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# Bycatch

## Catch and Mortality



# **Incidental Catch and Mortality of Pacific Halibut, 1962-1999**

by

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## **Introduction**

Fisheries targeting on other fish and shellfish inadvertently catch Pacific halibut (*Hippoglossus stenolepis*). Information collected by at-sea observers has indicated the incidental catch, or bycatch, is substantial. Regulations require that halibut be returned to the sea with no additional injury. However, some fish do die from being caught and handled. The preliminary estimate of bycatch mortality (i.e., those fish that die) in 1999 is 12.9 million pounds, which is virtually the same as 1998. This document provides an overview of areas and fisheries which contributed to halibut bycatch mortality in 1999.

## **Sources of Bycatch Information and Estimates**

For most fisheries, IPHC relies upon information supplied by observer programs for bycatch estimates. Research survey information is used to generate estimates of bycatch in the few cases where fishery observations are unavailable. The U.S. National Marine Fisheries Service (NMFS) oversees an observer program covering the groundfish fishery off Alaska and provides bycatch estimates. Estimates for 1999 were based on estimated bycatch reported from fishing through November 1 and projections for fishing for the remainder of the year.

Estimates of bycatch mortality in crab pot and shrimp trawl fisheries off Alaska have been made by IPHC staff and are based on bycatch rates observed on research surveys because direct fishery observations are lacking.

The amount of information varies for fisheries conducted off British Columbia. For the trawl fishery, bycatch is managed with an individual bycatch quota program instituted in 1996 by the Department of Fisheries and Oceans (DFO). Fishery observers sample the catch on each trawler, collecting data to estimate bycatch. Bycatch in other fisheries, such as the shrimp trawl, sablefish pot, and rockfish longline fisheries, is largely unknown. DFO is currently investigating the potential for halibut bycatch in the shrimp trawl fishery, but results have not yet been reported.

Little is known about bycatch in the Area 2A domestic trawl and hook-&-line fisheries. IPHC staff, state, and federal agencies established methodology for estimating bycatch using commercial fishery logbook information and results from gear experiments, using 1987 as a baseline year. Estimates are now being calculated every three years, coinciding with NMFS trawl surveys of the area. The CPUE from the survey is used to index the bycatch rates against changes in halibut abundance. The most recent estimate is for 1995. More detailed information on this approach can be found in Williams et al. (1998). Data collected during 1995-1998 by the Oregon Enhanced Data Collection Program (EDCP) may provide actual information from the trawl fishery, but results have not yet been reported.

## **Discard Mortality Rates and Assumptions**

Discard mortality rates (DMRs), used to determine the fraction of the estimated bycatch that dies, vary by fishery and area. Where observers are used for fishery sampling, DMRs are calculated from data collected on the release viability of halibut. For areas without observers, assumed DMRs are used, which are based on the similarity of fisheries to those in other areas where data are available. The mortality models used to calculate these rates have been presented in other reports (Clark et al. 1992; Williams 1997).

Observer data are used to estimate DMRs in the groundfish fishery off Alaska. NMFS manages these fisheries according to a schedule of DMRs; those used in 1999 are summarized in Table 1. DMRs for previous years can be found in "Pacific Halibut Discard Mortality Rates (DMRs) in the 1990-1998 Alaskan Groundfish Fisheries, with Recommendations for Monitoring in 2000" by G. Williams.

IPHC assumes DMRs for most other fisheries. For Area 2A, the domestic groundfish trawl and shrimp trawls are assumed to have a 50% mortality rate, whereas the unobserved hook-and-line fishery for sablefish is assigned an assumed DMR of 25%. The midwater fishery for whiting is assumed to have a 75% rate, based on the large catches of whiting typical of this type of fishery. In Area 2B, observers monitoring the Canadian trawl fishery examine each bycaught halibut to determine survival. Data collected by observers in the state-managed scallop fisheries indicate a 50% discard mortality rate is appropriate.

## **Bycatch Mortality by Regulatory Area**

Halibut bycatch mortality was relatively small until the 1960s, when it increased rapidly due to the sudden development of the foreign trawl fisheries off the North American coast. The total bycatch mortality (excluding the Japanese directed fishery in the eastern and western Bering Sea) peaked in 1965 at about 21 million pounds (Figure 1). Bycatch mortality declined during the 1960s, but increased to about 20 million pounds in the early 1970s. During the late 1970s and early 1980s, it dropped to roughly 13 million pounds. By 1985, bycatch mortality had declined to 7.2 million pounds, the lowest level since the IPHC began its monitoring nearly 25 years earlier. Bycatch mortality increased in the late 1980s, due to the growth of the U.S. groundfish fishery off Alaska, and peaked at 20.3 million pounds in 1992. Bycatch mortality has since declined; preliminary estimates for 1999 total 12.9 million pounds, representing a very slight decrease from 1998 and a 35% decrease from 1992. Most of the decrease is attributed to the introduction of Individual Fishing Quotas (IFQs) in the Alaskan sablefish fishery, the Careful Release program for the Alaskan longline fishery, and Individual Vessel Bycatch Quotas (IVBQs) in the Canadian trawl fishery.

Estimates of bycatch mortality by fishery and major IPHC regulatory area for 1990 through 1999 are shown in Table 2 and discussed in the following sections. Tables 3 through 5 provide bycatch mortality estimates by various area groupings. Table 6 provides estimates of bycatch mortality in the Alaskan groundfish fisheries. More detailed information on bycatch in the groundfish fisheries off Alaska can be found in "The 1999 Groundfish Fishery off Alaska: Groundfish Catches, Halibut Bycatches, and Other Information" by G. Williams.

## Area 2

Bycatch mortality in Area 2 in 1999 was estimated at 1.17 million pounds, essentially unchanged from the 1998 estimate (Table 2). Bycatch mortality in the Canadian trawl fishery was projected to be slightly lower than 1998 at 204,000 pounds, resulting in the lowest estimated bycatch since IVBQs were instituted in 1996. With practically no observer coverage in any fisheries in Area 2 other than trawling and non-IFQ longlining in Area 2C, most other estimates are rollovers from 1998. The estimate for the Area 2A trawl fishery remains at the level estimated for 1995, although recent management decisions by the PFMC have reduced groundfish total allowable catches (TACs) and have likely had an effect on the level of bycatch as well. New information should be available by this time next year.

## Area 3

Bycatch mortality in Area 3 was estimated at 4.55 million pounds in 1999 (Table 2), a 12 percent increase over the 1998 level and the highest since 1996. Increases occurred in both Area 3A and 3B and were of similar magnitude. Bycatch mortality in the groundfish trawl fishery increased in both subareas, although the increase was greater in Area 3A. The increases were attributed to overages in the trawl bycatch limit by shallow water fisheries. Non-IFQ longline fisheries for cod and rockfish also exceeded their bycatch limit, as a short reopening of the cod fishery in April resulted in more bycatch than was expected. Bycatch mortality by the cod pot fishery was also higher in 1999 than earlier years as a result of higher DMRs, bycatch rates that increased 5-fold, and a near doubling of the harvest. It still remains low, however, totaling just 72,000 pounds for all of Area 3.

## Area 4

Bycatch mortality in Area 4 was estimated at 7.17 million pounds in 1999, a reduction of seven percent from 1998, which continued the decline from a peak level of 10.7 million pounds in 1992 (Table 2). Total mortality was lower for both the trawl and non-IFQ longline fisheries, primarily due to lower TACs for Pacific cod and some species of flatfish. Pot fishing for cod remained at 1998 catch and bycatch levels, resulting in a low amount of mortality. The 1999 multispecies Community Development Quota (MSCDQ) fishery targeted mainly on pollock and resulted in 269,000 pounds of bycatch mortality, more than in 1998 when the CDQ fishery focused more on cod.

## References

- Clark, W. G., S. H. Hoag, R. J. Trumble, and G. H. Williams. 1992. Re-estimation of survival for trawl caught halibut released in different condition factors. *Int'l. Pac. Halibut Comm. Report of Assessment and Research Activities 1992*: 197-206.
- Williams, G. H. 1997. Pacific halibut discard mortality rates in the 1990-1995 Alaskan groundfish fisheries, with recommendations for monitoring in 1997. *Int'l. Pac. Halibut Comm. Report of Assessment and Research Activities 1996*: 211-227.

Williams, G., G. Stauffer, H. Weeks, M. Saelens, J. Scordino, D. Bodenmiller, and T. Northup. 1998. Pacific halibut bycatch in Area 2A: Bycatch rates and current estimates of bycatch mortality. Int'l. Pac. Halibut Comm. Report of Assessment and Research Activities 1997: 269-282.

**Table 1. Preseason assumed discard mortality rates used by NMFS for monitoring halibut bycatch mortality in 1999 in the Alaskan groundfish fisheries. From “Pacific Halibut Discard Mortality Rates (DMRs) in the 1990-1998 Alaskan Groundfish Fisheries, with Recommendations for Monitoring in 2000” by G. Williams.**

<b>Bering Sea/Aleutians Fishery</b>	<b>1999 Preseason Assumed DMR</b>	<b>Gulf of Alaska Fishery</b>	<b>1999 Preseason Assumed DMR</b>
<i><b>Trawls</b></i>		<i><b>Trawls</b></i>	
Atka mackerel	85	Atka mackerel	57
Bottom trawl pollock	76	Bottom trawl pollock	73
Pacific cod	69	Pacific cod	66
Other flatfish	69	Deep water flatfish	66
Rockfish	72	Shallow water flatfish	71
Flathead sole	62	Rockfish	64
Other species	69	Flathead sole	**
Midwater pollock	85	Other species	66
Rock sole	76	Midwater pollock	76
Sablefish	23	Sablefish	71
Turbot	73	Arrowtooth flounder	57
Yellowfin sole	78	Rex sole	55
<i><b>Pots</b></i>		<i><b>Pots</b></i>	
Pacific cod	4	Pacific cod	6
Other species	4	Other species	6
<i><b>Hook &amp; Line</b></i>		<i><b>Hook &amp; Line</b></i>	
Pacific cod	11	Pacific cod	16
Rockfish	12	Rockfish	9
Other species	11	Other species	16
Turbot	19		

\*\*Catcher vessel fleet = 58%; Catcher/Processor fleet = 74%

**Table 2. Estimates (thousands of pounds, *net weight*) of bycatch mortality of Pacific halibut (*Hippoglossus stenolepis*) by year, area, and fishery for 1990 through 1999. Estimates for 1999 are preliminary and subject to change as new information becomes available.**

<b>Region and Area</b>	<b>1990</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>
<b>AREA 2A</b>										
Joint Venture	2	2	0	0	0	0	0	0	0	0
Groundfish Trawl	308	308	385	385	385	548	548	548	548	548
Shrimp Trawl	82	82	43	43	43	50	50	50	50	50
Hook & Line	16	16	16	16	16	16	16	16	16	16
<b>Total</b>	<b>408</b>	<b>408</b>	<b>444</b>	<b>444</b>	<b>444</b>	<b>614</b>	<b>614</b>	<b>614</b>	<b>614</b>	<b>614</b>
<b>AREA 2B</b>										
Joint Venture	tr	tr	tr	tr	tr	tr	tr	tr	tr	tr
Domestic Trawl	1,679	1,992	1,745	1,661	1,219	1,522	299	215	213	204
<b>Total</b>	<b>1,679</b>	<b>1,992</b>	<b>1,745</b>	<b>1,661</b>	<b>1,219</b>	<b>1,522</b>	<b>299</b>	<b>215</b>	<b>213</b>	<b>204</b>
<b>AREA 2C</b>										
Crab Pot/Shrimp Trawl	303	303	303	303	303	303	303	303	303	303
Groundfish Trawl	27	46	32	1	13	1	2	46	4	2
Hook & Line (non-IFQ)	509	366	388	413	174	8	4	12	18	12
Hook & Line (IFQ)	-	-	-	-	-	3	3	3	3	3
Scallop Trawl	0	0	0	0	5	0	0	0	0	0
Chatham Str. Sablefish	12	7	3	10	8	8	8	8	8	8
Clarence Str. Sablefish	5	11	10	15	25	25	25	25	25	25
<b>Total</b>	<b>856</b>	<b>733</b>	<b>736</b>	<b>742</b>	<b>528</b>	<b>348</b>	<b>345</b>	<b>397</b>	<b>361</b>	<b>353</b>
<b>AREA 2 Subtotal</b>	<b>2,943</b>	<b>3,133</b>	<b>2,925</b>	<b>2,847</b>	<b>2,191</b>	<b>2,484</b>	<b>1,258</b>	<b>1,226</b>	<b>1,188</b>	<b>1,171</b>
<b>AREA 3A</b>										
Crab Pot/Shrimp Trawl	250	250	250	250	250	250	250	250	250	250
Groundfish Trawl	2,578	3,185	2,821	2,827	2,700	2,299	2,198	2,044	1,908	2,180
Hook & Line (non-IFQ)	1,238	1,404	1,580	1,200	913	267	159	534	360	297
Hook & Line (IFQ)	-	-	-	-	-	119	119	119	119	119
Groundfish Pot	48	4	17	14	17	18	7	8	15	31
Scallop Trawl	-	-	-	-	17	0	0	0	0	0
Pr Wm Sd Sablefish	-	-	-	-	10	10	10	10	10	10
<b>Total</b>	<b>4,114</b>	<b>4,843</b>	<b>4,668</b>	<b>4,291</b>	<b>3,907</b>	<b>2,963</b>	<b>2,743</b>	<b>2,965</b>	<b>2,662</b>	<b>2,887</b>
<b>AREA 3B</b>										
Crab Pot/Shrimp Trawl	50	50	50	50	50	50	50	50	50	50
Groundfish Trawl	1,726	1,307	1,207	720	906	1,445	1,690	1,201	1,130	1,199
Hook & Line (non-IFQ)	265	311	716	287	425	132	97	71	89	260
Hook & Line (IFQ)	-	-	-	-	-	116	116	116	116	116
Groundfish Pot	4	3	9	5	6	17	4	5	4	41
<b>Total</b>	<b>2,045</b>	<b>1,671</b>	<b>1,982</b>	<b>1,062</b>	<b>1,387</b>	<b>1,760</b>	<b>1,957</b>	<b>1,443</b>	<b>1,389</b>	<b>1,666</b>
<b>AREA 3 Subtotal</b>	<b>6,159</b>	<b>6,514</b>	<b>6,650</b>	<b>5,353</b>	<b>5,294</b>	<b>4,723</b>	<b>4,700</b>	<b>4,408</b>	<b>4,051</b>	<b>4,553</b>
<b>AREA 4</b>										
Crab Pot/Shrimp Trawl	300	300	300	300	300	300	300	300	300	300
Joint Venture	1,340	-	-	-	-	-	-	-	-	-
Groundfish Trawl	6,309	8,254	7,622	6,603	7,199	6,610	6,582	5,947	5,795	5,623
Hook & Line (non-IFQ)	627	1,464	2,775	861	1,944	1,731	1,535	1,564	1,409	910
Hook & Line (IFQ)	-	-	-	-	-	60	60	60	60	60
CDQ (all gears)	-	-	-	-	-	-	-	-	150	269
Groundfish Pot	4	4	21	tr	9	25	30	9	11	10
Scallop Trawl	-	0	0	0	14	0	0	0	0	0
<b>AREA 4 Subtotal</b>	<b>8,580</b>	<b>10,022</b>	<b>10,718</b>	<b>7,764</b>	<b>9,466</b>	<b>8,726</b>	<b>8,507</b>	<b>7,880</b>	<b>7,725</b>	<b>7,172</b>
<b>GRAND TOTAL</b>	<b>17,682</b>	<b>19,669</b>	<b>20,293</b>	<b>15,964</b>	<b>16,951</b>	<b>15,933</b>	<b>14,465</b>	<b>13,514</b>	<b>12,964</b>	<b>12,896</b>

**Table 3. Estimates (thousands of pounds, *net weight*) of bycatch mortality of Pacific halibut (*Hippoglossus stenolepis*) from all sources by IPHC regulatory area for 1990 through 1999. Estimates for 1999 are preliminary and subject to change as new information becomes available.**

Year	<i>Thousands of Pounds, net weight</i>				<i>Metric Tons, round weight</i>			
	Area 2	Area 3	Area 4	TOTAL	Area 2	Area 3	Area 4	TOTAL
1962	1,383	3,083	4,143	8,609	834	1,860	2,499	5,192
1963	1,283	6,102	2,038	9,423	774	3,681	1,229	5,683
1964	1,310	11,639	2,965	15,914	790	7,020	1,788	9,599
1965	1,640	16,539	3,182	21,361	989	9,976	1,919	12,884
1966	1,879	12,495	3,400	17,774	1,133	7,537	2,051	10,721
1967	2,091	9,528	4,718	16,337	1,261	5,747	2,846	9,854
1968	2,478	7,053	5,685	15,216	1,495	4,254	3,429	9,178
1969	2,651	4,980	7,599	15,230	1,599	3,004	4,584	9,186
1970	2,032	6,230	8,028	16,290	1,225	3,758	4,842	9,825
1971	2,284	4,341	13,095	19,720	1,377	2,618	7,899	11,894
1972	2,506	7,099	9,675	19,280	1,512	4,282	5,836	11,629
1973	2,357	7,147	8,029	17,533	1,422	4,311	4,843	10,575
1974	2,738	8,667	7,620	19,025	1,651	5,228	4,596	11,475
1975	3,025	5,231	3,650	11,906	1,825	3,155	2,202	7,181
1976	3,249	5,938	4,564	13,751	1,960	3,582	2,753	8,294
1977	2,874	5,988	2,914	11,776	1,733	3,612	1,758	7,103
1978	2,325	4,895	5,023	12,242	1,402	2,952	3,029	7,384
1979	3,149	6,715	5,419	15,282	1,899	4,050	3,269	9,218
1980	2,368	7,099	9,235	18,702	1,428	4,282	5,570	11,280
1981	2,169	6,282	6,408	14,859	1,308	3,789	3,865	8,963
1982	1,644	5,972	4,756	12,373	992	3,602	2,869	7,463
1983	1,723	4,892	4,269	10,883	1,039	2,951	2,575	6,564
1984	1,851	3,647	4,692	10,189	1,116	2,199	2,830	6,146
1985	1,915	1,578	4,207	7,700	1,155	952	2,538	4,644
1986	1,940	1,246	5,576	8,762	1,170	752	3,363	5,285
1987	2,428	3,113	5,738	11,279	1,465	1,878	3,461	6,803
1988	2,389	3,415	8,858	14,662	1,441	2,060	5,343	8,844
1989	2,278	4,085	7,282	13,646	1,374	2,464	4,393	8,231
1990	2,943	6,159	8,580	17,682	1,775	3,715	5,175	10,665
1991	3,133	6,514	10,022	19,669	1,890	3,929	6,045	11,864
1992	2,925	6,650	10,718	20,293	1,764	4,011	6,465	12,240
1993	2,847	5,353	7,764	15,964	1,717	3,229	4,683	9,629
1994	2,191	5,294	9,466	16,951	1,322	3,193	5,710	10,224
1995	2,484	4,723	8,726	15,933	1,498	2,849	5,263	9,610
1996	1,258	4,700	8,507	14,465	759	2,835	5,131	8,725
1997	1,226	4,408	7,880	13,514	739	2,659	4,753	8,151
1998	1,188	4,051	7,725	12,964	717	2,443	4,660	7,820
1999	1,171	4,553	7,172	12,896	706	2,746	4,326	7,779

**Table 4. Estimates (thousands of pounds, *net weight*) of bycatch mortality of Pacific halibut (*Hippoglossus stenolepis*) from all sources by IPHC regulatory subarea for 1990 through 1999. Estimates for 1999 are preliminary and subject to change as new information becomes available.**

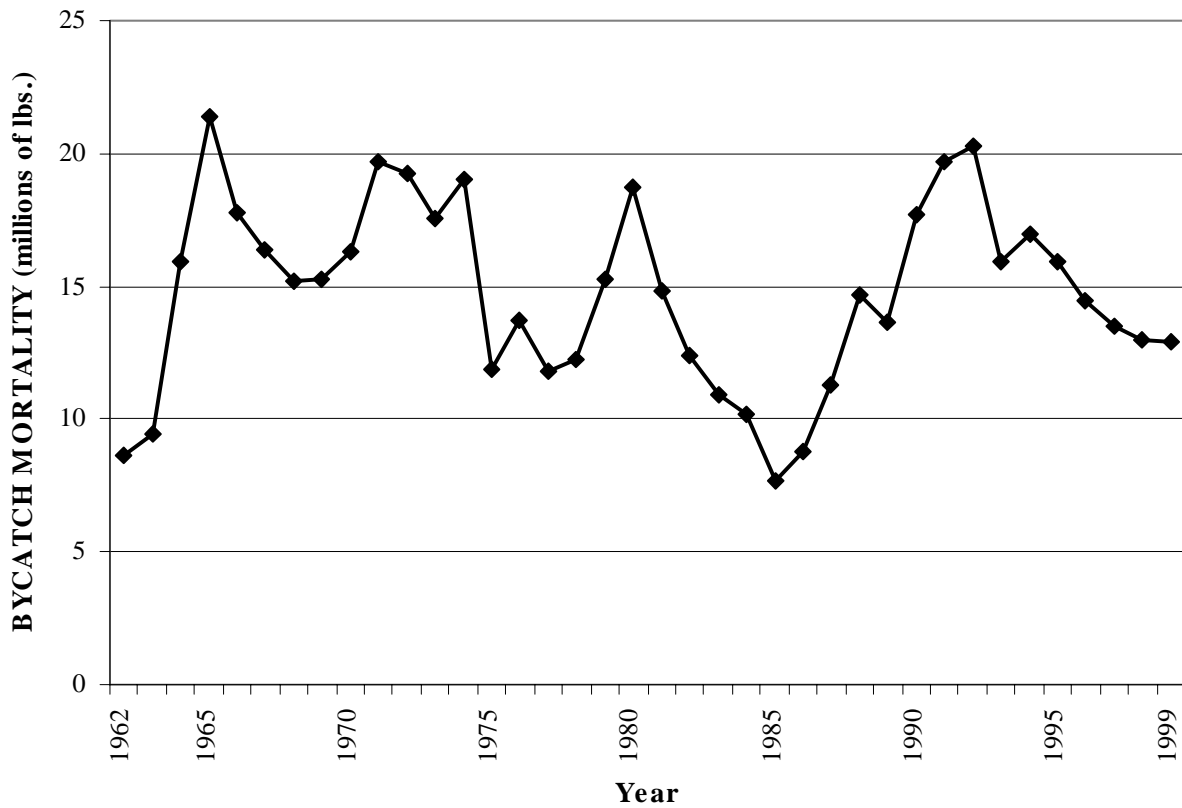
Year	<i>Thousands of Pounds, net weight</i>							<i>Metric Tons, round weight</i>						
	Area 2A	Area 2B	Area 2C	Area 3A	Area 3B	Area 4	Total	Area 2A	Area 2B	Area 2C	Area 3A	Area 3B	Area 4	Total
1962	-	1,176	207	1,919	1,164	4,143	8,609	-	709	125	1,157	702	2,499	5,192
1963	-	1,077	206	3,314	2,788	2,038	9,423	-	649	124	1,999	1,682	1,229	5,683
1964	-	1,105	205	9,370	2,269	2,965	15,914	-	667	124	5,652	1,369	1,788	9,599
1965	-	1,435	205	6,097	10,442	3,182	21,361	-	866	124	3,678	6,298	1,919	12,884
1966	-	1,666	213	4,513	7,982	3,400	17,774	-	1,005	128	2,722	4,815	2,051	10,721
1967	-	1,652	439	4,633	4,895	4,718	16,337	-	996	265	2,795	2,953	2,846	9,854
1968	-	1,963	515	5,476	1,577	5,685	15,216	-	1,184	311	3,303	951	3,429	9,178
1969	-	2,183	468	3,806	1,174	7,599	15,230	-	1,317	282	2,296	708	4,584	9,186
1970	-	1,470	562	3,389	2,841	8,028	16,290	-	886	339	2,044	1,714	4,842	9,825
1971	-	1,745	539	2,974	1,367	13,095	19,720	-	1,052	325	1,794	825	7,899	11,894
1972	-	1,750	756	5,406	1,693	9,675	19,280	-	1,056	456	3,261	1,021	5,836	11,629
1973	-	1,509	848	4,452	2,695	8,029	17,533	-	910	511	2,685	1,626	4,843	10,575
1974	477	1,729	532	5,247	3,420	7,620	18,548	288	1,043	321	3,165	2,063	4,596	11,475
1975	477	1,909	639	3,158	2,073	3,650	11,429	288	1,151	385	1,905	1,250	2,202	7,181
1976	477	2,064	708	3,495	2,443	4,564	13,274	288	1,245	427	2,108	1,474	2,753	8,294
1977	477	1,817	580	4,094	1,894	2,914	11,776	288	1,096	350	2,469	1,142	1,758	7,103
1978	477	1,471	377	3,055	1,840	5,023	12,242	288	887	227	1,843	1,110	3,029	7,384
1979	476	1,852	821	5,780	935	5,419	15,282	287	1,117	495	3,486	564	3,269	9,218
1980	476	1,372	520	5,852	1,246	9,235	18,702	287	828	314	3,530	752	5,570	11,280
1981	475	1,188	507	4,720	1,563	6,408	14,859	287	716	306	2,847	942	3,865	8,963
1982	475	867	302	3,797	2,175	4,756	12,373	287	523	182	2,290	1,312	2,869	7,463
1983	476	943	304	2,957	1,935	4,269	10,883	287	568	183	1,784	1,167	2,575	6,564
1984	475	1,074	302	2,140	1,507	4,692	10,189	287	648	182	1,290	909	2,830	6,146
1985	475	1,139	301	1,001	577	4,207	7,700	287	687	182	604	348	2,538	4,644
1986	476	1,161	303	836	410	5,576	8,762	287	700	183	504	247	3,363	5,285
1987	476	1,649	303	2,240	873	5,738	11,279	287	995	183	1,351	527	3,461	6,803
1988	477	1,609	303	3,365	50	8,858	14,662	288	971	183	2,030	30	5,343	8,844
1989	477	1,498	303	3,267	818	7,282	13,646	288	904	183	1,971	494	4,393	8,231
1990	408	1,679	856	4,114	2,045	8,580	17,682	246	1,013	516	2,481	1,233	5,175	10,665
1991	408	1,992	733	4,843	1,671	10,022	19,669	246	1,202	442	2,921	1,008	6,045	11,864
1992	444	1,745	736	4,668	1,982	10,718	20,293	268	1,053	444	2,816	1,195	6,465	12,240
1993	444	1,661	742	4,291	1,062	7,764	15,964	268	1,002	448	2,588	641	4,683	9,629
1994	444	1,219	528	3,907	1,387	9,466	16,951	268	735	318	2,357	837	5,710	10,224
1995	614	1,522	348	2,963	1,760	8,726	15,933	370	918	210	1,787	1,062	5,263	9,610
1996	614	299	345	2,743	1,957	8,507	14,465	370	180	208	1,655	1,180	5,131	8,725
1997	614	215	397	2,965	1,443	7,880	13,514	370	130	239	1,788	870	4,753	8,151
1998	614	213	361	2,662	1,389	7,725	12,964	370	128	218	1,606	838	4,660	7,820
1999	614	204	353	2,887	1,666	7,172	12,896	370	123	213	1,741	1,005	4,326	7,779

**Table 5. Estimates (thousands of pounds, *net weight*) of bycatch mortality of Pacific halibut (*Hippoglossus stenolepis*) from all sources by geographic region of the coast for 1990 through 1999. Estimates for 1999 are preliminary and subject to change as new information becomes available.**

Year	<i>Thousands of Pounds, net weight</i>					<i>Metric Tons, round weight</i>				
	WA OR CA	British Columbia	Gulf of Alaska	Bering Sea & Aleu.	Total	WA OR CA	British Columbia	Gulf of Alaska	Bering Sea & Aleu.	Total
1962	-	1,176	3,290	4,143	8,609	-	709	1,984	2,499	5,192
1963	-	1,077	6,308	2,038	9,423	-	649	3,805	1,229	5,683
1964	-	1,105	11,844	2,965	15,914	-	667	7,144	1,788	9,599
1965	-	1,435	16,744	3,182	21,361	-	866	10,100	1,919	12,884
1966	-	1,666	12,708	3,400	17,774	-	1,005	7,665	2,051	10,721
1967	-	1,652	9,967	4,718	16,337	-	996	6,012	2,846	9,854
1968	-	1,963	7,568	5,685	15,216	-	1,184	4,565	3,429	9,178
1969	-	2,183	5,448	7,599	15,230	-	1,317	3,286	4,584	9,186
1970	-	1,470	6,792	8,028	16,290	-	886	4,097	4,842	9,825
1971	-	1,745	4,880	13,095	19,720	-	1,052	2,943	7,899	11,894
1972	-	1,750	7,855	9,675	19,280	-	1,056	4,738	5,836	11,629
1973	-	1,509	7,995	8,029	17,533	-	910	4,822	4,843	10,575
1974	477	1,729	9,199	7,620	19,025	288	1,043	5,549	4,596	11,475
1975	477	1,909	5,870	3,650	11,906	288	1,151	3,541	2,202	7,181
1976	477	2,064	6,646	4,564	13,751	288	1,245	4,009	2,753	8,294
1977	477	1,817	6,568	2,914	11,776	288	1,096	3,962	1,758	7,103
1978	477	1,471	5,272	5,023	12,242	288	887	3,180	3,029	7,384
1979	476	1,852	7,536	5,419	15,282	287	1,117	4,545	3,269	9,218
1980	476	1,372	7,619	9,235	18,702	287	828	4,595	5,570	11,280
1981	475	1,188	6,789	6,408	14,859	287	716	4,095	3,865	8,963
1982	475	867	6,274	4,756	12,373	287	523	3,784	2,869	7,463
1983	476	943	5,196	4,269	10,883	287	568	3,134	2,575	6,564
1984	475	1,074	3,949	4,692	10,189	287	648	2,382	2,830	6,146
1985	475	1,139	1,879	4,207	7,700	287	687	1,133	2,538	4,644
1986	476	1,161	1,549	5,576	8,762	287	700	934	3,363	5,285
1987	476	1,649	3,416	5,738	11,279	287	995	2,060	3,461	6,803
1988	477	1,609	3,718	8,858	14,662	288	971	2,243	5,343	8,844
1989	477	1,498	4,388	7,282	13,646	288	904	2,647	4,393	8,231
1990	408	1,679	7,015	8,580	17,682	246	1,013	4,231	5,175	10,665
1991	408	1,992	7,247	10,022	19,669	246	1,202	4,371	6,045	11,864
1992	444	1,745	7,386	10,718	20,293	268	1,053	4,455	6,465	12,240
1993	444	1,661	6,095	7,764	15,964	268	1,002	3,676	4,683	9,629
1994	444	1,219	5,822	9,466	16,951	268	735	3,512	5,710	10,224
1995	614	1,522	5,071	8,726	15,933	370	918	3,059	5,263	9,610
1996	614	299	5,045	8,507	14,465	370	180	3,043	5,131	8,725
1997	614	215	4,805	7,880	13,514	370	130	2,898	4,753	8,151
1998	614	213	4,412	7,725	12,964	370	128	2,661	4,660	7,820
1999	614	204	4,906	7,172	12,896	370	123	2,959	4,326	7,779

**Table 6. Estimates (thousands of pounds, *net weight*) of bycatch mortality of Pacific halibut (*Hippoglossus stenolepis*) from the Alaskan groundfish fishery for 1990 through 1999. Estimates for 1999 are preliminary and subject to change as new information becomes available. All federally managed fisheries are represented, including the IFQ sablefish fishery. However, fisheries occurring entirely in state waters (e.g., Chatham Strait sablefish fishery) are excluded.**

Area & Year	<i>Thousands of Pounds, net weight</i>				<i>Metric Tons, round weight</i>			
	Trawls	H&L	Pot	Total	Trawls	H&L	Pot	Total
<i>Bering Sea/Aleutians</i>								
1990	6,309	627	4	6,940	3,805	378	2	4,186
1991	8,254	1,464	4	9,722	4,979	883	2	5,864
1992	7,622	2,775	21	10,418	4,597	1,674	13	6,284
1993	6,603	861	tr	7,464	3,983	519	tr	4,502
1994	7,199	1,944	9	9,152	4,342	1,173	5	5,520
1995	6,610	1,731	25	8,366	3,987	1,044	15	5,046
1996	6,582	1,535	30	8,147	3,970	926	18	4,914
1997	5,947	1,564	9	7,520	3,587	943	5	4,536
1998	5,795	1,409	11	7,215	3,495	850	7	4,352
1999	5,623	910	10	6,543	3,392	549	6	3,947
<i>Gulf of Alaska</i>								
1990	4,331	2,012	52	6,395	2,612	1,214	31	3,857
1991	4,538	2,081	7	6,626	2,737	1,255	4	3,997
1992	4,060	2,684	26	6,770	2,449	1,619	16	4,083
1993	3,548	1,900	19	5,467	2,140	1,146	19	3,305
1994	3,619	1,512	23	5,154	2,183	912	14	3,109
1995	3,206	645	35	3,886	1,934	389	21	2,344
1996	3,890	498	11	4,399	2,346	300	7	2,653
1997	3,291	855	13	4,159	1,985	516	8	2,509
1998	3,042	705	19	3,766	1,835	425	11	2,272
1999	3,381	807	72	4,260	2,039	487	43	2,570
<i>Alaska Total</i>								
1990	10,640	2,639	56	13,335	6,418	1,592	34	8,043
1991	12,792	3,545	11	16,348	7,716	2,138	7	9,861
1992	11,682	5,459	47	17,188	7,046	3,293	28	10,367
1993	10,151	2,761	19	12,931	6,123	1,665	19	7,807
1994	10,818	3,456	32	14,306	6,525	2,085	19	8,629
1995	9,816	2,376	60	12,252	5,921	1,433	36	7,390
1996	10,472	2,033	41	12,546	6,316	1,226	25	7,567
1997	9,238	2,419	22	11,679	5,572	1,459	13	7,044
1998	8,837	2,114	30	10,981	5,330	1,275	18	6,623
1999	9,004	1,717	82	10,803	5,431	1,036	49	6,516



**Figure 1. Historical trend of Pacific halibut bycatch mortality (millions of pounds, net weight) during 1962-1999 from all sources.**



# **Results of the 1998 and 1999 Bering Sea Trawl Fishery's Prohibited Species Donation (PSD) Program**

by

Gregg H. Williams

NMFS issued a permit to Northwest Food Strategies (NFS) of Bainbridge Island, Washington to operate a program which acquires bycaught halibut to donate to the needy. The halibut collected for this program is restricted to fish landed by shore-based trawlers that cannot sort at sea, limited to deliveries at three Dutch Harbor processing plants, and limited to a total retention of 50,000 pounds annually. The program started on July 13, 1998 and concludes on December 31, 2000. NMFS Enforcement Division has monitored the halibut donated to this Prohibited Species Donation (PSD) program and has reported no incidents.

## **Final 1998 Results**

During 1998, 21,196 pounds (23,356 pounds gross) of frozen, headed & gutted halibut were received by NFS from UniSea and Alyeska Seafoods in Dutch Harbor. Westward Seafoods did not participate as a result of processing constraints. The program occurred only during the pollock "B" season in September due to the lateness of the program's implementation. The fish were delivered to Seafreeze in Seattle, where they were weighed in totes, and the net weight estimated. Seafreeze cut the fish into steaks, sleeved, and repackaged the product for delivery to Food Lifeline, a Seattle-area food bank.

Surefish, an independent seafood testing laboratory, was asked to evaluate the fish prior to the steaking operation. Surefish reported that almost all of the fish had firm flesh and a sea fresh odor. A small number of fish were reported to have soft flesh and a sour belly. As a quality control precaution, NFS requested that all belly flaps be trimmed off and that Seafreeze discard any degraded fish at the time the fish were cut into steaks. This resulted in a lower product recovery rate, but a consistently higher grade finished product. The finished product weight was 16,437 pounds net. Food Lifeline estimates that the halibut provided approximately 65,000 meals for people served by hunger relief agencies in the Puget Sound area.

## **Preliminary 1999 Results**

As of November 1, 1999, the amount of halibut collected by NFS was 4,476 pounds net. As in 1998, only two of the three eligible processors participated in 1999. During the pollock "A" season in January-February, 1,886 pounds net (2,156 pounds gross) were landed; 2,590 pounds net (2,880 pounds gross) came in during the "B" season. UniSea provided 1,476 pounds net and 2,286 pounds net during the "A" and "B" seasons, respectively. The total from Alyeska was much less, 410 pounds in "A" season and 304 pounds net in "B" season. Processing and inspection was the same as in 1998. The program continues through the remainder of 1999, but no additional fish is expected.



# **The 1999 Groundfish Fishery off Alaska: Groundfish Catches, Halibut Bycatches, and Other Information**

by

Gregg H. Williams

## **Introduction**

This document summarizes the 1999 groundfish fishery off Alaska and the resulting bycatch of Pacific halibut (*Hippoglossus stenolepis*). Most of the Alaskan groundfish fisheries were managed with mortality limits that resulted in the closure of some fisheries before the total allowable catch (TAC) of target species was attained. The following sections describe (1) preliminary 1999 groundfish catches for the Gulf of Alaska (GOA) and the Bering Sea/Aleutian Islands (BSAI); (2) halibut bycatch limits and bycatch related fishery closures; (3) preliminary estimates of bycatch by area and fishery; and (4) the NMFS Vessel Incentive Program (VIP) for groundfish vessels fishing off Alaska. The information in this document pertaining to Alaska was obtained from reports generated by the staff of the Alaska Region office of NMFS in Juneau and made available to the public via the Internet. **The tables in this report include data through November 20.**

## **Groundfish Catches**

### **Gulf of Alaska**

Table 1 shows preliminary groundfish catches for the GOA through November 20. Figure 1 depicts the NMFS groundfish statistical areas for the GOA region. The total catch of 227,450 t, or 74% of the groundfish quota for 1999, was seven percent lower than the 1998 catch. Much of the decrease is attributable to a lower TAC for pollock in 1999. The TAC for cod was up slightly from 1998. The GOA closed to bottom trawling on October 16, but midwater fishing for pollock could continue for much of the rest of 1999. No foreign or joint venture fishing was allowed in the GOA in 1999.

### **Bering Sea/Aleutian Islands**

Figure 2 shows the NMFS groundfish statistical areas for the BSAI region. A total of 1,298,852 t of groundfish were harvested in 1999 as of November 20 (Table 2). This catch represents 73% of the groundfish TAC, less than in 1998. Reduced catches of pollock, cod, and yellowfin sole are the main contributors to the lower overall catch in 1998. This year was also the first year under the American Fisheries Act (AFA), which established fishing cooperatives for pollock. The pollock cooperative appears to have caught less pollock than the offshore sector did in 1998, but the fishery was able to fish throughout the year to take advantage of marketing opportunities.

## 1999 Halibut Bycatch Limits and Fishery Closures

Tables 3 and 4 show the division of the halibut mortality limits for the groundfish fisheries in the GOA and BSAI as adopted by the North Pacific Fishery Management Council (Council). As in previous years, the Council apportioned the trawl and fixed gear limits in seasonal or quarterly amounts. NMFS took actions later in the year to reassign portions of the limits from fisheries that were closed to fisheries that were running short of their limit.

### Gulf of Alaska

For the GOA, the Council used a framework approach to set the trawl limit of 2,000 t and fixed gear limit of 300 t (Table 3). As in 1997 and 1998, the GOA trawl apportionment was divided into the shallow water and deep water complexes. Although many individual species reached their TAC and were closed, the bottom trawl fishery ultimately closed for the year on October 16.

Bycatch management in the GOA hook and line fishery in 1999 was similar to 1997 and 1998. With the advent of the sablefish (and halibut) Individual Fishing Quota (IFQ) programs in 1995, industry and managers believed that most halibut which were taken as bycatch in the sablefish fishery in past years would now be retained as a directed commercial catch. Thus, halibut bycatch mortality limits could be set lower than the 750 t annually set during 1990-1994, but exactly how much lower was uncertain. An additional concern was that the IFQ fishery could turn into a “race for bycatch” by fishermen if it was perceived that the bycatch limit would be reached before all IFQs were caught. As a result, the Council allowed the sablefish IFQ fishery to be exempt from the fixed gear bycatch limit in 1995 and has continued this policy through 1999. The limit was then set at 300 t for all other fixed gear fisheries, which is an amount roughly similar to bycatch levels of past years for those fisheries.

The fixed gear fisheries targeted primarily on Pacific cod in the central and western GOA during the winter and rockfish in the eastern GOA in the spring. The first seasonal mortality limit was reached on April 24, thus closing the fishery until May 1. The hook & line fishery reopened for a few days in May, closing for the year on May 18. All pot and jig gear fisheries are exempt from mortality cap closures. The sablefish fishery closed as scheduled on November 15.

### Bering Sea/Aleutians

Halibut bycatch mortality limits for the 1999 BSAI trawl and fixed gear fisheries are listed in Table 4. The list represents fishery categories defined and implemented by BSAI Fishery Management Plan (FMP) Amendment 21. Limits for the individual fisheries were based on “need”, as recommended by industry representatives. The bycatch limits were apportioned by quarter or season. When a limit was reached, the entire BSAI was closed to further fishing until the next season, or for the remainder of the year. Amendment 57 reduced the trawl fishery limit from 3,775 t to 3,675 t when the NPFMC decided to prohibit the use of bottom trawl gear in the pollock fishery. For 1999, the bycatch limits for most trawl fisheries remained the same as 1998. The lone exception was the “pollock/atka mackerel/other species” category, which was reduced by 100 t.

As in past years, the BSAI fixed gear fishery operated with a bycatch limit of 900 t. The Pacific cod hook-&-line limit was divided into three seasonal apportionments, with the summer

apportionment intentionally “zeroed out” to eliminate any cod fishing during the traditionally high-bycatch period. All pot and jig fisheries are exempt from halibut mortality closures. The sablefish hook and line fishery closed on November 15 as scheduled.

Also in 1999, the Multispecies Community Development Quota (MSCDQ) began. The program evolved from the previously established pollock CDQ program, in which 7.5% of the pollock TAC was allotted to specified communities in the BSAI region. Under the MSCDQ program, 10% of all groundfish TACs were awarded to these communities, as well as a proportional share of all prohibited species bycatch limits to support their fishing efforts. Catch and bycatch by the MSCDQ operations are included in all tables shown in this report.

## **Halibut Bycatch And Mortality**

### **Gulf of Alaska**

In 1999, GOA trawl mortality reached 2,127 t by October 16, about a week later than in 1998. As in past years, the shallow water fisheries (cod, flatfish) took almost two-thirds of the total trawl bycatch mortality (Table 5). The hook & line fishery, excluding the sablefish IFQ fishery, exceeded the halibut mortality limit of 300 t by 15% (Table 6). Most of this was taken in the spring fishery for cod.

### **Bering Sea/Aleutians**

In the BSAI, 3,464 t of halibut mortality was taken in the trawl fishery (Table 7), which was six percent below the mortality limit. This figure is expected to rise as late-year fishing is reported. NMFS was expected to reallocate unused cod fishery bycatch to other fisheries, probably flatfish. The fixed gear fisheries (excluding sablefish IFQ) were estimated to have taken 570 t, of which 485 (or 85%) was taken by the Pacific cod fishery (Table 8).

Only the “rock sole/flathead sole/other flatfish” fisheries were closed in 1999 due to reaching their halibut mortality cap. Closures occurred during both the earlier seasons, but the final year-end closure occurred on August 31.

## **Vessel Incentive Program**

In 1991 a vessel incentive program (VIP) was implemented, under Amendments 16 and 21 to the groundfish fishery management plans, to help reduce halibut bycatch. The objective was to make individual vessels accountable for their own bycatch by specifying a predetermined bycatch rate. The program was continued in 1999 with the rates shown in Table 9. The rates have remained unchanged for several years. The rate is applied to each fishing month. The fisheries are broken down into the following trawl categories: BSAI midwater pollock, bottom pollock, yellowfin sole, other trawl, and GOA midwater pollock, and other trawl. If the standard was exceeded, the vessel is fined, perhaps severely if a repeat offender. Enforcement action is taken post-season.

**Table 1. Groundfish catch (metric tons) in the Gulf of Alaska in 1999, based on reports through November 20, 1999. Source: NMFS/AKR web site.**

<b>Species/Species Group</b>	<b>Trawl</b>	<b>H &amp; L</b>	<b>Pot</b>	<b>Total</b>	<b>TAC</b>	<b>% Taken</b>
Arrowtooth Flounder	14,740	1,305	22	16,067	35,000	46
Atka Mackerel	261	1	0	262	600	44
Deep Water Flatfish	2,252	34	0	2,286	6,050	38
Demersal Shelf Rockfish	0	270	0	270	560	48
Flathead Sole	860	30	0	890	9,040	10
Northern Rockfish	5,397	1	1	5,399	4,990	108
Other Rockfish	681	107	0	788	5,270	15
Other Species	2,084	1,494	244	3,822	14,600	26
Pacific Cod - Inshore	35,929	11,142	15,148	62,219	61,052	102
Pacific Cod - Offshore	1,220	1,252	4,058	6,530	6,783	96
Pacific Ocean Perch	10,477	0	0	10,477	12,590	83
Pelagic Shelf Rockfish	4,618	38	2	4,658	4,880	96
Pollock	93,214	150	5	93,369	100,920	93
Rex Sole	3,057	0	0	3,057	9,150	33
Sablefish (Hook & Line)	0	10,535	6	10,541	10,953	96
Sablefish (Trawl)	1,681	0	0	1,681	1,747	96
Shallow Water Flatfish	2,477	62	6	2,545	18,770	14
Shortraker/Rougheye	727	582	0	1,309	1,590	82
Thornyhead	792	488	0	1,280	1,990	64
<b>Grand Total</b>	<b>180,467</b>	<b>27,491</b>	<b>19,492</b>	<b>227,450</b>	<b>306,535</b>	<b>74</b>

**Table 2. Groundfish catch (metric tons) in the Bering Sea/Aleutian Islands in 1999, based on reports through November 20, 1999. Source: NMFS/AKR web site.**

<b>Species/Species Group</b>	<b>Trawl</b>	<b>H &amp; L</b>	<b>Pot</b>	<b>Total</b>	<b>TAC</b>	<b>% Taken</b>
Arrowtooth Flounder	9,072	1,431	24	10,527	114,201	9
Atka Mackerel (Non-Jig)	53,403	71	11	53,485	61,263	87
Atka Mackerel (Jig)	0	0	0	0	157	0
Flathead Sole	17,558	252	0	17,810	65,705	27
Greenland Turbot	1,715	3,874	37	5,626	7,651	74
Other Flatfish	15,053	95	1	15,149	130,900	12
Other Red Rockfish	172	38	1	211	227	93
Other Rockfish	560	209	3	772	897	86
Other Species	8,976	8,702	739	18,417	27,931	66
Pacific Cod (Fixed Gear)	0	77,229	16,127	93,356	91,300	102
Pacific Cod (Jig)	0	163	0	163	475	34
Pacific Cod (Trawl - C/P)	31,102	0	0	31,102	33,475	93
Pacific Cod (Trawl - C/V)	35,990	0	0	35,990	38,475	94
Pacific Ocean Perch	12,236	0	0	12,236	13,677	90
Pollock - AFA CP	340,441	0	0	340,441	340,364	100
Pollock - AFA Mothership	83,550	0	0	83,550	85,090	98
Pollock - Incidental Catch	39,404	3,346	25	42,775	44,590	96
Pollock - Inshore	421,911	0	0	421,911	425,457	99
Rock Sole	40,446	60	2	40,508	102,000	40
Sablefish (Fixed Gear)	0	888	31	918	1,364	67
Sablefish (Trawl)	280	0	0	280	862	33
Sharpchin/Northern	5,238	35	0	5,273	3,913	135
Shorthead/Rougheye	340	144	0	484	893	54
Squid	414	0	0	414	1,675	25
Yellowfin Sole	67,231	151	71	67,453	176,783	38
<b>Grand Total</b>	<b>1,185,092</b>	<b>96,688</b>	<b>17,072</b>	<b>1,298,852</b>	<b>1,769,325</b>	<b>73</b>

**Table 3. Halibut bycatch mortality limits (metric tons, round weight) for the 1999 Gulf of Alaska groundfish fisheries. Exempted fisheries for 1999 include groundfish pots, jigs, and the IFQ hook-&-line fishery for sablefish.**

<b>Gear/Time Period</b>	<b>1999 Mortality Limit</b>
<b>Trawl</b>	<b>2,000</b>
Shallow Water complex <sup>1</sup>	
January 20 - March 31	500
April 1 - June 30	100
July 1 - September 30	200
October 1 - December 31	remainder
Deep Water complex <sup>2</sup>	
January 20 - March 31	100
April 1 - June 30	300
July 1 - September 30	400
October 1 - December 31	remainder
<b>Hook-&amp;-Line</b>	<b>300</b>
All species except Demersal shelf rockfish and sablefish	
January 1 - April 30	250
May 1 - August 31	15
September 1 - December 31	25
Demersal shelf rockfish (Southeast only)	10
<b>Groundfish pots, jigs</b>	<b>exempt</b>
<b>Grand total</b>	<b>2,300</b>

<sup>1</sup>Shallow water complex: pollock, Pacific cod, shallow water flatfish, Atka mackerel, and other species.

<sup>2</sup>Deep water complex: rockfish, sablefish, deep water flatfish, flathead sole, and arrowtooth flounder.

**Table 4. Halibut bycatch mortality limits (metric tons, round weight) for the 1999 Bering Sea/Aleutian Islands groundfish fisheries. Exempted fisheries for 1999 include groundfish pots, jigs, and the IFQ hook-&-line fishery for sablefish.**

<b>Gear/Target /Time Period</b>	<b>1998 Mortality Limit</b>	<b>1999 Mortality Limit</b>
<i>Trawl</i>		
<b>Yellowfin sole</b>	<b>1,005</b>	<b>1,005</b>
January 20 - March 31	285	285
April 1 - May 10	210	210
May 11 - August 14	100	100
August 15 - December 31	410	410
<b>Rock sole/Other flatfish</b>	<b>795</b>	<b>795</b>
January 20 - March 29	485	485
March 30 - June 28	130	130
June 29 - December 31	180	180
<b>Turbot/Sablefish/Arrowtooth flndr.</b>	<b>0</b>	<b>0</b>
<b>Rockfish</b>	<b>75</b>	<b>75</b>
January 20 - June 28	0	-
June 29 - December 31	75	-
July 11 - December 31	-	75
<b>Pacific cod</b>	<b>1,550</b>	<b>1,550</b>
<b>Pollock/Atka mackerel/Other sp.</b>	<b>350</b>	<b>250</b>
January 20 - April 15	300	-
April 16 - December 31	50	-
<b>Total Trawl Mortality Limit</b>	<b>3,775</b>	<b>3,675</b>
<i>Fixed Gear</i>		
<b>Hook-&amp;-Line Pacific cod</b>	<b>810</b>	<b>810</b>
January 1 - April 30	495	495
May 1 - September 14	40	0
September 15 - December 31 <sup>1</sup>	275	315
<b>Other Hook-&amp;-Line<sup>2</sup></b>	<b>90</b>	<b>90</b>
May 1 - September 14	-	45
September 15 - December 31	-	45
<b>Groundfish Pot and Jig</b>	<b>Exempt</b>	<b>exempt</b>
<b>Total Fixed Gear Mortality Limit</b>	<b>900</b>	<b>900</b>
<b>Grand total</b>	<b>4,675</b>	<b>4,675</b>

<sup>1</sup>Unused PSC from the first trimester will be rolled into the third trimester.

<sup>2</sup>For all practical purposes, this only includes rockfish and turbot. The sablefish IFQ fishery is exempt from the 1999 bycatch limits.

**Table 5. Estimated 1999 bycatch mortality (metric tons, round weight) in the Gulf of Alaska trawl fishery. Source: NMFS/AKR web site, report dated November 24, 1999.**

Ending Date	Shallow Water Complex <sup>1</sup>		Deep Water Complex <sup>2</sup>		Grand Total
	Bycatch Mortality	Cumulative Total	Bycatch Mortality	Cumulative Total	
1/23/99	6	6	1	1	7
1/30/99	9	15	4	5	20
2/6/99	15	30	2	7	37
2/13/99	19	49	2	9	57
2/20/99	71	120	2	11	131
2/27/99	177	297	0	11	308
3/6/99	221	518	4	15	533
3/13/99	180	698	9	24	721
3/20/99	49	747	24	48	794
3/27/99	0	747	46	94	840
4/3/99	0	747	25	119	865
4/10/99	0	747	86	204	951
4/17/99	0	747	77	282	1,028
4/24/99	0	747	101	383	1,129
5/1/99	0	747	8	391	1,137
5/22/99	0	747	0	391	1,137
5/29/99	0	747	0	391	1,138
6/5/99	1	748	0	391	1,139
6/12/99	2	750	0	391	1,141
6/19/99	0	750	0	391	1,141
7/10/99	0	750	103	494	1,244
7/17/99	0	750	103	596	1,346
7/24/99	0	750	36	632	1,382
8/7/99	0	750	37	669	1,419
8/14/99	0	750	61	730	1,480
8/21/99	0	750	6	736	1,486
9/4/99	0	751	0	736	1,486
9/18/99	1	752	0	736	1,488
9/25/99	2	753	0	736	1,489
10/2/99	104	858	1	737	1,595
10/9/99	401	1,258	43	780	2,039
10/16/99	48	1,307	36	817	2,123
10/23/99	4	1,310	0	817	2,127

<sup>1</sup>Shallow Water Complex = pollock, Pacific cod, shallow-water flatfish, flathead sole, Atka mackerel, and “other species.”

<sup>2</sup>Deep Water Complex = sablefish, rockfish, rex sole, arrowtooth flounder, and deep-water flatfish.

**Table 6. Estimated 1999 weekly bycatch mortality (metric tons, round weight) in the Gulf of Alaska non-IFQ hook and line fisheries. Source: NMFS/AKR web site, report dated November 24, 1999.**

<b>Week Ending Date</b>	<b>Est. Byc. Mortality (t)</b>	<b>Cumulative Total</b>	<b>Week Ending Date</b>	<b>Est. Byc. Mortality (t)</b>	<b>Cumulative Total</b>
1/2/99	3	3	7/3/99	0	340
1/9/99	9	12	7/10/99	0	340
1/16/99	14	26	7/17/99	0	341
1/23/99	12	38	7/24/99	2	343
1/30/99	17	55	7/31/99	0	343
2/6/99	14	69	8/7/99	0	343
2/13/99	10	79	8/14/99	0	343
2/20/99	17	96	8/21/99	0	343
2/27/99	54	150	8/28/99	0	343
3/6/99	50	199	9/4/99	0	343
3/13/99	35	235	9/11/99	0	344
3/20/99	3	238	9/18/99	0	344
3/27/99	1	238	9/25/99	0	344
4/3/99	0	239	10/2/99	0	344
4/10/99	0	239	10/9/99	0	344
4/17/99	1	240	10/16/99	0	344
4/24/99	97	337	10/23/99	0	345
5/1/99	0	337	10/30/99	0	345
5/8/99	0	337	11/6/99	0	345
5/15/99	0	338	11/13/99	1	346
5/22/99	0	338	11/20/99	1	346
5/29/99	0	339			
6/5/99	0	339			
6/12/99	0	339			
6/19/99	0	340			
6/26/99	0	340			

**Table 7. Estimated 1999 bycatch mortality (metric tons, round weight) in the Bering Sea/Aleutians trawl fisheries. Source: NMFS/AKR web site, report dated November 24, 1999.**

<b>Week Ending Date</b>	<b>Pacific cod</b>	<b>Yellowfin sole</b>	<b>Rock sole/ Flathead sole/ Other flatfish</b>	<b>Pollock/ Atka mack/ Other sp.</b>	<b>Rockfish</b>	<b>Arrowtooth/ Sablefish/ Turbot</b>
1/23/99	31	0	25	5	0	0
1/30/99	124	4	17	9	0	0
2/6/99	51	0	37	17	0	0
2/13/99	56	0	89	18	0	0
2/20/99	69	0	77	7	0	0
2/27/99	110	0	150	8	0	0
3/6/99	225	23	8	12	0	0
3/13/99	111	21	5	2	1	0
3/20/99	87	20	6	1	0	0
3/27/99	40	19	17	0	0	0
4/3/99	83	34	39	0	0	0
4/10/99	60	24	40	0	1	0
4/17/99	58	34	67	0	0	0
4/24/99	75	20	56	1	0	4
5/1/99	125	5	7	1	0	0
5/8/99	16	19	0	40	0	3
5/15/99	0	64	0	21	0	2
5/22/99	2	15	0	0	0	31
5/29/99	0	37	0	2	0	3
6/5/99	0	10	0	0	0	4
6/12/99	0	17	0	0	0	0
6/19/99	0	13	0	0	0	0
6/26/99	0	23	0	0	0	0
7/3/99	0	4	0	0	0	0
7/10/99	0	0	21	0	14	3
7/17/99	0	0	27	0	3	7
7/24/99	0	1	28	0	5	4
7/31/99	0	0	50	2	29	2
8/7/99	0	0	20	3	0	5
8/14/99	0	3	18	4	0	0
8/21/99	0	78	15	3	0	3
8/28/99	0	90	21	4	0	6
9/4/99	0	5	4	53	0	0
9/11/99	0	21	0	19	0	0
9/18/99	0	27	0	8	0	0
9/25/99	0	13	0	17	0	0
10/2/99	0	55	2	7	0	0
10/9/99	2	91	0	2	0	0
10/16/99	1	74	2	14	0	1
10/23/99	2	0	0	1	0	0
10/30/99	0	0	0	1	0	0
11/6/99	0	0	0	0	0	0
11/13/99	0	0	0	9	0	0
11/20/99	4	0	0	0	0	0
<b>Total</b>	<b>1,333</b>	<b>864</b>	<b>848</b>	<b>290</b>	<b>53</b>	<b>76</b>

**Table 8. Estimated 1999 bycatch mortality (metric tons, round weight) in the Bering Sea/Aleutian Islands longline and pot fisheries Source: NMFS/AKR web site, report dated November 24, 1999.**

Week Ending Date	Pacific cod hook & line		Other Species Hook & line, Jig		Groundfish Pots	
	Wkly Byc. Mort.	Cumul. Total	Wkly Byc. Mort.	Cumul. Total	Wkly Byc. Mort.	Cumul. Total
1/2/99	6	6	0	0	0	0
1/9/99	32	38	0	0	0	0
1/16/99	29	67	0	0	0	0
1/23/99	15	82	0	0	0	0
1/30/99	17	99	0	0	0	0
2/6/99	14	113	0	0	0	0
2/13/99	17	130	0	0	0	0
2/20/99	17	147	0	0	0	0
2/27/99	13	160	0	0	0	0
3/6/99	18	177	0	0	0	0
3/13/99	15	192	0	0	0	0
3/20/99	11	203	0	0	0	0
3/27/99	15	218	0	0	0	0
4/3/99	16	233	0	0	0	0
4/10/99	15	248	0	0	0	0
4/17/99	19	267	0	0	0	0
4/24/99	0	267	0	0	0	0
5/1/99	0	267	11	11	0	0
5/8/99	0	267	48	59	0	1
5/15/99	0	267	4	64	0	1
5/22/99	0	267	0	64	0	1
5/29/99	1	268	3	67	0	1
6/5/99	0	268	0	67	0	2
6/12/99	0	268	0	67	0	2
6/19/99	0	268	0	67	0	2
6/26/99	0	268	0	68	0	2
7/3/99	3	272	0	68	0	2
7/10/99	1	272	0	68	0	2
7/17/99	0	272	0	68	0	2
7/24/99	0	272	0	68	0	2
7/31/99	0	272	0	68	0	2
8/7/99	0	273	0	68	0	2
8/14/99	0	273	0	68	0	2
8/21/99	0	273	0	68	0	2
8/28/99	0	273	0	68	0	2
9/4/99	3	275	3	71	0	2
9/11/99	0	275	7	78	0	2
9/18/99	21	296	1	79	0	2
9/25/99	47	343	0	79	0	2
10/2/99	37	380	0	80	0	3
10/9/99	35	415	0	80	0	3
10/16/99	52	467	0	80	0	3
10/23/99	17	484	0	80	0	3
10/30/99	0	485	0	80	0	3
11/6/99	0	485	1	81	0	3
11/13/99	0	485	1	82	0	3
11/20/99	0	485	0	82	0	3

**Table 9. Halibut bycatch rate standards used in 1999 in the NMFS Vessel Incentive Program.**

<b>Fishery and Quarter</b>	<b>Halibut Bycatch Rate Standard (kg halibut/t of groundfish)</b>
BSAI midwater pollock	
Qtr 1	1.0
Qtr 2	1.0
Qtr 3	1.0
Qtr 4	1.0
BSAI bottom pollock	
Qtr 1	7.5
Qtr 2	5.0
Qtr 3	5.0
Qtr 4	5.0
BSAI yellowfin sole	
Qtr 1	5.0
Qtr 2	5.0
Qtr 3	5.0
Qtr 4	5.0
BSAI other trawl	
Qtr 1	30.0
Qtr 2	30.0
Qtr 3	30.0
Qtr 4	30.0
GOA midwater pollock	
Qtr 1	1.0
Qtr 2	1.0
Qtr 3	1.0
Qtr 4	1.0
GOA other trawl	
Qtr 1	40.0
Qtr 2	40.0
Qtr 3	40.0
Qtr 4	40.0

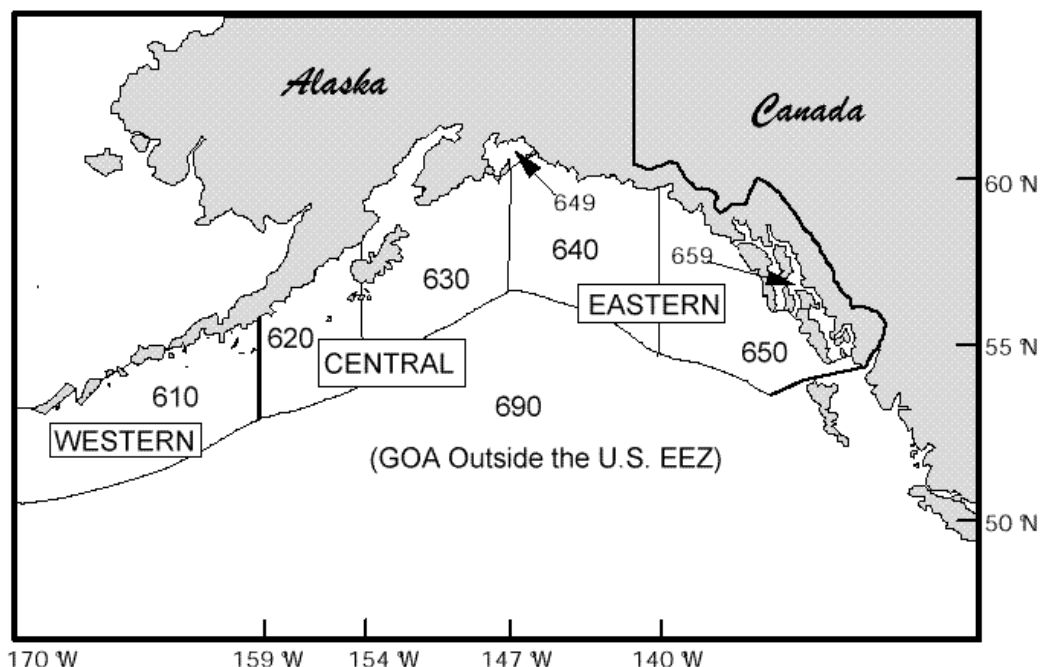


Figure 1. NMFS statistical and management areas for the Gulf of Alaska.

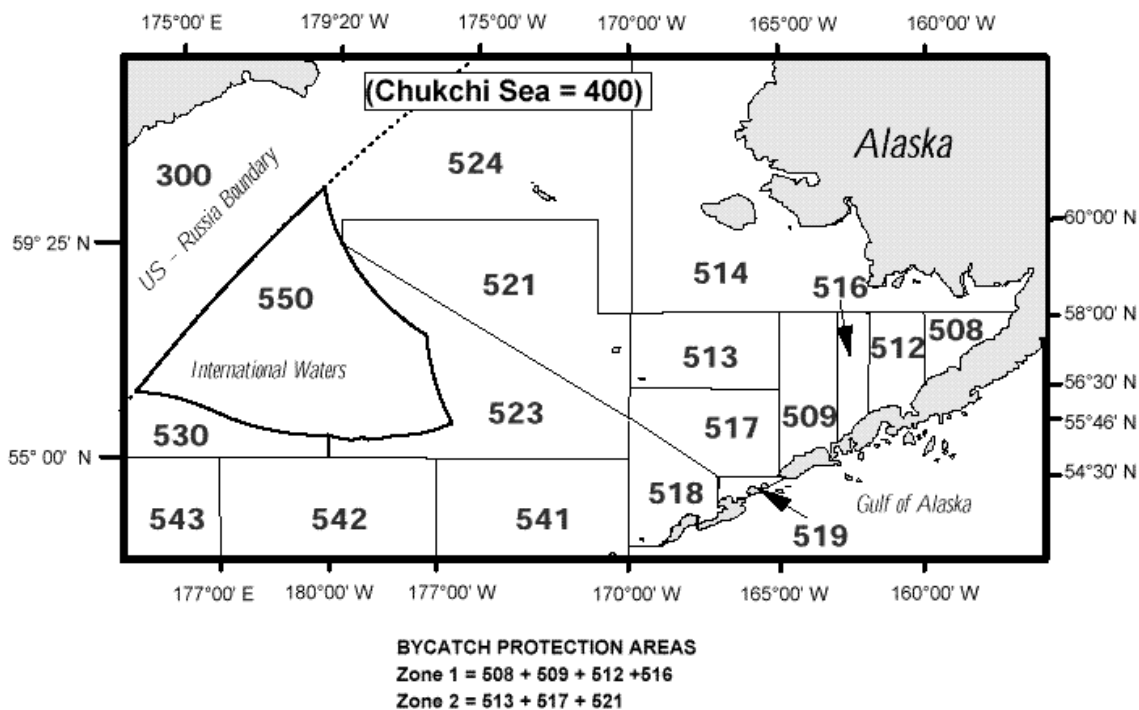


Figure 2. NMFS statistical and management areas for the Bering Sea and Aleutian Islands.



# **Changes to Halibut Bycatch Management in 1999**

by

Gregg H. Williams

## **Introduction**

Management measures to reduce halibut bycatch within Canada and the United States saw little change in 1999. Canada's success with Individual Vessel Bycatch Quotas (IVBQs) has resulted in continued reduction in halibut mortality for the groundfish trawl fishery. On the other hand, the United States is still pursuing several initiatives off Alaska and the West Coast that may or may not yield benefits. The greatest potential for bycatch reductions in Alaska will come from the adoption of Vessel Bycatch Accounts (VBAs) for the trawl fisheries, but such a program is still being designed.

This report reviews recent management efforts by both countries to control and reduce halibut bycatch in their respective fisheries.

## **Canada**

Canada has continued to manage their trawl fisheries off British Columbia with IVBQs in 1999 and is expected to continue in the foreseeable future. Specific details of the program can be found in the report by Trumble and Leaman (1997).

## **United States**

For Alaska, the most promising is the work underway by the North Pacific Fishery Management Council (Council) on a VBA program. The Council's VBA Committee, composed of fishing industry members, met in early 1999 to design a straw man proposal for a VBA program. The Committee recommended to the Council that the program be tested as a pilot program in a single fishery to work out any problems and demonstrate the benefits. The Council agreed to the Committee's request and tasked National Marine Fisheries Service (NMFS) with drafting up the necessary regulations. Unfortunately, implementation of the American Fisheries Act (AFA) and continual involvement with Steller sea lion issues have prevented NMFS from beginning their work on the matter.

At the same time as the VBA program was being drafted, the Committee also discussed a proposal known as Halibut Mortality Avoidance Program (HMAP). This program is essentially a structured deck sorting requirement accompanied by strict operational requirements on tow speed, tow length, and tow size. Industry proponents see substantial mortality reductions resulting from such a program, and the Council was in agreement with the recommendation to add this to the VBA pilot program. However, the proposal is also waiting for analytical staff time.

At its June 1998 meeting, the Council adopted a prohibition on the use of bottom trawl gear in the Bering Sea/Aleutian pollock fishery. Midwater, or pelagic nets are still legal and experienced

fishermen can fish them close to the bottom. However, the larger mesh sizes required in those nets should result in less halibut bycatch. The Council staff's analysis estimated the savings at 100 t (round weight, or 166,000 pounds net weight). Accordingly, the Council also reduced the trawl fishery bycatch mortality limit by 100 t, to 3,675 t. The measure was expected to be in effect for the 1999 fishery, however NMFS was unable to draft the regulations for 1999 due to AFA and Steller sea lion work. As a temporary measure, NMFS did not allocate any pollock to the bottom trawl fishery for 1999, thus requiring that vessels fish midwater to catch pollock. NMFS staff was to begin work on the regulations in the fall of 1999, so the Council-passed measure is expected to be in place for 2000.

This past year was also the first for the pollock cooperatives formed under the AFA, or Senate Bill 1221 (SB1221) as it became known. We are expecting a report from the cooperatives on their performance during 1999 regarding not only catch but also halibut bycatch.

Off the West Coast, the Pacific Fishery Management Council and NMFS staff are proceeding with an examination of data collected by the Oregon Enhanced Data Collection Program. The observer program operated during 1996-1998 and no results have been reported as yet.

### **References**

Trumble, R. J. and B. M. Leaman. 1997. Status of 1996 bycatch management planning. Int. Pac. Halibut Comm. Report of Assessment and Research Activities 1996:201-207.