

**BREAK OTHER SPECIES CATEGORY INTO SQUID, SHARKS, SKATES, SCULPINS, AND OCTOPI**  
**Discussion Paper**  
**Revised October 14, 2005**

In December 2004, the Council requested that staff develop a discussion paper of a proposal from the Groundfish Plan Teams and Science and Statistical Committee to amend the Gulf of Alaska and Bering Sea/Aleutian Islands Groundfish Fishery Management Plans. The amendments would provide additional precautionary management of five groups of non-target species that are managed in the “other species” category. The Plan Teams, SSC, ad hoc committee, and Non-Target Species Committee have been continuing development of recommendations for improving management of all non-target species, which began with a proposal by the State of Alaska in 1998. These plan amendments combine two steps that were first discussed in a previous draft of this discussion paper, which were recommended by the teams, SSC, and two committees for improving management of non-target species. Step 1 revised the GOA Groundfish FMP to set the GOA “other species” TAC  $\leq 5$  percent of the sum of all Groundfish TACs in time for the 2006 specification cycle; this would allow for setting the category on bycatch status at the beginning of the year (Council action occurred in 2005). Step 2 (now Alternative 2 below) would set an overfishing level and allowable biological catch for the GOA “other species” category to match the BSAI Groundfish FMP. Step 3 would eliminate the “other species” assemblage by setting specifications for the component groups contained in the assemblage.

**PROPOSED ACTION:** In April 2005, the Council reviewed a previous draft of this paper (dated February 1, 2005), initiated the plan amendments, and set a timeline for action. The Council adopted a problem statement and requested an analysis of a suite of alternatives to modify the “other species” category in the BSAI and GOA, based on recommendations by the SSC, Bering Sea Groundfish Plan Team, Advisory Panel, and Non-Target Species Committee. These amendments include both Steps 2 and 3.

**PROBLEM STATEMENT/OBJECTIVE:** The two groundfish FMPs require that specifications be set for the “other species” assemblage category; however, management of the assemblage does not offer sufficient protection from overfishing of the component groups because the overfishing level, allowable biological catch, and total allowable catch for the category is set equal to the sum of the estimates for the individual groups. Therefore, any one (or more) groups are vulnerable to overfishing because they are managed under specifications that are set for the category, which is set equal to the sum of five (in the GOA) or four (in the BSAI) groups.

The Council adopted the following general problem statement in April 2005.

*The current management regime may not provide appropriate protection for all species in the ecosystem impacted by the groundfish fisheries, including species for which little biological information is available. The current management system also purports to manage species that are not targeted by groundfish fisheries and may be unaffected or minimally affected by groundfish fisheries. These non-target species are often managed as a complex, which carries the risk that individual species within the complex may be overfished while the complex catch as a whole is within allowable catch guidelines. Conversely, attempts to remove these species from complexes often result in single species quotas that constrain targeted groundfish operations. Since many of these non-target species are either not abundant, not well surveyed, or have life histories that are not well understood, the quotas may not be set appropriately. However, obtaining sufficient data to appropriately manage them under the current quota system may be prohibitively expensive or not possible with current sampling technology. In addition, there is no mandate to manage these species for optimum yield so it may be desirable for both management and conservation to move these species outside of the current quota system.*

*The problem is then one of deciding how to manage data-poor non-target species outside of the*

*traditional yield-oriented framework used for groundfish species, while still maintaining appropriate protection for those species. If yield-based approaches are not used, then other guidelines for acceptable levels of catch must be determined. Also, if acceptable levels of take cannot be determined and catch is still of concern, protection measures outside of the current quota system may also be considered. Additionally, since markets and circumstances change, a process for transitioning in a timely manner between quota-based target and non-target species management should be established.*

**BACKGROUND:** For several years, the BSAI Groundfish Plan Team and SSC have recommended that the Council initiate a FMP amendment to set group-specific (squid, sharks, skates, sculpins, and octopi) OFLs and ABCs rather than complex-wide (“other species”) specifications. The SSC and Plan Team recommended that the “other species” category be placed on bycatch-only status until implementation of an industry proposed and Council-approved data collection program that minimally provides accurate data on location of catch, total fishery removals by species, and opportunities for biological sampling of the catch for age, length, weight, and sex. Bycatch-only status (meaning retention of other species is only allowed as a percentage of target species on board) is recommended to prevent directed fishing on all species groups in this category until stock assessment information improves. The assessment authors wholeheartedly concur with SSC recommendations for data collection programs and setting of group-specific ABCs and OFLs. The entire assessment was reformatted in 2004 to better accommodate group-specific management. The section for each group recommended potential data collection programs, including increased retention for the purpose of collecting biological data at delivery points without additional burdens to at-sea observers.

Catches of “other species” have been very small compared to those of target species, but they appear to be increasing. There are data limitations in terms of life history for all creatures in the other species complex; we lack information on age and growth, reproductive biology, habitat requirements, and in some cases, species descriptions. Considerable further investigation is necessary to be sure that all components of “other species” are not adversely affected by groundfish fisheries. Furthermore, if target fisheries develop for any component of the other species group (as they have for skates in the Gulf of Alaska in 2003), effective management will be extremely difficult with the current limited information. The development of a skate fishery in 2003 in the central GOA and concerns about potential overfishing of several skate species prompted the Council to initiate a GOA plan amendment to separate GOA skates from the category in 2004. Similar concerns regarding a developing spiny dogfish (shark) fishery in the GOA are occurring in 2005. Interest has been reported for developing a target fishery for octopus species in the BSAI, and also for sculpin species in the GOA.

Until 2004, the BSAI “other species” TAC has never been exceeded in the BSAI or the GOA with the current composition of the category. As of October 23, 2004, the BSAI non-CDQ TAC of 23,124 mt was exceeded, so the category was put on prohibited status (meaning no further retention is allowed, but catch and discard can continue up to the OFL of 81,150 mt). In addition, the CDQ reserve of 2,040 mt was also exceeded as of November 4. While it was exceeded, the TAC was reduced from the amount of harvest allowed under the ABC to keep the total catch of groundfish in compliance with the BSAI OY cap, so it is likely there were no biological threats to the groups. However, if interest continues in developing fisheries within this category, the lower aggregate TAC may restrict retention and utilization of the more valuable components of the “other species” category (i.e., skates and octopus).

The 2004 BSAI “other species” assessment and 1998 draft assessment for GOA “other species” identified the fisheries and gear types that catches each species in each area and possible group level specifications (Attachment). Current data suggests that the only catches that approached group level specifications was GOA octopus in 1999; it should be noted that octopus are poorly covered by the biennial GOA trawl survey.

**ANALYSIS:** An EA/RIR/IRFA for a joint BSAI/GOA plan amendment is required.

**RANGE OF ALTERNATIVES:**

- Alternative 1. No action.
  - Alternative 2. Set aggregate “other species” OFL and ABC for the GOA.
  - Alternative 3. Break out BSAI skates from the other species category
  - Alternative 4. Break out BSAI skates and BSAI and GOA sculpins from the other species category
  - Alternative 5. Eliminate “other species” assemblage and manage squids, skates, sculpins, sharks, and octopi as separate assemblages under specification process
- Option: Add grenadiers and other non-specified species that are caught in the fishery.

**ESTIMATE OF STAFF RESOURCES:** Approximately 30 person weeks of total interagency staff time for analytical and regulatory writing and review. Anticipated staff includes project leader/analyst (Jane DiCosimo), Melanie Brown (regional coordinator), In-Season management staff, CDQ staff, Analytical Team.

**TIMELINE TO IMPLEMENTATION:** Initial Review/Final Action is tentatively identified as June 2006/October 2006. Implementation would occur no earlier than the 2008 fishing year.

**Attachment to Other Species Discussion Paper**

Table 16- 2. Estimated total (retained and discarded) catches of other species (mt) in the eastern Bering Sea and Aleutian Islands by groundfish fisheries, 1977-2002. JV=Joint ventures between domestic catcher boats and foreign processors. Estimated catches of other species from 1977-98 include smelts.

Year	Eastern Bering Sea				Aleutian Islands				Grand Total
	Foreign	JV	Domestic	Total	Foreign	JV	Domestic	Total	
1977	35,902			35,902	16,170			16,170	52,072
1978	61,537			61,537	12,436			12,436	73,973
1979	38,767			38,767	12,934			12,934	51,701
1980	33,955	678		34,633	13,028			13,028	47,661
1981	32,363	3,138	100	35,651	7,028	246		7,274	42,925
1982	17,480	720		18,200	4,781	386		5,167	23,367
1983	11,062	1,139	3,264	15,465	3,193	439	43	3,675	19,140
1984	7,349	1,159		8,508	184	1,486		1,670	10,178
1985	6,243	4,365	895	11,503	40	1,978	32	2,050	13,553
1986	4,043	6,115	313	10,471	1	1,442	66	1,509	11,980
1987	2,673	4,977	919	8,569		1,144	11	1,155	9,724
1988		11,559	647	12,206		281	156	437	12,643
1989		4,695	298	4,993		1	107	108	5,101
1990			16,115	16,115			4,693	4,693	20,808
1991			16,261	16,261			938	938	17,199
1992			29,994	29,994			3,081	3,081	33,075
1993			20,574	20,574			3,277	3,277	23,851
1994			23,456	23,456			1,099	1,099	24,555
1995			20,923	20,923			1,290	1,290	22,213
1996			19,733	19,733			1,706	1,706	21,440
1997			23,656	23,656			1,520	1,520	25,176
1998			23,077	23,077			2,455	2,455	25,531
1999			18,884	18,884			1,678	1,678	20,562
2000			23,098	23,098			3,010	3,010	26,108
2001			23,148	23,148			4,029	4,029	27,178
2002			26,639	26,639			1,980	1,980	28,619
2003									28,703
2004*									26,298

\*2004 open access catch reported through October 23, 2004 plus CDQ catch reported through November 4, 2004.

Data Sources: Foreign and JV catches-U.S. Foreign Fisheries Observer Program, Alaska Fisheries Science Center, National Marine Fisheries Service, NOAA, BIN C15700, Bld.4, 7600 Sand Point Way NE, Seattle, WA 98115. Domestic catches before 1989 (retained only; do not include discards): Pacific Fishery Information Network (PacFIN), Pacific Marine Fisheries Commission, Portland, OR 97201. Domestic catches since 1989: NMFS Regional Office BLEND and CAS databases, Juneau, AK 99801.

Table 16- 3. Estimated total catch (t) of BSAI non-target species groups by FMP category, 1997-2002. Source: NORPAC observer database and year-end estimates of target species catch from the NMFS Regional Office BLEND database (see text for estimation methods). \*\*\*Note that this estimation method is different from the one used in Table 16-2, so Other species totals reported here do not match Table 16-2 totals for 1997-2002 exactly.

Group	1997	1998	1999	2000	2001	2002	6 year avg	avg % of cv category	
squid	1,573.40	1,255.80	501.76	412.93	1,810.37	1,742.13	1,216.07	0.51	
skates	17,747.37	19,317.86	14,079.84	18,876.53	20,570.46	21,278.69	18,645.12	0.14	70.76%
sculpin	7,477.84	6,285.46	5,470.00	7,086.45	7,669.76	7,176.18	6,860.95	0.12	26.04%
dogfish	4.09	6.38	4.95	8.88	17.33	7.27	8.15	0.59	0.03%
salmonshk	6.82	18.04	29.96	23.30	24.45	33.90	22.75	0.42	0.09%
sleepershk	304.07	336.00	318.68	490.43	687.27	433.17	428.27	0.34	1.63%
shark	52.77	136.08	176.40	67.61	34.97	44.40	85.37	0.67	0.32%
octopus	248.37	189.68	326.08	418.15	227.28	374.45	297.33	0.30	1.13%
<b>Total Other Species</b>	<b>25,841.33</b>	<b>26,289.50</b>	<b>20,405.92</b>	<b>26,971.35</b>	<b>29,231.51</b>	<b>29,348.07</b>	<b>26,347.95</b>	<b>0.12</b>	
smelts	29.76	36.57	45.30	51.68	80.12	18.64	43.68	0.49	88.32%
gunnel		0.02	0.04	0.00	0.01	0.02	0.02	0.68	0.04%
sticheidae	0.40	0.24	0.03	0.11	0.41	0.09	0.21	0.77	0.43%
sandfish	1.11	0.40	3.29	20.29	1.85	1.68	4.77	1.61	9.64%
lanternfish	0.42	0.40	0.02	0.11	0.29	2.75	0.67	1.55	1.35%
sandlance	0.10		0.02	0.00	0.14	0.28	0.11	1.03	0.22%
<b>Total Forage Species</b>	<b>31.79</b>	<b>37.64</b>	<b>48.70</b>	<b>72.19</b>	<b>82.81</b>	<b>23.46</b>	<b>49.45</b>	<b>0.47</b>	
grenadier	5,851.55	6,589.04	7,388.23	7,320.94	3,753.93	4,698.09	5,933.63	0.25	28.05%
otherfish	1,569.15	1,362.69	1,327.28	1,458.20	1,459.89	1,189.60	1,394.47	0.09	6.59%
crabs	303.78	185.92	108.86	142.69	144.18	134.15	169.93	0.41	0.80%
starfish	6,191.00	3,287.17	3,051.47	3,174.02	4,221.00	3,742.66	3,944.55	0.30	18.64%
jellyfish	8,849.21	7,147.51	7,153.25	10,491.25	3,861.50	1,897.49	6,566.70	0.48	31.04%
invertunid	1,608.58	638.35	140.08	1,121.43	923.35	784.41	869.37	0.56	4.11%
seapen/whip	2.61	2.40	4.96	4.96	8.16	13.60	6.12	0.69	0.03%
sponge	530.12	500.83	321.84	164.91	245.36	330.26	348.89	0.41	1.65%
anemone	182.96	113.73	171.52	347.24	209.24	229.16	208.97	0.37	0.99%
tunicate	1,793.67	728.06	372.01	1,055.72	1,525.29	1,273.77	1,124.75	0.46	5.32%
benthinv	672.70	531.37	226.43	365.96	556.36	371.70	454.09	0.36	2.15%
snails					0.00	0.60	0.30	1.41	0.00%
echinoderm	44.88	24.27	30.32	42.37	43.42	32.76	36.34	0.23	0.17%
coral	38.89	27.67	52.49	43.12	183.29	79.23	70.78	0.82	0.33%
shrimp	2.73	1.71	1.23	3.70	2.41	3.03	2.47	0.36	0.01%
birds	28.69	43.49	24.39	27.04	17.44	8.19	24.87	0.48	0.12%
<b>Total Non-Specified</b>	<b>27,670.52</b>	<b>21,184.21</b>	<b>20,374.36</b>	<b>25,763.55</b>	<b>17,154.83</b>	<b>14,788.70</b>	<b>21,156.23</b>	<b>0.23</b>	
<b>Total Non-Targets</b>	<b>55,117.04</b>	<b>48,767.14</b>	<b>41,330.75</b>	<b>53,220.02</b>	<b>48,279.51</b>	<b>45,902.36</b>	<b>48,769.69</b>	<b>0.10</b>	

We recommended group specific ABCs and OFLs (based on the 10 year average EBS shelf survey biomass by group plus the 10 year average EBS slope survey biomass by group plus the 10 year average AI survey by group, all times the natural mortality rates listed below times 0.75 for ABC and 1 for OFL), and **placing all groups on "bycatch-only" status until information improves:**

	Sharks	Skates	Sculpins	Octopi
Avg Biomass	17,711	477,993	206,148	6,321
M (see text)	0.09	0.10	0.19	0.50
<b>BSAI ABC</b>	<b>1,195</b>	<b>35,849</b>	<b>29,376</b>	<b>2,371</b>
<b>BSAI OFL</b>	<b>1,594</b>	<b>47,799</b>	<b>39,168</b>	<b>3,161</b>
recent avg catch	545	18,645	6,861	297

These ABCs and OFLs would permit the levels of bycatch historically observed (1997-2002 average) while increasing protection for the species groups.

Most recent ABC and OFL estimates from the GOA were done for the 1999 SAFE appendix, would obviously have to be redone for assessment in 2006, but can serve as a baseline, note that octopus and sculpin Ms = Fofls would change based on analysis presented in 2004 BSAI assessment:

This is the first assessment of Gulf of Alaska Other species. The purpose of this chapter is to highlight some of the available data for these species and develop some approaches toward evaluating the harvest levels and resource abundances. Input data included catch estimates by species groups from 1990-98, and GOA triennial trawl survey biomass estimates for each species group. The proposed assessment model is a simple state-space model described in Appendix E. Although changing the procedure for establishing TAC of other species requires a amendment to the GOA FMP, we proposed separate ABC and OFL levels for each species groups within other species to ensure that less productive groups are not overharvested. These individual ABCs sum to slightly less than the recent aggregate TACs in the range of 14,000 t, but observed catches in each of the categories have never exceeded these proposed ABCs in the domestic fishery, with the eception of octopus catches in 1992 and 1997. We believe that cephalopod biomass is substantially underestimated by the bottom trawl survey, resulting in overly conservative estimates of ABC and OFL for these species groups, but we have no other data on which to base recommendations.

		Sharks	Skates	Sculpins	Octopi	Squid	Total
<b>Tier 5</b>	<b>M</b>	0.09	0.10	0.15	0.30	0.40	
<b>Model estimated 1999 biomass</b>		34,214	72,164	30,259	550	2,134	
<b>F=0.75M ABC</b>		2,309	5,412	3,404	124	640	11,890
<b>F=M OFL</b>		3,079	7,216	4,539	165	854	15,853

Estimated total catch (t) of GOA non-target species groups by FMP category, 1997-2002. Source: NORPAC observer database and year-end estimates of target species catch from the NMFS Regional Office BLEND database (see BSAI other species SAFE for estimation methods).

Group	1997	1998	1999	2000	2001	2002	6 year avg	cv	avg % of category
sculpin	906.58	540.83	544.39	943.01	601.28	925.65	743.62	0.27	15.16%
skates	3,119.83	4,476.19	2,000.41	3,238.44	1,828.40	6,483.86	3,524.52	0.49	71.85%
shark	123.48	1,379.86	33.00	73.64	76.98	25.91	285.48	1.88	5.82%
salmonshk	123.77	70.96	131.58	37.82	32.78	58.17	75.85	0.56	1.55%
dogfish	657.47	864.85	313.57	397.60	493.97	117.04	474.08	0.55	9.66%
sleepershk	135.87	74.02	557.66	608.19	249.00	225.56	308.38	0.72	6.29%
octopus	232.19	112.00	166.34	175.95	88.17	298.27	178.82	0.43	3.65%
squid	97.49	59.22	40.69	18.62	90.78	42.72	58.25	0.53	1.19%
<b>Total Other Species</b>	<b>4,490.10</b>	<b>7,037.10</b>	<b>3,243.23</b>	<b>4,550.26</b>	<b>2,860.08</b>	<b>7,251.53</b>	<b>4,905.38</b>	<b>0.38</b>	
smelts	23.06	122.74	26.09	123.78	534.85	156.41	164.49	1.15	98.06%
gunnel	0.11	0.03	0.03		0.00		0.04	1.08	0.03%
sandfish	3.68	2.16	0.53	0.32	1.24	1.70	1.60	0.77	0.96%
sticheidae	0.29	0.03	3.53	0.49	4.66	0.13	1.52	1.33	0.91%
lanternfish	0.00	0.00	0.00		0.03	0.00	0.01	2.04	0.00%
sandlance	0.02	0.01	0.06	0.35	0.04	0.04	0.09	1.50	0.05%
<b>Total Forage Species</b>	<b>27.15</b>	<b>124.97</b>	<b>30.24</b>	<b>124.94</b>	<b>540.82</b>	<b>158.28</b>	<b>167.75</b>	<b>1.14</b>	
grenadier	12,029.38	14,683.06	11,387.68	11,610.01	9,684.62	10,479.16	11,645.65	0.15	76.38%
otherfish	575.92	8,400.26	819.00	979.34	696.56	2,173.02	2,274.02	1.34	14.91%
crabs	15.42	25.13	10.85	12.43	4.24	4.30	12.06	0.65	0.08%
starfish	987.15	1,244.53	1,510.44	894.20	469.22	518.51	937.34	0.43	6.15%
jellyfish	36.05	166.60	107.16	37.87	235.16	159.72	123.76	0.64	0.81%
invertunid	8.15	42.86	1.33	15.18	6.42	12.83	14.46	1.02	0.09%
seapen/whip	0.62	2.92	2.69	0.90	0.30	0.35	1.30	0.92	0.01%
sponge	3.61	3.65	12.90	4.30	3.97	5.07	5.58	0.65	0.04%
anemone	17.57	15.68	17.41	16.17	15.86	20.51	17.20	0.10	0.11%
tunicate	1.57	1.16	0.03	3.55	2.62	3.88	2.14	0.69	0.01%
benthinv	24.56	31.25	25.24	10.35	12.53	5.59	18.25	0.55	0.12%
echinoderm	22.55	32.39	8.45	7.02	8.12	8.60	14.52	0.72	0.10%
coral	4.06	7.92	1.16	10.24	5.20	16.32	7.48	0.71	0.05%
shrimp	3.74	2.33	0.62	1.39	3.04	6.01	2.85	0.67	0.02%
birds	2.00	5.64	6.40	3.27	2.99	0.94	3.54	0.59	0.02%
<b>Total Non-Specified</b>	<b>13,759.50</b>	<b>24,790.36</b>	<b>13,941.60</b>	<b>13,731.14</b>	<b>11,691.68</b>	<b>13,573.09</b>	<b>15,247.91</b>	<b>0.31</b>	
<b>Total Non-Targets</b>	<b>15,854.01</b>	<b>26,847.60</b>	<b>15,981.35</b>	<b>15,750.12</b>	<b>13,783.50</b>	<b>15,617.85</b>	<b>15,306.25</b>	<b>0.31</b>	