

## Executive Summary

This document analyzes alternatives for managing three species of grenadiers (giant, Pacific, and popeye grenadiers) in the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands () Management Area (BSAI FMP) and the Fishery Management Plan for Groundfish of the Gulf of Alaska (GOA FMP). The purpose of this action is to improve the reporting and catch accounting of grenadiers in order to provide additional protection for grenadiers from the potential adverse effects of groundfish fisheries off Alaska. This action is necessary to amend the FMPs to include grenadiers, thereby allowing the adoption of management measures and catch accounting requirements. These management measures would be achieved by including grenadiers in the fishery management plans (FMPs) as either “in the fishery” or an “ecosystem component” and adopting management measures designed to improve the protection, conservation, and catch accounting of grenadiers.

### Council Problem Statement

The Council formulated the following problem statement in June 2012 to initiate this analysis.

*Grenadiers are not included in the BSAI or GOA groundfish FMPs. There are no limits on their catch or retention, no reporting requirements, and no official record of their catch. However, grenadiers are taken in relatively large amounts as bycatch, especially in longline fisheries; no other Alaskan groundfish has such high catches that is not included in the FMPs. Considerable information on giant grenadier exists that can be used for stock assessment (under Tier 5). Inclusion in the groundfish FMPs would provide for their precautionary management by, at a minimum, recording their harvest and/or placing limits on their harvest.*

The purpose of the proposed action is to give managers more control over grenadier catch, and catch reporting, to reduce the risk of overfishing of this ecologically important species.

### Alternatives

The action alternatives evaluated in this analysis are based on the alternatives adopted by the Council in June 2012. The alternatives apply separately at the FMP level: an alternative will need to be selected for the BSAI FMP and for the GOA FMP. Under both the action alternatives, grenadier species are aggregated due to a lack of data necessary to manage the species separately. This section outlines management measures that need to be adopted for grenadiers when considered for inclusion as “in the fishery” or an “ecosystem component,” as well as additional management measures that could be, but need not be, adopted.

#### Alternative 1: No action (Status Quo)

Under this alternative, grenadiers are not federally managed and are not included in the groundfish FMPs. Directed fishing is not prohibited and there are no catch or retention limits for grenadiers, and unlimited amounts may be taken and sold. There are no reporting or recordkeeping requirements for grenadiers, and currently the best estimate of catch comes from observer data. Vessels which have a Federal Fisheries Permit may use their retention of grenadiers as basis species for the retention of other groundfish up to the maximum retainable amounts listed in Tables 10 and 11 to 50 CFR 679, for the GOA and BSAI.

#### Alternative 2: Include grenadiers in the FMP as an Ecosystem Component species.

This alternative would manage grenadiers in ecosystem component category under the FMP. The term “ecosystem component” is defined in the National Standard 1 guidelines (50 CFR 600.310). According to the National Standard 1 guidelines, in order to be designated as an “ecosystem component” (EC), the species or species group should be

- a non-targeted species or species group;
- not subject to overfishing, overfished, or approaching an overfished condition;
- not likely to become subject to overfishing or overfished in the absence of conservation and management measures; and
- not generally retained (a small amount could be retained) for sale or commercial use.

According to the National Standard 1 guidelines, it is important to consider whether use of the EC species classification in a given instance is consistent with Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) conservation and management requirements. Species may be included in the FMP as an EC for any of the following reasons: for data collection and catch monitoring purposes; for ecosystem considerations related to specification of optimum yield (OY) for the associated fishery; as considerations in the development of conservation and management measures for the associated fishery; or to address other ecosystem concerns.

As an EC species, the catch of grenadiers would be required to be reported for monitoring purposes and directed fishing for grenadiers would be prohibited. Under the ecosystem component, targeting grenadiers would not be possible without moving them to “in the fishery” and establishing status determination criteria. While grenadiers are currently not targeted commercially, moving them to the ecosystem component would be intended to discourage uncontrolled fishing on these species without applicable management measures in place should they become economically viable in the future.

### **Alternative 3: Include grenadiers in the FMP as “in the fishery.”**

This alternative would include grenadiers “in the fishery” as incidental catch species.

The term “in the fishery” is defined in the National Standard 1 guidelines (50 CFR 600.310). Stocks of fish that are “in the fishery” are

- stocks that are targeted, and retained for sale or personal use;
- stocks that are not directly targeted but are taken incidentally in other directed fisheries and are retained for sale or personal use; and
- stocks not targeted or retained but are taken as incidental catch and for which overfishing or overfished status may be a concern.

For each stock “in the fishery”, all Magnuson-Stevens Act requirements under 303(a) must be met. Therefore, the Council and NMFS must establish Overfishing Limits (OFLs), Allowable Biological Catches (ABCs), and Total Allowable Catches (TACs) each year in the annual harvest specifications process. Recordkeeping and reporting of grenadier catch would be required and other management measures discussed in Chapter 2 would need to be adopted. Additionally, the Council would need to describe and identify Essential Fish Habitat for grenadiers.

### **Impacts of the Alternatives**

The proposed action is limit in scope and will likely not affect most environmental components of the BSAI and GOA. The effects discussion is limited to impacts on grenadiers, impacts on groundfish target species, ecosystem impacts, and cumulative effects.

## **Alternative 1: No Action**

### *Potential Effects on Grenadiers*

Under the no action alternative, NMFS does not manage grenadiers and there is no prohibition on “unmanaged targeted fishing” of grenadiers. Present and past harvests of grenadiers taken incidentally are well below the current OFLs calculated for grenadiers, there are no significant effects (either adverse or beneficial) on the stock biomass, fishing mortality, spatial or temporal distribution, or changes in prey availability for grenadier and groundfish target species in either the BSAI or GOA.

Under Alternative 1, NMFS does not have the ability to protect grenadiers from the risk of overfishing should a market for grenadier products develop. This is particularly problematic since there is great uncertainty about the biology and population dynamics of grenadiers. Grenadier species have low fecundity and low growth rates, which would lead to slow recoveries if stocks were fished down. Historically, nearly all incidental catch of grenadiers has been discarded; however, the status quo allows retention of grenadier as a basis species in the retention of other, valuable, groundfish. Once delivered as a basis species these grenadier are either turned to meal or, more frequently, discarded leading to wasting of the catch.

### *Potential Effects on Groundfish*

Under Alternative 1, the status quo, grenadiers would continue as non-FMP species without any harvest limitations or recordkeeping and reporting requirements. Since there is no limit on grenadier catch or retention, and grenadiers are not assessed in the calculation of optimum yield in the groundfish fishery, there would be no short term effects (either adverse or beneficial) on the stock biomass, fishing mortality, spatial or temporal distribution, or changes in prey availability for other groundfish target species in either the BSAI or GOA.

Alternative 1; however, retains the possibility for “unmanaged targeted fishing” of grenadiers to occur. Were a market to develop, grenadier could be targeted and there would be no required recordkeeping and reporting of catch and disposition of catch. Given the ecological importance of grenadiers, increased removals of grenadiers in an unmanaged and unreported fishery could have adverse effects on prey availability for other groundfish target species. However, little information is available on food web and habitat interactions between grenadiers and other groundfish. The information that is available indicates that in the Aleutian Islands, the diet comprised mostly squid and bathypelagic fish (myctophids) (Yang 2003), whereas in the Gulf of Alaska, squid and pasiphaeid shrimp predominated as prey (Yang et al. 2006). Thus, other groundfish do not appear to compose the prey field of grenadiers. However, sablefish do appear to prey on grenadiers. The extent of grenadier in the diet of sablefish is unknown. Thus it is not possible to determine whether incidental catches of grenadiers under the status quo remove a substantial amount of sablefish prey, nor what might happen if incidental catches were to increase under the status quo. Alternative 1 does not provide for improvements in that level of scientific knowledge through, at a minimum, accurate recording of their harvest and/or placing limits on their harvests.

Alternative 1 also allows the retention of grenadiers for use as a basis species in retaining other groundfish; however, the additional harvest of groundfish would not have a significant impact on groundfish stocks, because the harvest is conducted within the MRA limits and is subtracted from the annual TAC specified for each groundfish species group. It is still possible, under Alternative 1 for grenadier to be used as a basis species and then be discarded at the shoreside plant level as there is no market for grenadier at present. Thus, Alternative 1 does nothing, in any formalized way, to address the problem of grenadier incidental catch potentially resulting in discard waste, either on the fishing grounds or post-delivery when used as a basis species.

*Potential Effects on the Ecosystem*

Under Alternative 1, grenadiers would continue as non-FMP species without any harvest limitations or recordkeeping and reporting requirements. The Council and NMFS are considering federal conservation and management for grenadiers because, although grenadiers have not been managed as an FMP species since 1980, there is no longer a valid scientific reason to exclude them. Bottom trawl surveys have shown giant grenadier is the most abundant species at depths 200 m to 1,000 m on the continental slope of the GOA, eastern Bering Sea, and Aleutian Islands. Alternative 1 provides no management structure for either tracking or limiting harvest of this ecologically important species. Under Alternative 1, the overall risk to grenadier stocks and their ecological role would appear to be limited based on known biomass, harvests, and reasonably foreseeable harvest trends. However, under Alternative 1, NMFS would not have management tools to accurately track catch or limit harvests should a directed fishery develop quickly. The likelihood of such a fishery developing in the foreseeable future is unknown.

*Potential Cumulative Effects*

While it is not known what the exact effect climate change may have on grenadier stocks, it is possible that changing ocean conditions, such as salinity, temperature, and acidity, may affect grenadiers in several life stages and as they move through the water column to feed. This is partly due to the lack of comprehensive harvest information collection on grenadiers that is perpetuated under the status quo.

**Alternative 2: Grenadiers in the FMP as “Ecosystem Component” species.**

*Potential Effects on Grenadiers*

Under Alternative 2 grenadier would be included in the FMP as an “ecosystem component” species. Recordkeeping and reporting requirements would be established for grenadiers, and grenadiers would be closed to “directed fishing.” A closure to “directed fishing” means that targeting grenadiers would no longer be allowed. Further, MRAs of grenadiers as an incidental catch species would be established limiting grenadier catch. These measures are all in sharp contrast to the status quo conditions and would improve catch estimation, thereby helping to reduce scientific uncertainty, as well as preventing “unmanaged target fishing” of grenadiers. Thus, Alternative 2 provides management measures necessary to ameliorate the vulnerability of grenadiers to overfishing as an incidental catch species.

In contrast to Alternative 1, Alternative 2 prevents “unmanaged target fishing” of grenadiers and prevents a “directed fishery” from being developed as well. Were a market for grenadiers to be developed, Alternative 2 would allow a “small amount” of grenadier to be retained and marketed; however, establishing a formal directed fishery would require an FMP amendment. Alternative 2 would also prevent use of grenadier incidental catch as a basis species for retention of other groundfish, thereby eliminating the potential discard waste of grenadiers post-delivery.

*Potential Effects on Groundfish*

Alternative 2 would place grenadiers in the FMPs as “ecosystem component” species. As has been discussed above, directed fishing for grenadiers would not be allowed, recordkeeping and reporting would

be required, and conservation and management measures to reduce incidental catch of grenadiers would be applied. Given limited interaction information, it is difficult to discern any direct effects of this alternative on other groundfish species; however, the enhanced recordkeeping and reporting requirements may lead to improvements in interaction information over time. Further, Alternative 2 formalizes management of grenadiers and provides for conservation and management of grenadiers should concerns about effects of grenadier removals on other groundfish species arise in the future.

While little is presently known about the interactions of grenadiers with other groundfish species, Alternative 2 may improve the level of scientific knowledge through, at a minimum, recording of their harvest and/or placing limits on their harvests. Thus, Alternative 2 does provide the precautionary management structure needed to sustainably manage the grenadier stock to potentially promote its sustainability and the sustainability of other groundfish species with which grenadier may have important ecological interactions.

#### *Potential Effects on the Ecosystem*

Under Alternative 2 grenadier would be included in the FMP as an “ecosystem component,” species. NMFS established the ecosystem component category to encourage ecosystem approaches to management and to incorporate ecosystem considerations (74 FR 3179, January 16, 2009). Alternative 2 provides management measures necessary for precautionary management of this ecologically important species, as an “ecosystem component” with limited incidental catch. These measures are all in sharp contrast to the status quo conditions and would provide for ecosystem approaches to management via improving grenadier catch estimation, thereby helping to reduce scientific uncertainty, as well as limiting grenadier harvest in recognition of their important ecological role.

#### *Potential Cumulative Effects*

Under Alternative 2, increased TAC in target fisheries where grenadiers are caught incidentally and the resulting increase in grenadier incidental catch would be monitored via recordkeeping and reporting requirements. Thus, Alternative 2 provides management structure necessary to monitor grenadier removals under changing future conditions. Similarly, Alternative 2 offers a management structure under which information can be collected to improve understanding of stock structure thereby improving understanding of the potential effects of future climate change on stock structure.

### **Alternative 3: Grenadiers in the FMP as “in the Fishery”**

#### *Potential Effects on Grenadiers*

Alternative 3 would place grenadiers in the FMP as “in the fishery,” with all of the associated, recordkeeping and reporting, stock assessment, harvest specifications, and conservation and management measures afforded to all other groundfish species in the BSAI and GOA. A directed fishery could develop if the Council recommended a TAC above the amount needed for incidental catch in other fisheries. In addition, The Council would need to describe and identify grenadier Essential Fish Habitat (EFH) in the FMP.

Alternative 3 would expand the record keeping and reporting requirements of Alternative 2 by incorporating grenadiers into the annual harvest specifications process. Alternative 3 also provides a

formal structure under which a “directed fishery” for grenadiers could be allowed with all the associated management structure required under the Magnuson-Stevens Act to prevent overfishing. Further, Alternative 3 addresses the recommendation of stock assessment authors who have recommended that management measures appropriate for target species (such as Annual Catch Limits (ACLs) and Accountability Measures (AMs)) should also be applied to grenadiers because of the similarities in vulnerability scores between target stocks and giant grenadier (Ormseth and Spencer 2009, 2011). Thus, Alternative 3 provides management measures necessary to ameliorate the vulnerability of grenadiers to overfishing as either incidental catch or in a “directed fishery.”

Under Alternative 3, no directed fishery would be allowed and the grenadier basis species Maximum Retainable Amount (MRA) would be zero, with a 35 percent MRA as an incidental catch species. Alternative 3 does allow a directed fishery to be opened through the specifications process with amendment of the MRAs in regulations. The additional harvest of groundfish that could occur under MRAs in a grenadier “directed fishery” would not have a significant impact on groundfish stocks, because the harvest is conducted within the MRA limits and is subtracted from the annual TAC specified for each groundfish species group. A separate MRA for grenadiers would allow “topping off” with other groundfish species up to the MRA; however, the Council could choose to have a separate TAC for grenadier, but not have a separate MRA for them. Any grenadiers caught in excess of the MRA would have to be discarded. This policy decision is discussed under chapter 2.

In contrast to Alternatives 1 and 2, Alternative 3 provides the management structure needed to potentially promote sustainable harvest of grenadiers in a future “directed fishery.” However, the implications for other groundfish stocks of establishing a grenadier “directed fishery” differ between the GOA and the BSAI.

#### *Potential Effects on Groundfish*

At present, the OY cap established in the GOA FMP is substantially greater than the total of all GOA TACs. Thus, placing grenadier “in the fishery” in the GOA does not require “funding” of grenadier TAC via reductions in TACs of any other groundfish species. Further, since the present and past harvests of grenadiers taken incidentally are well below the current ABCs calculated for grenadiers, there would be no effects (either adverse or beneficial) on the stock biomass, fishing mortality, spatial or temporal distribution, or changes in prey availability for groundfish target species in the GOA.

In contrast to the potential effects of Alternative 3 in the GOA, the BSAI FMP specifies a total OY cap of 2 million mt. The total of all BSAI groundfish TACs may not exceed this 2 million mt cap. Thus, placing BSAI grenadiers “in the fishery” means that grenadier incidental catch would have to be “funded” from reduced TAC of other BSAI groundfish species. The actual reduction in TAC that may occur in other BSAI groundfish target fisheries to “fund” grenadiers is unknown. However, the RIR has analyzed hypothetical examples and the results of those analyses are provided in the summary of the RIR, below. Alternative 3 also provides a formal structure under which a “directed fishery” for grenadiers could be allowed with all the associated management structure required under the MSRA to prevent overfishing. Thus, Alternative 3 provides management measures necessary for precautionary management of this ecologically important species, either with limited incidental catch, or if a “directed fishery” is eventually developed.

#### *Potential Effects on Ecosystem*

Alternative 3 would expand the record keeping and reporting requirements of Alternative 2 by incorporating grenadiers into the annual harvest specifications process. Alternative 3 also provides a formal structure under which a “directed fishery” for grenadiers could be allowed with all the associated

management structure required under the MSRA to prevent overfishing. Thus, alternative 3 provides management measures necessary to precautionary management of this ecologically important species, either with limited incidental catch, or if a “directed fishery” is eventually developed.

#### *Potential Cumulative Effects*

Under Alternative 3, increased TAC in target fisheries where grenadiers are caught incidentally and the resulting increase in grenadier incidental catch would be monitored via recordkeeping and reporting requirements. Thus, Alternative 3 provides management structure necessary to monitor grenadier removals under changing future conditions. Similarly, Alternative 3 offers a management structure under which information can be collected to improve understanding of stock structure thereby improving understanding of the potential effects of future climate change on stock structure.

### **Regulatory Impact Review and Initial Regulatory Flexibility Analysis**

#### **Alternative 1: The status quo**

Since the present and past harvests of grenadiers taken incidentally are well below the current ABCs calculated for grenadiers, and there is presently no market value for Alaska grenadiers, there would be no significant short term effects (either adverse or beneficial), under Alternative 1, on the stock biomass, fishing mortality, spatial or temporal distribution, or changes in prey availability for grenadier and groundfish target species in either the BSAI or GOA. Thus, there would be no significant short term changes in groundfish harvesting operations and no significant short term changes in the socioeconomic conditions in the commercial groundfish fisheries in the two areas. However, were conditions to change, grenadier could be targeted and there would be no required recordkeeping and reporting. Alternative 1 also allows the retention of grenadiers for use as a basis species in retaining other groundfish; however, grenadier can then be discarded at the shoreside plant level, as there is no market for grenadier at present.

Alternative 1 would allow future revenue increases via unmanaged targeted fishing of grenadiers. However, Alternative 1 provides none of the management structure needed to ameliorate the risk of overfishing nor to manage the grenadier stock to promote its sustainability and the sustainability of other species with which grenadier may have important ecological interactions.

#### **Alternative 2: Grenadiers in the Groundfish FMPs as “Ecosystem Component” species.**

Under Alternative 2, the present and past harvests of grenadiers taken incidentally are well below the current ABCs calculated for grenadiers. Thus, there would be no significant effects (either adverse or beneficial) on the stock biomass, fishing mortality, spatial or temporal distribution, or changes in prey availability for grenadier and groundfish target species in either the BSAI or GOA. There would be no significant (either beneficial or adverse) socioeconomic effects on those who harvest grenadiers or other groundfish targets in either the BSAI or GOA.

Alternatives 2 will impose new recordkeeping and reporting requirements on the groundfish fishing industry, as well as additional fisheries management processes; however, given the small relative amount of grenadier incidental catch these requirements will have *de-minimus* effects on fishery participants and NMFS.

In contrast to Alternative 1, Alternative 2 prevents targeting of grenadiers and prevents a “directed fishery” from being developed as well. Alternative 2 would allow management structure needed to ameliorate the risk of overfishing and to sustainably manage the grenadier stock. Were a market for

grenadiers to be developed, Alternative 2 would allow a “small amount” of grenadier to be retained and marketed; however, establishing a formal directed fishery would require further regulatory action. Alternative 2 would also prevent use of grenadier incidental catch as a basis species for retention of other groundfish. Thus, while Alternative 2 does not allow unlimited grenadier harvests and associated revenue, it does provide the management structure needed to ameliorate the risk of overfishing and to sustainably manage the grenadier stock to potentially promote its sustainability and the sustainability of other species with which grenadier may have important ecological interactions.

### **Alternative 3: Grenadiers in the Groundfish FMPs as “in the Fishery”**

Alternative 3 could allow retention, subject to potential MRA restrictions (see Section 2), and marketing of incidentally caught grenadier. In contrast to Alternative 2, were a market to develop, a “directed fishery” could be allowed as part of the annual TAC specifications process without further FMP amendment. Thus, Alternative 3 provides the management structure needed to ameliorate the risk of overfishing and to sustainably manage the grenadier stock to potentially promote its sustainable harvest in a future “directed fishery” as well as promoting the sustainability of other species with which grenadier may have important ecological interactions.

At present, the OY cap established in the GOA FMP is substantially greater than the total of all GOA TACs. Thus, placing grenadier “in the fishery” in the GOA does not require “funding” of grenadier TAC via reductions in TACs of any other groundfish species. There would be no significant (either beneficial or adverse) socioeconomic effects on those who harvest grenadiers or other groundfish targets in the GOA.

In contrast to the potential effects of Alternative 3 in the GOA, placing grenadiers “in the fishery” in the BSAI FMP may have adverse effects on fishery total revenue in the short term. The BSAI FMP specifies a total OY cap of 2 million mt. The total of all BSAI groundfish TACs may not exceed this 2 million mt cap. Thus, placing BSAI grenadiers “in the fishery” means that grenadier incidental catch would have to be “funded” from reduced TAC of other, presently valuable, BSAI groundfish species.

The actual amount of reduction in TAC that may occur in other BSAI groundfish target fisheries with grenadiers “in the fishery” in the BSAI are unknown and would be determined in the annual harvest specifications process. However, to put the potential impacts in perspective, consider that if the grenadier TAC in the BSAI were set at, for example, the estimated mean 2003 through 2013 incidental catch level of 5,294 mt, the cumulative TACs for other groundfish species would be reduced by as little as 0.26 percent.

The RIR analyzes funding of grenadier TAC from target species/species groups having the highest incidental catch proportions. The highest proportions of incidental catch occur in the Greenland turbot, sablefish, other flatfish, and halibut target species/species groups. Note; however, that the halibut target fishery would not be subject to TAC reductions via the annual specifications process. Thus, the proportion of incidental BSAI grenadier catch that occurs in the halibut fishery would have to be made up elsewhere. This analysis shows that a substantial amount of revenue could be lost with proportional “funding” of BSAI grenadier TAC via BSAI sablefish TAC reductions. These impacts range from \$7.3 million (19.9% of target total) to \$17.1 million (46.9% of target total), while the potential impacts to the Greenland turbot target fishery range from \$800,000 (11% of target total) to \$2.0 million (25.9% of target total).

The hypothetical revenue impacts in the other flatfish target fishery range from \$500,000 (2.5% of target total) to \$1.1 million (5.9% of target total) with the remaining fisheries having lesser impacts especially when considered as a percent of fishery total revenue. Note that with substantially larger TACs in the

Pacific cod, rockfish, and other species target species/species groups the percentage of total fishery revenue potentially lost is less than one percent in each example. Another consideration is that “funding” of BSAI grenadier TAC via reductions in the TACs of target fisheries that have the highest proportions of BSAI grenadier incidental catch will likely reduce BSAI grenadier incidental catch as well. However, due to incomplete reporting of BSAI grenadier catch, at present, it is not possible to estimate the potential magnitude of the effect.

A further consideration is the fact that the 2 million mt TAC cap in the BSAI is not always reached. For example, in the period from 2008 through 2010, BSAI pollock TACs decreased considerably and the average annual grenadier catch of approximately 5,300 mt would have been easily “funded” within the OY cap. Thus, in three of the past ten years, grenadier catch in the BSAI could have been “funded” with either no reduction in the TACs of other BSAI groundfish species, or with less than two tenths of a percent reduction in other TACs. The period of lower than normal BSAI groundfish TACs between 2008 and 2010 appears to be somewhat anomalous. Total BSAI TAC has fallen below 2 million mt in only two other years (1992 and 1993; by 145 and 3380 tons, respectively)<sup>1</sup>, since implementation in the early 1980’s. Nonetheless, were future variability in groundfish stocks to result in total BSAI TACs significantly lower than 2 million mt tons then, were a market for grenadier products to develop, retention of incidental catch and/or directed fishing of grenadier in the BSAI could improve optimal yield from the BSAI fishery in times of decreased stock abundance of other groundfish species, all else equal. Thus, placing grenadiers “in the fishery” in the BSAI may offer the potential for improved future benefits to the nation.

It is important to recognize that these hypothetical impacts would be spread across all Federal groundfish participants, including BSAI Community Development Quota (CDQ) entities, via the allocations made to sectors in the TAC specifications process. Thus, the impacts of funding a grenadier TAC, if any, would be borne by all harvesting platforms in an affected sector and gear type, further ameliorating potential impacts. These hypothetical examples show that the likely potential economic impacts of having grenadiers “in the fishery” in the BSAI are not significant in comparison to the overall value of the BSAI groundfish fishery.

As with Alternatives 2, Alternative 3 will impose new recordkeeping and reporting requirements on the groundfish fishing industry, as well as additional fisheries management processes; however, given the small relative amount of grenadier incidental catch these reporting requirements will have *de-minimus* effects on fishery participants. Similarly, grenadier stock assessments are presently being conducted and the additional burden on NMFS of new grenadier management measures will have *de-minimus* impacts.

### **Effects on Net Benefits to the Nation**

Under Alternative 1, the no action alternative, grenadiers would continue as non-FMP species without any harvest limitations or recordkeeping and reporting requirements. Since the present and past harvests of grenadiers taken incidentally are well below the current ABCs calculated for grenadiers, there would be no significant effects (either adverse or beneficial) on the stock biomass, fishing mortality, spatial or temporal distribution, or changes in prey availability for grenadier and groundfish target species in either the BSAI or GOA. Thus, there would be no significant short term change in groundfish harvesting operations and no significant short term changes in the socioeconomic conditions in the commercial groundfish fisheries in the two areas.

---

<sup>1</sup> Data Available at: <http://alaskafisheries.noaa.gov/sustainablefisheries>

Alternative 1 would allow unlimited targeting of grenadier without any formal management structure in place to prevent overfishing. Thus, while Alternative 1 provides the possibility of allowing future revenue increases via unmanaged targeted fishing of grenadiers it provides none of the management structure needed to ameliorate the risk of overfishing nor to sustainably manage the grenadier stock to promote its sustainability and the sustainability of other species with which grenadier may have important ecological interactions. Thus while Alternative 1 appears to have no short term adverse effects on net national benefits it does nothing to mitigate risks of non-management of grenadier stocks.

Net benefits are not expected to decrease, in the near term, under Alternative 2. Alternative 2 does not affect current fishery revenue, as grenadiers are not currently marketable. However, Alternative 2 does not allow a directed fishery to develop without further regulatory action, thus potentially constraining future revenue potential should a market develop for grenadiers. Alternative 2 does provide enhancements to species monitoring and management that, while not quantifiable, are considered to be beneficial. Alternative 2 also ameliorates the risks of non-management of grenadiers that would continue under the status quo.

Under Alternative 3, grenadiers are defined as “in the fishery,” with all of the associated management structure required under the MSRA. Grenadier would be assessed under the calculation of OY. Both the BSAI FMP and statute constrains TAC at 2 million metric tons in the BSAI. The GOA OY cap far exceeds the sum of all GOA TACs and is nonbinding. However, in order to establish a grenadier TAC in the BSAI annual harvest specifications, in most years it would require the Council and NMFS to reduce TAC of some other BSAI groundfish species (or group of groundfish species) to ensure the 2 million mt TAC is not exceeded. Given that grenadier is currently valueless, this will decrease groundfish revenue in the short run unless a market for grenadier can be established. However, given the large biomass of grenadier it is possible that, if a market is developed, grenadier catch could be taken in years when the BSAI TAC for all other non-grenadier species is less than 2 million metric tons, thus contributing to additional harvest opportunities under those conditions. Similar to Alternative 2, Alternative 3 also ameliorates the risks of non-management of grenadiers that would continue under the status quo, and extends management to include the potential for a “directed fishery” to develop.

#### **Initial Regulatory Flexibility Analysis:**

The Initial Regulatory Flexibility Analysis (IRFA) addresses the statutory requirement of the Regulatory Flexibility Act of 1980, as amended by the Small Business Fairness Act of 1996, and by the final rule implementing new size standards for finfish fishing effective July 22, 2013. These acts require an analysis of the numbers of small entities directly regulated by regulatory actions subject to the notice and comment provisions of the Administrative Procedures Act.

Earnings from all fisheries in and off Alaska for 2012 were estimated for trawl catcher/processors and catcher vessels, and non-trawl catcher/processors and catcher vessels that participated in the BSAI and GOA groundfish fisheries. Table 6.1, of the IRFA provides the numbers of BSAI and GOA small entities that would be directly regulated by this action. These small entities had total gross revenue from all fisheries off Alaska of less than \$19 million in 2011 and were not cooperative affiliated, to the best of our knowledge. In the GOA, there were a total of 688 small catcher vessels and 5 small catcher/processors, for a combined total of 693 small GOA entities in 2012. The majority of these (561) are Catcher Vessels in the hook-and-line (HAL) gear type sector. In the BSAI, there were 76 small catcher vessels and 5 small catcher/processors, for a total of 81 small BSAI entities in 2012. The combined total for all of the EEZ groundfish fisheries is 725 small catcher vessels and 10 small catcher/processors, or 735 small groundfish vessels, directly regulated by this action, in 2012. In addition, the six CDQ groups qualify as directly regulated small entities under this action.

The action alternatives would impose additional recordkeeping and reporting requirements on fishery participants. These requirements include recording grenadier catch using a new species code and require no additional skills. Given the small amount of grenadier incidental catch, relative to groundfish catch, these recordkeeping and reporting requirements are found to have *de-minimus* impacts on fishery participants.

### **Organization of the Document**

This document is an Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA). The EA/RIR/IRFA provides assessments of the environmental impacts of an action and its reasonable alternatives (the EA), the economic benefits and costs of the action alternatives, as well as their distribution (the RIR), and the impacts of the action on directly regulated small entities (the IRFA). The purpose and need for the proposed action and the problem statement adopted by the Council are presented in Section 1, along with the history of the action. A description of the alternatives and options considered are presented in Section 2. Background information on grenadier biology, stocks, and catch history are presented in Sections 3.1, 3.2, and 3.3, respectively. The environmental impacts of the proposed action alternatives and options are presented in Sections 3.4 through 3.7. The Regulatory Impact Review (Section 4) discusses the socioeconomic impacts of the action, and the Initial Regulatory Flexibility Analysis (Section 5) evaluates the impact of the action on small entities. Section 6 reviews the proposed action with respect to the BSAI and GOA groundfish FMPs, the Magnuson-Stevens Act requirements. Section 7 lists the preparers and agencies and persons consulted, and Section 8 provides references for the literature cited.