTS

The purpose of this section is to analyze the environmental impacts of the proposed Federal action: to set ABC and OFL specifications for the “other species” category in the GOA. An environmental assessment is intended, in a concise manner, to provide sufficient evidence of whether or not the environmental impacts of the action are significant (40 CFR 1508.9).

#### 3.1 “Other species” category, biological and fishery information

As discussed in Section 1.3, the “other species” category in the GOA FMP currently includes squid, sculpins, sharks, and octopus. Until 2005, TAC was set for this complex as a proportion of the TACs of other target species. Since the implementation of Amendment 69 in 2005, the TAC has been set at a lower level. The Council establishes the TAC level to meet incidental catch needs in other directed groundfish fisheries, buffered to allow for limited directed fishery potential, but low enough to prevent excessive harvest of a single targeted species or of the category as a whole.

Table 2 illustrates the history of TACs and catch for the “other species” category in the GOA groundfish fisheries. “Other species” are primarily taken incidentally, in many groundfish fisheries, although limited directed fishing occurs (e.g., a developing skate fishery in 2003 was the reason that skates were removed from the “other species” category to become a target species). Exceeding the TAC for “other species” places the category on prohibited species status, but does not currently shut down any target groundfish fishery since there is no ABC or OFL established for “other species.” Stock assessments are not routinely prepared for the “other species” category, although draft stock assessments have been reviewed by the Plan Teams and the SSC as an appendix to the GOA SAFE report, in preparation for this FMP amendment. Stock assessments are not required as the Council does not currently specify an OFL or ABC for this category.

**Table 2 TAC and catch for “other species” category in the GOA groundfish fisheries, 1997-07.**

Year	TAC (mt)	Catch (mt)		Catch as % of TAC
1997	13,470	5,409	During these years, the “other species” category included skates, which were broken out as a target species in 2004  SKATE LANDINGS:	40%
1998	15,570	3,748		24%
1999	14,600	3,858		26%
2000	14,215	5,649		40%
2001	13,619	4,801		35%
2002	11,330	4,040		36%
2003	11,260	6,377		57%
2004*	12,942	1,553	2,912	12%
2005*	13,872	2,306	2,710	17%
2006*	13,856 / 4,500 <sup>a</sup>	3,566	3,501	79%
2007*	4,500	2,719	3,498	60%

<sup>a</sup> Amendment 69, which amended the FMP to allow TAC to be set at or below 5% of the combined TACs of the target species, was implemented mid-2006. The Council adopted the 4,500 mt TAC at the December 2005 meeting, in anticipation of its implementation as soon as the FMP amendment was approved.

\* After 2004, skates were not included in the “other species” category.

Under Alternative 2 (the preferred alternative), the SSC would recommend an aggregate ABC and OFL for the “other species” category as a whole, and the Council would set the TAC at or below the recommended ABC. This is the same way the “other species” category is treated in the BSAI groundfish FMP. In order to come up with aggregate harvest specifications for the BSAI, the SSC considers a group-level ABC and OFL for each component of the “other species” category, and then adds the ABCs and OFLs to arrive at an aggregate ABC and OFL. For the purposes of this analysis, it is assumed that the SSC would use a similar method to arrive at an ABC and OFL for the GOA “other species” category under Alternative 2; this analysis was reviewed by the SSC in February 2008, and was approved for public release.

In late 2006, the Plan Teams and the SSC recommended ABCs and OFLs for the component species groups of the GOA “other species” category, for this analysis. These numbers were revisited in 2007, and updated for sculpins based on its most recent biomass estimate. The recommendations are listed in Table 3.

**Table 3 Plan Team and SSC recommendations for “other species” ABC and OFL, 2006 and 2007 (mt).**

“other species” complex		ABC (mt)	OFL (mt)	Tier	Notes
component species groups	squid	1,526	2,030	6	Modified Tier 6 formula, ABC based on maximum incidental catch (in 2006)
	sculpins	4,327	5,770	5	Calculations based on biomass estimate from 2007 trawl survey
	sharks	1,792	2,390	6	Modified Tier 6 formula, OFL based on maximum incidental catch (in 1998)
	octopus	298	398	6	Modified Tier 6 formula, OFL based on maximum incidental catch (in 2002)
<b>Aggregate</b>		<b>7,943</b>	<b>10,588</b>		

Under Alternative 2, the Council would then set TAC levels at or below ABC, as specified in the FMP. A comparison of Table 2 and Table 3 illustrates that, based on recent information, the proposed aggregate



ABC for the “other species” category would allow the TAC to be set at a higher level than has been the practice for the last two years, but still lower than 5% of the combined target species TACs (13,271 mt in 2007), which is the current maximum TAC as prescribed in the FMP. However, the Council could continue to reduce the TAC below the ABC, to a level to meet incidental catch needs but low enough to prevent excessive harvest of a single targeted species or of the category a whole.

Table 4 lists catch of the “other species” category by species group, for the most recent five years. A comparison with Table 2 shows that the catch is well below TAC in all years.

**Table 4 “other species” category catch (mt) for 2003-2007, broken out by component species groups**

Year	“other species” mt	Squid		Sculpin		Sharks		Octopus	
		mt	% of complex	mt	% of complex	mt	% of complex	mt	% of complex
2003	6,377 <sup>a</sup>	91	1%	751	12%	750	12%	210	3%
2004	1,553	157	10%	658	42%	474	31%	265	17%
2005	2,306	627	27%	544	24%	987	43%	149	6%
2006	3,566	1,527	43%	576	16%	1,300	36%	164	5%
2007	2,719	413	15%	855	31%	1,189	44%	263	10%

<sup>a</sup> Skates included as part of category in 2003

Each group in the “other species” category plays an important ecological role. The species groups in this category occupy all marine habitats from pelagic to benthic, nearshore to open oceans, and shallow to slope waters. Sharks are top predators, so fluctuations in their populations may have significant effects on community structure. Squid and octopus are highly productive, voracious predators which are in turn important prey for commercially important groundfish, sharks, and marine mammals. Sculpins are important benthic predators, and are prey for many groundfish species.

Stock assessments were most recently prepared for the “other species” component species groups in 2006, and updated in 2007 and are included as appendices to the GOA SAFE reports (Reuter et al. 2006, Ormserth and Jorgenson 2007, Connors and Jorgensen 2006, Courtney et al. 2006). These assessments provide the most recent information on GOA “other species”, and they are incorporated by reference. The following sections contain an overview of information on each component species group, drawn from the SAFE reports.

### *Squid*

Squid are highly productive, short-lived animals, with a general lifespan of about 1 to 2 years. Ecosystem models estimate that there is a much larger squid biomass in the GOA ecosystem than is represented by their incidental catch in the GOA groundfish fisheries, and that a large proportion of squid mortality is attributable to predation. Consequently, the trawl survey biomass estimates for squid are likely to be low, and are considered unreliable (Table 5). The 2006 incidental catch was significantly higher than previous years, as was the 2007 survey biomass. Natural mortality rate is difficult to calculate, as a high proportion of the biomass dies off during the year.

**Table 5 Squid biomass and catch of squids in the GOA (mt)**

Year	2003	2004	2005	2006	2007
GOA squid survey biomass	6,322	n/a	4,899	n/a	11,991
total GOA squid catch	91	157	627	1,527	413
pollock fishery squid catch	62	139	620	1,515	406
pollock fishery as % of total squid catch	69%	89%	99%	99%	99%

The stock assessment author provided ABC and OFL recommendations for both Tier 5 and Tier 6. Tier 5 is problematic because of the unreliable biomass and natural mortality estimates. The traditional Tier 6 calculation, average catch over 1978-1995, results in a very low ABC and OFL, and seems overly conservative considering that squid appear to have a much larger abundance than is indicated by fishery catch. The highest incidental catch occurred in 2006, and the Plan Team and SSC recommended an alternative Tier 6 calculation, where ABC was set equal to the maximum incidental catch of 1,526 mt, and OFL was calculated at 133% of that amount.

Since 2004, the vast majority of incidental catch of squid occurs in the pollock fishery, largely in an area of the Shelikof Straits, during February and March.

### *Sculpins*

GOA sculpin are dominated by 4 of the largest sculpin species groups: yellow Irish lord, plain sculpin, great sculpin, and bigmouth sculpin, although about twenty species show up in the survey. The coefficients of variability (CV) around the biomass estimates for sculpins are low, and biomass estimates are considered to be reliable (Table 6). Life history information is lacking for GOA sculpins, although new data are available for the BSAI.

**Table 6 Sculpin complex biomass (selected species, mt) from the 1996-2007 GOA trawl survey**

Species	Common name	Biomass (mt)						CV
		1996	1999	2001	2003	2005	2007	2007
<i>Hemilepidotus jordani</i>	Yellow Irish lord	17,804	20,255	20,945	12,064	15,952	15,720	0.15
<i>Hemitripteris bolini</i>	Bigmouth sculpin	4,246	3,983	3,471	5,767	5,543	3,126	0.22
<i>Myoxocephalus jaok</i>	Plain sculpin	1,015	1,692	932	1,220	3,912	4,456	0.50
<i>Myoxocephalus polyacanthocephalus</i>	Great sculpin	7,326	3,913	3,540	6,037	6,574	7,734	0.19
<b>TOTAL – all sculpin species</b>		31,313	30,782	30,417	26,515	33,560	32,468	0.11

Because of the reliable biomass estimates, sculpins are assessed in Tier 5. A conservative estimate of natural mortality is applied, based on information on sculpin species throughout the North Pacific. Sculpin catch is low in the groundfish fisheries, relative to their recommended ABC. The most common sculpin species are incidentally caught in flatfish trawl and Pacific cod pot fisheries. Smaller sculpin species are incidental catch in rockfish fisheries.

## Sharks

Sharks are a long-lived taxon with slow growth to maturity, low productivity, and large maximum size. The three most common shark species in the GOA are spiny dogfish, Pacific sleeper shark, and salmon sharks. Reliable point estimates for biomass do not exist for sharks in the GOA, as the efficiency of bottom trawl gear varies by species and is unknown. Average biomass from 1996-2006 is considered the best available biomass estimate for GOA sharks (47,433 mt for spiny dogfish, 37,459 mt for Pacific sleeper shark, and 1,729 mt for salmon shark). Natural mortality has been estimated for spiny dogfish, but not for other species.

The Plan Teams and SSC recommended that ABC and OFL for sharks be specified using a modified Tier 6 approach. The maximum annual incidental catch for sharks between 1990 and 2006 occurred in 1998. This figure, 2,390 mt, is specified as the OFL, and ABC is calculated at 75% of the OFL.

Spiny dogfish and Pacific sleeper sharks are taken incidentally in flatfish and pollock bottom trawl, and sablefish longline fisheries. Catch by species is estimated in Table 7. There are currently no directed commercial fisheries for shark species, although there were some deliveries of spiny dogfish to Kodiak in 2004 and 2005.

**Table 7 Estimated catch (mt) of sharks in the GOA, by species.**

Year	Spiny dogfish	Pacific sleeper shark	Salmon shark	Other/unidentified shark	Total sharks
	<i>Squalus acanthias</i>	<i>Somniosus pacificus</i>	<i>Lamna ditropis</i>		
2003	369	292	36	53	750
2004	180	233	22	39	474
2005	414	460	53	60	987
2006	948	240	29	83	1,300
2007	692	294	95	107	1,189

## Octopus

At least seven species of octopus can be found in the GOA, and all but one species are benthic. In general, octopus life spans either 1-2 years or 3-5 years, although life history is little known for all species except *Enteroctopus dofleini*. Trawl survey biomass estimates are highly variable (Table 8), and may not accurately reflect the species and sizes caught, for example, in the pot fishery. As with squid, ecosystem models indicate that fishery catch is small compared to estimated predation mortality on octopus.

**Table 8 GOA survey biomass estimates for octopus (all species, mt)**

Survey year	Survey hauls	Hauls with octopus		Estimated biomass
		Count	Percentage	
1999	764	47	6.2%	994
2001	489	29	5.9%	994
2003	809	70	8.7%	3,767
2005	839	56	6.7%	1,125
2007	820	71	8.7%	2,296
<b>10 year average</b>				<b>1,835</b>

The Plan Teams and the SSC recommended a modified Tier 6 approach for octopus, as the traditional average catch Tier 6 approach appears too conservative for octopus. ABC is recommended as the maximum incidental catch, which occurred in 2002, and OFL is calculated at 133% of that value.

There is some interest in a directed fishery for octopus, although currently there is little evidence of such a fishery taking place. One Kodiak processor purchases incidentally-caught octopus primarily for halibut bait. Recent increases in market value have increased retention of incidentally-caught octopus in the GOA. The vast majority of incidental catch comes from the Pacific cod pot fishery.

## **3.2 Physical and Biological Impacts**

### *Alternative 1*

Alternative 1 represents the status quo, with no change to the harvest specifications for the “other species” category. Status quo groundfish fishing is periodically evaluated in the environmental impact statement (EIS) that supports decision making on harvest specifications for the BSAI and GOA groundfish fisheries (NMFS 2007). The EIS evaluates all physical and biological resources affected by the groundfish fisheries, and describes the impact of the fisheries. The environmental consequences of the current fishery management regime are fully disclosed, particularly with respect to impacts that affect the species population outside the range of natural variability, and which may affect the sustainability of the species or species group.

The analysis of Alternative 2 in NMFS (2007), which describes status quo fishing, is incorporated by reference. The EIS indicates that under status quo groundfish fishery management there is a low probability of overfishing target species, or generating adverse impacts to fish species generally (target, non-specified, forage, or prohibited species). The preliminary stock assessments prepared in 2006 and 2007 also do not indicate that the component species of the “other species” category are overfished or subject to overfishing. Direct and indirect effects of the groundfish fisheries, as currently managed, on marine mammals and seabirds are not likely to constrain the foraging success of these species or to cause population declines. Effects on essential fish habitat are minimal and not adverse, and effects on ecosystem relationships are analyzed as adverse but not significant.

### *Alternative 2 (Preferred)*

Alternative 2 would change the status quo to annually set an ABC and OFL for the “other species” category. This would allow the TAC for the “other species” category to be based on best available scientific information, and would incur an annual review of stock status of the “other species” category. This does not currently occur under status quo management. The annual review and biological limits are likely to further reduce any risk of overfishing the species within the “other species” category, and so are likely to be beneficial to those species. As Table 1 demonstrates, the maximum permissible TAC for the “other species” category would be reduced, under the proposed action, to a limit that is biologically determined. There continues to be some risk, as these species are managed as a complex, that directed fishing might target an individual stock of the category and risk overfishing that species. A similar situation occurred in 2003, when a developing fishery for skates emerged in the GOA. At that time, the Council took swift action to remove skates from the “other species” category, which is an appropriate way to address such issues under the FMP. This safeguard is still available should developing fisheries for “other species” emerge.

Under Alternative 2, the impacts of a developing fishery would not be as severe as they could have been in 2003, as the potential aggregate OFL for the category will be notably less than the TAC was for the category at that time (which was calculated as 5% of the combined target species TACs). Additionally,

with the specification of an overfishing limit, inseason management has the ability to close directed fisheries once the “other species” OFL has been attained, which presents a further safeguard to any risk of overfishing.

Furthermore, the Council currently sets TAC for the “other species” category at a level that is approximately half of the estimated ABC for the category (see Table 1). The Council would retain its flexibility under Alternative 2 to set the TAC at a level lower than the ABC, should the Council wish to continue its practice of accommodating incidental and limited directed fisheries, but preventing excessive targeting on a particular stock within the category. For all these reasons, no significantly adverse impacts are likely to be associated with Alternative 2 with respect to the “other species” category. The proposed ABC in fact lowers the maximum permissible TAC that the Council might specify. Alternative 2 places the conservation of those species on a more sound, biologically-based footing.

Along the same lines, the revised Magnuson-Stevens Act requires a Council to “establish a mechanism for specifying annual catch limits ... at a level such that overfishing does not occur in the fishery...” (16 U.S.C. 1852 302(a)). Although specific guidelines interpreting this requirement of the revised Act have not yet been promulgated, it most likely will be necessary for the Council to specify OFL for the “other species” category with respect to the annual TAC. For this reason, Alternative 2 is more likely to comply with this requirement of the Act.

With regard to other elements of the physical and biological environment, the proposed action is unlikely to exert any change. The “other species” category is primarily an incidental catch fishery, and no element of this proposed amendment is likely to change this status. The amount of incidental catch of “other species” is unlikely to change, as this proposed amendment has no impact on other directed groundfish fisheries, and so is unlikely to change fishery interactions with seabirds, marine mammals, habitat, or the ecosystem generally.

### **3.3 Economic and Socioeconomic Impacts**

Alternative 1 represents the status quo, with no change to the harvest specifications for the “other species” category. Status quo groundfish fishing is periodically evaluated in the EIS that supports decision making on harvest specifications for the BSAI and GOA groundfish fisheries (NMFS 2007). The analysis of Alternative 2 in NMFS (2007), which describes status quo fishing, is incorporated by reference. The EIS has found that status quo groundfish fishery management does not result in significantly adverse social or economic impacts.

Under Alternative 1, the Council retains the ability to set TAC up to the maximum of 5% of the combined target species TACs, or 13,271 mt in 2007. In practice, since the passage of Amendment 69, the Council has elected to set TAC well below such a limit, at a level sufficient to accommodate incidental catch. Alternative 2 would restrict the overall maximum TAC that could be set for the “other species” category to be at or below ABC, which is recommended at 7,943 mt in this analysis (Table 1). While this amendment does preclude the ability of the Council to set a maximum permissible TAC of 5% of the combined target species TACs, which could allow for directed fishing of the “other species” category, the Council would be highly unlikely to take such an action. Almost of the catch of the “other species” category is taken incidentally in the directed groundfish fisheries. The Council has stated its intent to set the “other species” TAC at a level appropriate to accommodate incidental catch, and in fact, should directed fishing occur on a species within the “other species” category, that species would likely be moved out into the target species category (as with skates in 2003), where it would be subject to biologically-based harvest specifications.

NMFS (2007) estimates earned gross revenue for the GOA “other species” fishery in 2006 as \$700,000, when the catch was 3,526 mt. This represents a calculation of approximately \$198.5/mt. Using this calculation, the maximum foregone TAC between Alternative 1 and Alternative 2 would be 5,328 mt, which could represent potentially \$1.1 million earned gross revenue. However, this figure is only 0.5% of the total earned gross revenue of the GOA groundfish fishery, so that even large changes in the retained catch of “other species” will only have a small impact on industry gross revenues. Given that the “other species” catch is frequently not retained, this suggests that it is not currently profitable to harvest the “other species” category up to its current reduced TAC of 4,500 mt, let alone to the maximum permissible TAC.

One consequence of the difference between Alternative 2 and Alternative 1 is that because an ABC and OFL are specified for the “other species” category, directed fisheries in which “other species” are incidentally caught would be closed once the OFL is reached. However, in the last 30 years, the catch of “other species” has never once exceeded the proposed OFL level of 10,588 mt. It is therefore unlikely that other groundfish fisheries would be impacted by a closure to prevent overfishing of the “other species” category.

Based on this discussion, and the comparison to Alternative 1, Alternative 2 (the preferred alternative) is not considered to have significant social and economic impacts.

### **3.4 Cumulative Impacts**

Analysis of the potential cumulative effects of a proposed action and its alternatives is a requirement of NEPA. Cumulative effects are those combined effects on the quality of the human environment that result from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions, regardless of what Federal or non-Federal agency or person undertakes such other actions (40 CFR 1508.7, 1508.25(a), and 1508.25(c)). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. The concept behind cumulative effects analysis is to capture the total effects of many actions over time that would be missed by evaluating each action individually. At the same time, the CEQ guidelines recognize that it is not practical to analyze the cumulative effects of an action on the universe but to focus on those effects that are truly meaningful.

The 2004 Final Alaska Groundfish Fisheries Programmatic Supplemental Environmental Impact Statement (Groundfish PSEIS; NMFS 2004) assesses the potential direct and indirect effects of groundfish FMP policy alternatives in combination with other factors that affect physical, biological, and socioeconomic resource components of the BSAI and GOA environment. The Alaska Groundfish Harvest Specifications EIS (NMFS 2007) updated the assessment of the groundfish management program by discussing reasonably foreseeable future effects for each resource component. To the extent practicable, this analysis incorporates by reference the cumulative effects analysis of these documents, including the persistent effects of past actions and the effects of reasonable foreseeable future actions.

Beyond the cumulative impacts analysis documented in NMFS (2004, 2007), no additional past, present, or reasonably foreseeable cumulative negative impacts on the biological, physical, or socioeconomic environment (including fish stocks, essential fish habitat, ESA-listed species, marine mammals, seabirds, marine ecosystems), fishing communities, fishing safety or consumers have been identified that would accrue from the proposed action. Cumulatively significant negative impacts on these resources are not anticipated with the proposed action because no negative direct or indirect effects on the resources have been identified.

One related future action that would interact with this proposed action is the development of an analysis to set individual harvest specifications for the component groups of the “other species” category. That analysis has been initiated by the Council, but is not complete. However, that analysis is in effect a sequential extension of the one that is proposed here, and so any cumulative impacts will appropriately be discussed at the time of the future analysis.

## 4 Preparers, Agencies and Persons Consulted

Preparers: Diana Evans, NPFMC  
Agencies and persons consulted: AFSC SAFE authors  
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## 6 Proposed Amendment Text

### Proposed Text to Amend the Fishery Management Plan for Groundfish of the Gulf of Alaska

1. In Table ES-2, row 'Procedure to set Total Allowable Catch (TAC)', delete the sentence:

*TAC for the "other species" category will be set at 5% of the summed target species TACs.*

2. In Section 3.1.2, numbered paragraph "3" beginning "Other Species", delete the sentence:

*The TAC will be less than or equal to 5 percent of the combined TACs for target species.*

3. In Section 3.2.5.1, revise the introductory paragraph to read as follows:

*A procedure has been developed whereby the Council may set annual harvest levels by specifying a total allowable catch for each groundfish target species or species group and species category on an annual basis. The procedure is used to determine TACs for every groundfish target species or species group, and species category managed by the FMP.*

4. In Section 3.2.5.1, revise numbered paragraph "2" to read as follows:

*Determine a TAC based on biological and socioeconomic information. The TAC must be less than or equal to the ABC. The TAC may be lower than the ABC if bycatch considerations or socioeconomic considerations cause the Council to establish a lower harvest.*

5. In Appendix A.1, revise or include the following paragraphs, in the appropriate order:

Amendment 68, implemented December 20, 2006:

1. Created a rockfish cooperative program allocating primary rockfish species in the Central GOA to eligible LLP licenses, based on catch history of legal landings of these species
2. Allowed eligible harvesters to fish in a cooperative or in a limited access fishery.

Amendment 79, implemented \_\_\_\_\_.

*Removed exception by which TAC was determined for the "other species" category. The "other species" category is now subject to the same framework for setting ABC and TAC as other groundfish target species and species groups.*