Inclusion of Grenadiers (Family Macrouridae)

In the Fishery Management Plans for Groundfish of the Bering Sea and Aleutian Islands and Gulf of Alaska

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Council Problem Statement (June 2012)

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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.

Alternatives

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Alternative 1: No action (Status Quo)

Alternative 2: Include grenadiers (all species) in the BSAI and GOA FMPs as an “ecosystem component”

Alternative 3: Include grenadiers (all species) in the BSAI and GOA FMPs as “in the fishery”

Note: grenadiers species include giant, Pacific, and popeye

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"ecosystem component"

National Standard 1 guidelines (50 CFR 600.310)

- 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.

Reasons for inclusion in the ecosystem component

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- 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.

“in the fishery”

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- 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;
- Stocks not targeted or retained but are taken as incidental catch and for which overfishing or overfished status may be a concern.

Table 2-1: Summary of Management Measures in Alternative 2 and 3

Management Measure	Alt 2 - Ecosystem Component	Alt. 3 - "In the Fishery"
Recordkeeping and Reporting	**Yes** - require catch reporting - add grenadiers to Table 2c Species Code: FMP Forage Fish *and Grenadiers*.	**Yes** - require catch reporting - add grenadiers to Table 2a, Species Codes: FMP Groundfish
Product Recovery Rates (PRR)	**No** - optional to add PRRs for grenadiers to Table 3	**Yes** - add PRRs (whole 100%, headed and gutted 50% and fillet 24.35%) for grenadiers to Table 3. (Matsui et.al, 1990)
Annual Harvest Specifications	**No** - stock assessment optional - catch not assessed in optimum yield	**Yes** - incorporate grenadiers into the annual harvest specifications - stock assessment reviewed by plan team and SSC - SSC/ Council set annual OFL, ABC, and TAC - assess grenadier TAC/catch in optimum yield - apply existing accountability measures to grenadiers - *BSAI* - CDQ allocation, if directed fishery exits, 679.20(b)(ii)(D)(2)

Table 2-1: Summary of Management Measures in Alternative 2 and 3

Management Measure	Alt 2 - Ecosystem Component	Alt. 3 - "In the Fishery"
Bycatch Management	**Yes** - MRA as incidental catch species = 2% (same as forage fish) - add grenadiers to aggregated forage fish category or as a separate category in Table 10 GOA Retainable Percentages, Table 11 BSAI Retainable Percentages - Council could recommend any additional management measures to minimize grenadier bycatch in the groundfish, halibut, or sablefish fisheries	**Yes** - MRA as basis species = 0 - MRA as incidental catch species = 35% - add grenadiers as a basis species and as an incidental catch species in Table 10 GOA Retainable Percentages, Table 11 BSAI Retainable Percentages - include grenadier in an existing PSC category - *BSAI* - IR/IU for Amendment 80 C/Ps
Prohibit A Directed Fishery	**Yes** - prohibit directed fishing in regulations at 679.20(i) Forage Fish *and Grenadiers*	**Yes** - prohibit directed fishery through 679.20(d) Fishery Closures
Open A Directed Fishery	**No** - requires an FMP amendment to move grenadiers to "in the fishery"	**Yes** - open a directed fishery through harvest specifications process - amend MRAs in regulations
Essential Fish Habitat (EFH)	**No**	**Yes** - describe and identify EFH for grenadiers



Giant Grenadier

Giant Grenadier Distribution and Biology

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- range from Baja California, Mexico, around the arc of the north Pacific Ocean to Japan, including the Bering Sea and the Sea of Okhotsk
- shallowest depth distribution of all grenadiers caught in the EEZ off Alaska, the largest apparent biomass, and the largest body size of all grenadiers.
- the most abundant species, overall, on the continental slope in the eastern Bering Sea and the GOA from 200 m to 1,000 m
- they are especially abundant on the continental slope, in waters greater than 400 m depth.

- females and males have different depth distributions, with females comprising the great majority of the catch at depths less than 800 m.
- in recent age-at-maturity study of females the oldest fish was 58 years and the age and length at which 50 percent of the females were mature was 23 years, much older than most other groundfish.

- Length frequency distributions for giant grenadier in the commercial fishery, and size composition data for the AFSC Longline Surveys, show that mature fish likely comprise the majority of the giant grenadier catch

Ecological Role of Grenadiers

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- Giant grenadier is a relatively large animal that is considered an apex predator in its environment on the deep slope (Drazen et al. 2001), so it may have relatively few predators as an adult.

- Results of the trawl surveys emphasize the important ecological role of giant grenadier in Alaskan waters. In a ranking of all species caught in the 1999 GOA trawl survey, giant grenadier was the fifth most abundant species in terms of CPUE, after arrowtooth flounder, Pacific ocean perch, walleye pollock, and Pacific halibut.

- It should be noted that this survey covered both the continental shelf and slope; if we consider just the slope deeper than 400 m, giant grenadier had the highest overall CPUE.

- Similarly, the 2007 GOA trawl survey indicated giant grenadier was third most abundant species in terms of CPUE, and was exceeded only by arrowtooth flounder and Pacific ocean perch (von Szalay et al. 2008).

- In the EBS slope surveys, giant grenadier is even more important. Among all species caught in the surveys in this area, giant grenadier was by far the most abundant in terms of both CPUE and biomass.

Marketability



Marketability of Grenadiers

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- Very low protein content (10 percent to 16 percent).
- Extremely high moisture content: 88 percent.
- Sensory analysis panel at the NMFS Northwest Fishery Science Center: giant grenadier flesh unpalatable because of its soft texture.
- The panel gave giant grenadier flesh scores, on a scale of 0 (none) to 7 (high) that were low (3.36 and below) for flakiness, hardness, chewiness, and fibrousness, and high scores for moistness (as reported in Matsui et.al. 1990).

Attempts to Develop a Market

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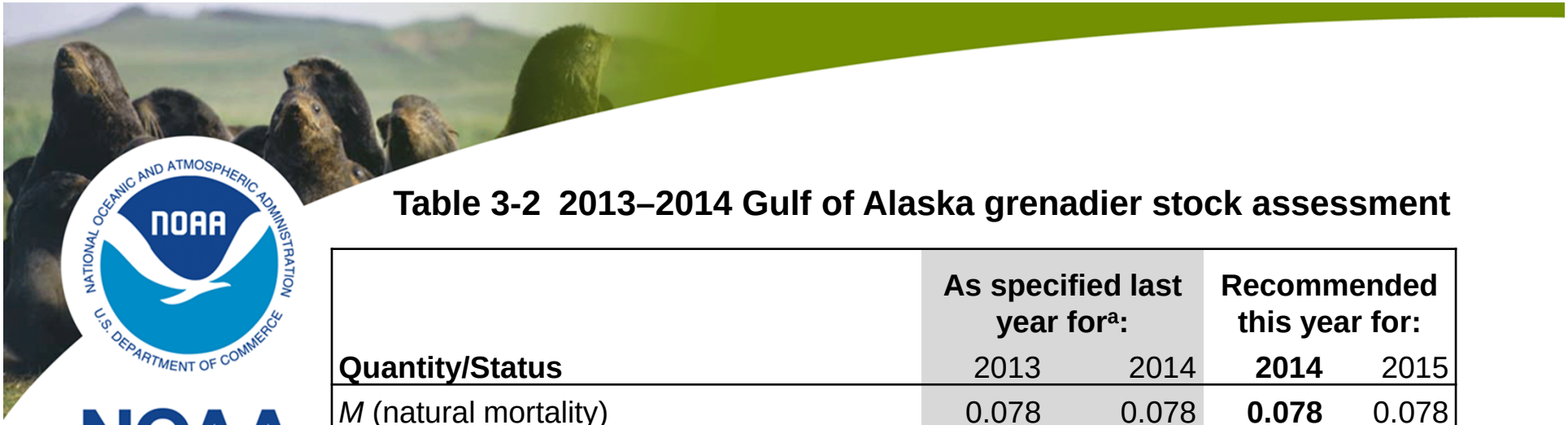
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- Port of Kodiak in 1998: hook-and-line-caught giant grenadier processed for surimi, apparently unsuccessful and ended in 1999.
- Port of Kodiak, 2005 exploratory trawl effort to develop a fillet and roe market. This venture was not continued in 2006.
- From 2009 to 2011 a total of approximately 1,400 mt were retained for processing.
- Anecdotal evidence from industry indicate that at least some of this catch was sold as headed and gutted and tail cut off, used as bait, or for meal.

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Grenadier Stock Assessments

- Most recent “unofficial” assessment in 2013 (Rodgveller 2013) appended to Groundfish SAFEs.
- Giant grenadier biomass is estimated from trawl survey, and AFSC Longline Survey, data.
- ABC and OFL recommendations have been based on Tier 5 computation.
- In the Tier 5 determinations, giant grenadiers have served as a proxy for the entire grenadier group.



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Table 3-2 2013–2014 Gulf of Alaska grenadier stock assessment

Quantity/Status	As specified last year for[a]: 2013	As specified last year for[a]: 2014	Recommended this year for: **2014**	Recommended this year for: 2015
M (natural mortality)	0.078	0.078	**0.078**	0.078
Specified/recommended Tier	5	5	**5**	5
Biomass	597,884	597,884	**597,884**	597,884
F_{OFL} (F=M)	0.078	0.078	**0.078**	0.078
$maxF_{ABC}$ (maximum allowable = 0.75x F_{OFL})	0.0585	0.0585	**0.0585**	0.0585
Specified/recommended F_{ABC}	0.0585	0.0585	**0.0585**	0.0585
Specified/recommended OFL (t)	46,635	46,635	**46,635**	46,635
Specified/recommended ABC (t)	34,976	34,976	**34,976**	34,976
Incidental Catch Estimate*	10,525			
Is the stock being subjected to overfishing?	n/a	n/a	n/a	n/a

[a]The values for biomass, OFL, and ABC in these two columns are based on Rodgveller et al. 2012. No new biomass estimates were available in 2013 so values of OFL and ABC remain constant

* Incidental catch is estimated through October of 2013.



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Table 3-3 2013–2014 Bering Sea and Aleutian Islands grenadier stock assessment

	As specified last year for[a]:		Recommended this year for:	
Quantity/Status	2013	2014	**2014**	2015
M (natural mortality)	0.078	0.078	**0.078**	0.078
Specified/recommended Tier	5	5	**5**	5
Biomass	1,152,284	1,152,284	**1,152,284**	1,152,284
F_{OFL} (F=M)	0.078	0.078	**0.078**	0.078
$maxF_{ABC}$ (maximum allowable = 0.75x F_{OFL})	0.0585	0.0585	**0.0585**	0.0585
Specified/recommended F_{ABC}	0.0585	0.0585	**0.0585**	0.0585
Specified/recommended OFL (t)	135,236	135,236	**89,878**	89,878
Specified/recommended ABC (t)	101,427	101,427	**67,409**	67,409
Incidental Catch Estimate*	3,849			
Is the stock being subjected to overfishing?	n/a	n/a	n/a	n/a

[a] The values for biomass, OFL, and ABC in these two columns are based on Rodgveller et al. 2012.

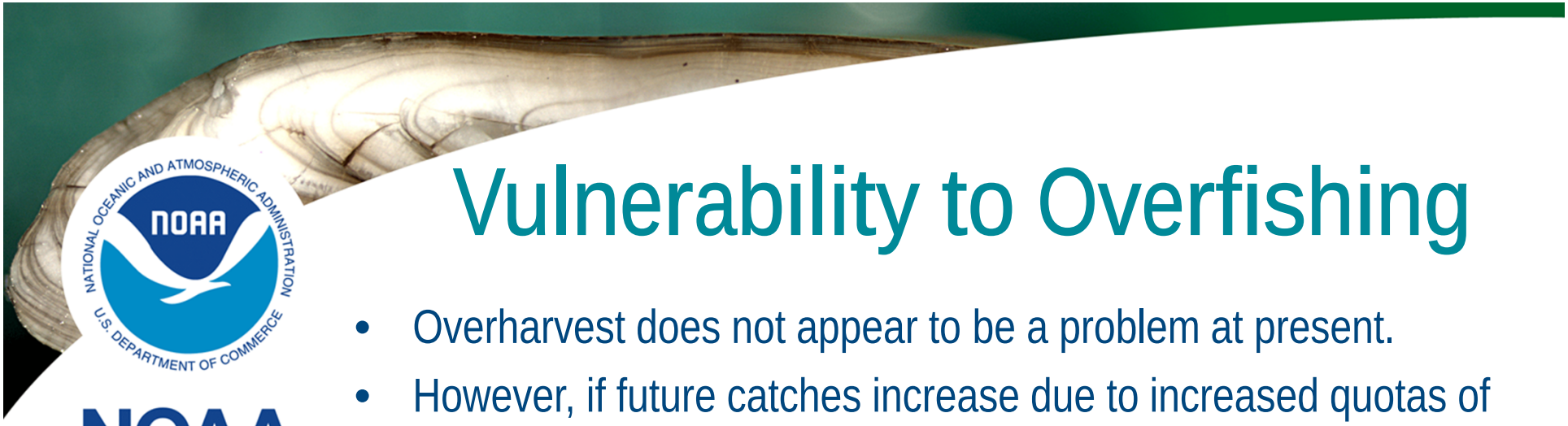
* Incidental catch is estimated through October of 2013.



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Observer Data Estimation of Catch History (2003-2013)

- Catches in the eastern Bering Sea have ranged from 1,482 mt (2013) to 4,240 mt (2011), averaging 2,597 mt annually.
- Catches in the Aleutian Islands have ranged from 1,545 mt (2007) to 4,570 mt (2012) averaging 2,697 mt annually.
- Catches in the eastern Bering Sea and Aleutian Islands combined have averaged 5,294 mt annually from 2003 through October of 2013.
- Catches in the GOA have ranged from 5,765 (2010) to 11,341 (2008) and have averaged 8,707 mt annually.



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Vulnerability to Overfishing

- Overharvest does not appear to be a problem at present.
- However, if future catches increase due to increased quotas of sablefish or Greenland turbot or due to the development of a fishery, grenadier may be vulnerable to overfishing because

1) the vast majority of the giant grenadier catch is discarded, and the discard mortality rate is 100 percent;
2) female giant grenadier greatly outnumber males at the depths where the sablefish and Greenland turbot fisheries operate, which means there is a disproportionate removal of females;
3) like many deep-sea fish, giant grenadier are long-lived, slow growing, and late maturing, which are traits that do not support high rates of fishing.

Productivity-Susceptibility Analysis of Giant Grenadier

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- AFSC Stock assessment scientists prepared a draft vulnerability analysis (Appendix 3;2009 Groundfish SAFE report) (Ormseth and Spencer 2009).
- The results indicate susceptibility was highest for target stocks (highest scores were for walleye pollock and Pacific cod), but they were also highly productive, which gave them moderate vulnerability scores.
- GOA giant grenadier received a moderate vulnerability score, between Pacific cod and walleye Pollock. In the BSAI, they also received a moderate score between Pacific cod and Pacific ocean perch.
- Because of the similarities in vulnerability scores between target stocks and giant grenadier, the authors concluded that management measures appropriate for target species (such as ACLs and AMs) should also be applied to grenadiers (Ormseth and Spencer 2009).

Potential Environmental Effects: Alternative 1: Status Quo

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- 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 : presently no overfishing concern.
- Once delivered, as a basis species, these grenadier are either turned to meal or, more frequently, discarded leading to wasting of the catch.

- Status quo allows retention of grenadier as a basis species. 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 groundfish TAC

- 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.

Potential Environmental Effects: Alternative 2, Ecosystem Component

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- Improved catch estimation, thereby helping to reduce scientific uncertainty.
- Prevents “unmanaged target fishing” and a “directed fishery.”
- Allows a “small amount” of grenadier to be retained and marketed
- Establishing a formal directed fishery would require an FMP amendment.
- Prevents use as a basis species for retention of other groundfish, thereby eliminating the potential discard waste of grenadiers post-delivery.
- 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.

- Provides 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.

- Provides for ecosystem approaches to management via improving grenadier catch estimation, thereby helping to reduce scientific uncertainty, as well as limiting potential for grenadier harvest in recognition of their important ecological role.

Potential Environmental Effects: Alternative 3, "in the fishery."

- All recordkeeping and reporting, stock assessment, harvest specifications, and conservation and management measures afforded to all other groundfish species in the BSAI and/or GOA would apply to grenadiers
- A directed fishery would not presently be allowed and the grenadier basis species 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.
- Essential Fish Habitat (EFH) would need to be described and identified in the FMP.

- The additional harvest of groundfish that could occur under MRAs in a grenadier "directed fishery" would be tabulated in the annual TAC setting process.
- Due to the 2 million mt OY Cap, 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 BSAI TAC that may occur in other BSAI groundfish target fisheries to "fund" grenadiers is unknown.

- 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.

Cumulative Effects

- Status quo:
  - exact effect climate change may have on grenadier stocks
  - 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.
  - unknown effect of climate change is partly due to the lack of comprehensive harvest information collection on grenadiers that is perpetuated under the status quo.

- Alternatives 2 and 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.
  - provides management structure necessary to monitor grenadier removals under changing future conditions thereby improving understanding of stock structure and how it may be affected by future climate change

Potential Socioeconomic Effects

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- Alternative 2 has no short term effects on fishery revenue. Would impose some recordkeeping and reporting requirements.
- Alternative 3 Affects TAC in BSAI only
- Incidental, or directed, grenadier TAC would be “funded” from reduced TAC of another species
- Actual TAC reductions would occur in the annual TAC setting process and would vary depending on stock assessments, and whether the 2 million mt cap is binding. Thus, actual impacts are unknown.

Table 4-1 Proportional BSAI grenadier catch (% of total), TAC reduction (mt), and hypothetical revenue Impacts ($ millions and % of total) by target species/species group, 2003–2013

	Target species/species group						
Year	Sablefish	G. turbot	Halibut	Other flat	P. cod	Rockfish	Other sp.
Proportion of BSAI Grenadier Catch							
2003	41%	24%	27%	2%	4%	0%	1%
2004	30%	38%	19%	2%	7%	2%	1%
2005	25%	48%	17%	1%	8%	1%	1%
2006	35%	36%	8%	11%	6%	4%	0%
2007	34%	45%	5%	4%	7%	1%	5%
2008	14%	14%	49%	9%	3%	1%	9%
2009	29%	34%	5%	24%	3%	3%	1%
2010	16%	32%	5%	29%	10%	5%	3%
2011	22%	27%	2%	27%	16%	5%	2%
2012	17%	20%	2%	47%	8%	1%	6%
2013	31%	12%	13%	25%	7%	6%	5%
Average	27%	30%	14%	16%	7%	3%	3%
Average Proportional TAC Reduction/deficit to Fund Grenadier Incidental Catch at Historic Levels							
High: 7,484	2,006	2,243	1,031	1,235	539	198	232
Av: 5,294	1,419	1,586	729	873	381	140	164
Low: 3,174	851	951	437	524	229	84	98
Hypothetical Revenue Impacts ($ millions) in 2012 Total Product Value ($ per round mt)							
High: 7,484	$17.1	$2.0	n/a	$1.1	$0.7	$0.3	$0.2
Av: 5,294	$12.1	$1.4	n/a	$0.8	$0.5	$0.2	$0.1
Low: 3,174	$7.3	$0.8	n/a	$0.5	$0.3	$0.1	$0.1
BSAI TAC by Target Species/Species Group							
2012	4,280	8,660	n/a	20,900	261,000	31,338	31,000
Hypothetical Revenue Impacts as a percent of Target species/species group 2012 Total Product Value							
High: 7,484	46.9%	25.9%	n/a	5.9%	0.2%	0.6%	0.7%
Av: 5,294	33.2%	18.3%	n/a	4.2%	0.1%	0.4%	0.5%
Low: 3,174	19.9%	11.0%	n/a	2.5%	0.1%	0.3%	0.3%

Net National Benefits

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- Alternative 1 (No change in Net National Benefits)
  - no significant short term change in socioeconomic conditions
  - 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.

- Alternative 2 (No short term change in Net National Benefits, reduces risks of non-management)
  - does not affect current fishery revenue,
  - does not allow a directed fishery to develop without further regulatory action
  - provides enhancements to monitoring and management that ameliorates the risks of non-management of grenadiers that would continue under the status quo.

- Alternative 3 (short term reduction in Net National Benefits, potential for long term improvement)
  - TAC of some other BSAI groundfish species reduced in order to “fund” grenadier TAC.
  - decreases groundfish revenue in the short run unless a market for grenadier can be established.
  - grenadier catch could be taken in years when the BSAI TAC total is less than 2 million metric tons, thus contributing to enhancing OY in such years, rare as they may be.
  - 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

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- Small entities had total gross revenue from all fisheries off Alaska of less than $19 million in 2012 and were not affiliated with any large, under SBA standards, cooperatives
  - GOA: 688 small catcher vessels and 5 small catcher/processors, for a combined total of 693 small GOA entities in 2012.
  - BSAI: 76 small catcher vessels and 5 small catcher/processors, for a total of 81 small BSAI entities in 2012.
  - Total is 725 small catcher vessels and 10 small catcher/processors, or 735 small groundfish vessels, directly regulated by this action, in 2012.
- CDQ groups are small entities for purposes of this analysis.

National Standard 1 — Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery

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- While there is not presently an overfishing concern, the absence of conservation and management measures applying to grenadiers means that there is no mechanism under Alternative 1 to prevent overfishing should conditions change in the future.

- Alternative 2, restricts directed fishing and provides a management structure that may enhance OY by taking into account marine ecosystems while continuing to provide the greatest overall benefit to the nation in terms of food production, and is consistent with management for maximum sustainable yield from the fishery while considering the ecological factors associated with the grenadier species.

- Alternative 3 may enhance optimum yield similarly to Alternative 2 and, further, provides a structure upon which a directed fishery can be initiated without additional FMP amendments. Overall, In the GOA, Alternative 3 is expected to enhance OY, even at incidental catch levels, and provides the potential to further enhance OY if grenadiers can be utilized in the future.

- In the BSAI, managing grenadiers as “in the fishery” may presently reduce optimum yield from the BSAI fishery. The BSAI is subject to an OY cap of 2 million metric tons annually. Grenadier TAC would have to be “funded” from reduced TAC in one or more species groups presently having market value, while grenadier are valueless at present.

National Standard 7 — Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

- Grenadiers are presently not managed under the groundfish FMPs for the BSAI and GOA, nor are there any other state/Federal, or international commissions for their regulation in the waters of the EEZ off Alaska.

- Alternatives 2 and 3 will impose new recordkeeping and reporting requirements on the groundfish fishing industry; however, given the small relative amount of grenadier incidental catch these reporting requirements will have *de-minimus* effects on fishery participants.

- Grenadier stock assessments are presently being conducted and the additional burden on NMFS of new grenadier management measures will have *de-minimus* impacts. Thus, all of the action alternatives under consideration appear to be consistent with this NS7.

National Standard 9 — Conservation and management measures shall, to the extent practicable, (A) minimize bycatch, and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

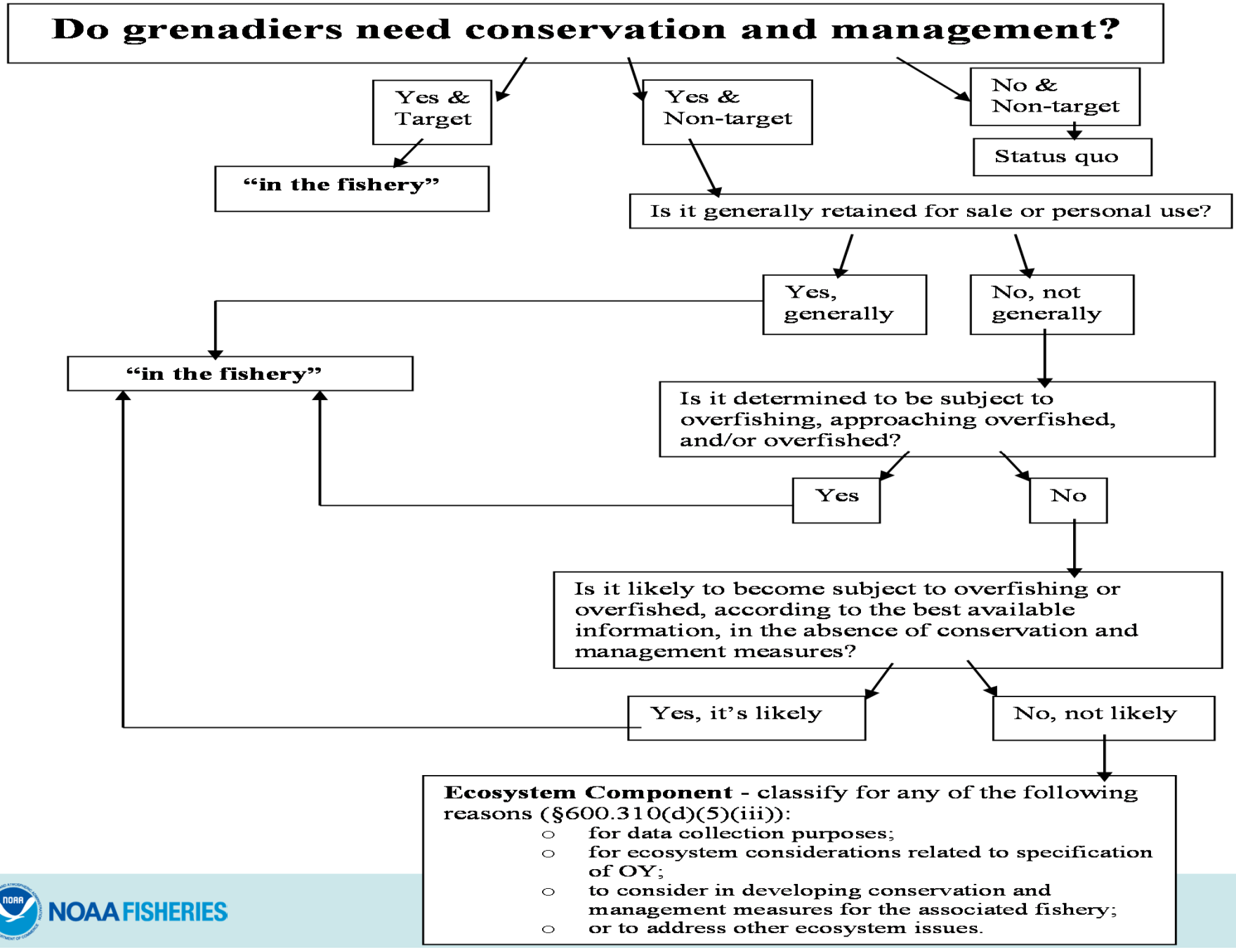
- While there is not presently an overfishing concern, the absence of conservation and management measures applying to grenadiers means that there is no mechanism under Alternative 1 to minimize bycatch. There is presently no known method to minimize grenadier mortality.

- Alternative 2, restricts directed fishing and further incentivizes the avoidance of bycatch by limiting retention (2% MRA), and prohibits basis species use, while at the same time requiring complete recordkeeping and reporting.

- Alternative 3 provides complete management structure that further incentivizes the avoidance of bycatch by limiting retention (0%) MRA as basis species, 35% incidental catch), while at the same time requiring complete recordkeeping and reporting. Alternative 3 would allow a directed fishery, rather than incidental catch, were a market to develop and sufficient TAC made available in the specifications process.

- Both of the action alternatives provide management structure to monitor bycatch as well as to incentivize the avoidance of bycatch and are consistent with NS9. As indicated in Chapter 2, the Council may wish to recommend other grenadier bycatch minimization measures.

Decision-tree: "In the Fishery" vs. "Ecosystem Component" classification



Past SSC Recommendations

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- December 2009 SSC minutes: "…the SCC supports the proposed groundfish ACL amendment package consider an option for the grenadier complex of three species (giant, Pacific, and popeye) to be categorized as "in the fishery" with a Tier 5 assessment of giant grenadier.

- December 2010 SSC minutes: "The author and the SSC recommend placing grenadier into the FMPs. The high biomass and notable catch of grenadier, coupled with its role in the BSAI and GOA ecosystems, justify management of this species within the FMPs. Jane DiCosimo noted that the NPFMC has agreed to develop a plan amendment to address grenadier management in the BSAI and GOA. The SSC considers this an important issue and looks forward to reviewing management options for this species group."

- December 2011 SSC minutes: "The SSC continues to support moving grenadiers into the FMP, noting that biomass estimates appear reliable and that the Tier 5 estimates would be appropriate."

- December 2012 SSC minutes: "Given the historical catch and evidence of a potential market for grenadiers in the GOA, the SSC supports the development of an amendment package to consider alternative management of grenadiers. The SSC agrees that if this stock is moved into the fishery, that data is available to manage this stock in Tier 5."

Groundfish Plan Team Recommendations

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- November 2010 Joint Plan Team minutes: "The Plan Teams strongly recommends that the grenadier be included in the groundfish FMPs to regularly determine their status. The Plan Teams also strongly recommend that grenadiers be classified as "in the fishery" in the GOA. The Plan Teams identified the proposed FMP amendments as a high priority for Council action."

- September 2013 Joint Plan Team Minutes: "The GOA Plan Team recommended that the Council consider adding grenadiers to the GOA groundfish FMP as a category "in the fishery" (and thus be subject to ACLs and accountability measures (AMs)). The GOA Team's recommendation was consistent with recommendations made in previous years by the Team and based on: the majority of the grenadier biomass occurring in the GOA; the lack of required catch accounting and monitoring of the GOA grenadier catch under the status quo; and lack of economic costs to the GOA groundfish fisheries by their inclusion in the fishery. Management "in the fishery" would allow grenadiers to be targeted if a market develops without the need for a further FMP amendment.

- September 2013 Joint Plan Team Minutes: The BSAI Plan Team recommended that the Council consider adding grenadiers to the EC category under the BSAI Groundfish FMP. The BSAI Team's recommendation was based on the lack of a clear justification for inclusion "in the fishery" (and subsequent inclusion under the 2 million mt optimal yield cap) given the economic costs to the BSAI groundfish fisheries (and the Nation) of foregone harvests in other, more valuable fisheries. The Team acknowledged that including grenadiers in the EC would be one way to improve catch data and fishery monitoring.

EC Species Monitoring Guidelines (50 CFR 600.310)

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While EC species are not considered to be "in the fishery," a Council should consider measures for the fishery to minimize bycatch and bycatch mortality of EC species consistent with National Standard 9, and to protect their associated role in the ecosystem. EC species do not require specification of reference points but should be monitored to the extent that any new pertinent scientific information becomes available (e.g., catch trends, vulnerability, etc.) to determine changes in their status or their vulnerability to the fishery. If necessary, they should be reclassified as "in the fishery."

Reclassification of FMP Species (50 CFR 600.310)

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Reclassification. A Council should monitor the catch resulting from a fishery on a regular basis to determine if the stocks and species are appropriately classified in the FMP. If the criteria previously used to classify a stock or species is no longer valid, the Council should reclassify it through an FMP amendment, which documents rationale for the decision.

Decision Points and Additional Analysis for Final Action

- Approval of revised alternative set numbering.
- *Forage fish and grenadiers* category or grenadiers separately?
- Product Recovery Rates for EC category?
- Additional Options for Analysis?
  - Monitoring of EC species: periodic review of catch data, formal stock assessment, vulnerability review

NOAA FISHERIES
- Alaska Region

An underwater video photograph taken from the ROV *Jason II* of what are believed to be two giant grenadier at a depth of 1,203 m in the Aleutian Islands. Photo by Doris Alcorn.



http://www.afsc.noaa.gov/Quarterly/amj2008/amjfeaturelead.htm