

# **Appendix IV**

## **FY 2004 Multispecies Fishery**

### **Background Information on Cod Landings**

#### **Groundfish Plan Development Team**



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## ***Fishing Year 2004 Groundfish Landings and Revenues***

Regulated groundfish landings (pounds, landed weight) and revenues (nominal dollars) were summarized from the NMFS commercial dealer database. This data are preliminary (as of November 1, 2005), since some FY 2004 records may not yet be entered into the database. Data is reported by species and not by stock. FY 2004 landed weight was dominated by haddock (15.4 million pounds), yellowtail flounder (14.4 million pounds), cod (12.6 million pounds), pollock (10.8 million pounds), and winter flounder (9.9 million pounds). Witch flounder (6.4 million pounds) and white hake (5.4 million pounds) landings were also substantial. Cod accounted for most groundfish revenues at \$20.9 million, followed by haddock at \$18.5 million. Winter flounder (\$10.7 million), yellowtail flounder (\$9.9 million), witch flounder (\$8.9 million), pollock (\$6.2 million), and plaice (\$4.3 million) were the only other species that accounted for more than one million dollars in revenue. (Table 1 and Table 2)

Cod landings were summarized by vessel size, month, and landing state. Vessels were grouped into four categories based on permitted length. Some dealer records are not attributed to a specific vessel, so an “unknown” category was included. Vessels in the 30 to 50 foot length group landed the most cod of any of the size categories (4.75 million pounds), followed in order by the 50 to 75 ft. group and the over 75 ft. group. Records that could not be attributed to a vessel length class accounted for 1.5 million pounds of cod. Most cod (sixty-one percent) was sold by vessels that claimed a Massachusetts homeport, followed by unknown vessels (twelve percent), New Hampshire vessels (ten percent), and Maine vessels (eight percent). (Table 3, Table 4, and Figure 1)

July was the month with the most cod landings (1.5 million pounds). The second highest months with cod landings were June and December with nearly identical landings (1.3 million pounds). More than a million pounds were also landed in November, January, March, and April. Vessels in the 30 to 50 ft. length class landed more cod than any other single length category in June through January, while vessels 75 ft. and over landed more cod in February through April, and 50 to 75 ft. vessels landed more cod in May. (Table 5)

Many of the records in the dealer database indicate gear, though this field is not always completed. Trawl gear is recorded as the gear for fifty-one percent of the cod landings, gillnets account for twenty-eight percent, handgear for five percent, and unknown gear another five percent. Bottom longline is listed as the harvesting gear for four percent of the landed weight of cod. (Table 6).

Dealer data records indicate a total of 26,176 trips landed regulated groundfish. Twenty-four percent of the trips did not land any cod, forty-three percent landed less than 100 pounds, and sixty percent of the trips landed less than 200 pounds. There is a distinct mode between 700 and 800 pounds, probably due to the GOM cod possession limit of 800 pounds. Different size classes have different

distributions of cod per trip. Vessels less than 30 feet in length are least likely to avoid cod altogether, with only six percent of these trips not landing any cod. The vessels most likely to avoid cod are those in the 30 to 50 ft. group, with forty-three percent of these trips not landing cod. This is an interesting result, since as reported earlier this size class landed more cod than other classes. It is possible that there are distinct targeting behaviors for vessels in this group, probably due to vessel location and the availability of cod. In terms of cumulative cod catch, trips of 800 pounds or less account for slightly less than half the total cod catch. (Table 7, Figure 2, and Figure 3)

Cod accounts for nearly half of regulated groundfish revenues for vessels less than 50 ft. in length. Larger vessels generally are less dependent on cod and earn revenues from a broader mix of species. For vessels between 50 and 75 feet in length, revenues of yellowtail flounder and winter flounder exceeded cod revenues in FY 2004. Haddock revenues exceeded cod revenues for vessels seventy-five feet. (Figure 4 and Figure 5)

On a trip basis, cod was fifty percent or more of the total groundfish pounds landed on thirty-six percent of the trips that landed groundfish. Cod was more than seventy percent of the groundfish landed on twenty-six percent of trips, and was more than 90 percent of the groundfish landed on sixteen percent of all trips. Once again there are differences between vessel size classes. For vessels less than thirty feet long, cod was more than ninety percent of the groundfish landed on forty-nine percent of the trips. For vessels between thirty and fifty feet, cod was more than ninety percent of groundfish landings on only twenty percent of the trips, and was more than ninety percent of the landings on less than two percent of the trips for vessels over fifty feet in length. Groundfish revenues followed a similar pattern, with smaller vessels generally having more trips where cod provided the majority of total trip revenues. (Table 8 and Table 9)

Trips were ordered by cod revenue as a percent of total revenues. The cumulative cod catch was then plotted against this percentage. The resulting line indicates whether trips that have a similar reliance on cod revenues account for a disproportionate share of cod catch. If this is the case, the line will show changes in slope – positive where trips at a certain reliance level account for more cod catch, negative where the opposite occurs. The resulting line is remarkably smooth, with a slight positive slope increase for trips where cod accounts for thirty to fifty percent of total revenues, and a small spike for trips where cod accounts for all total revenues. (Figure 6)

**Table 1 – FY 2004 regulated groundfish sold, (pounds, landed weight) (Source: NMFS dealer data, October 17, 2005)**

Length Group	COD	HADDOCK	YELLOWTAIL	WINTER	WITCH	PLAICE	POLLOCK	WHITE HAKE	REDFISH	WINDOW PANE	HALIBUT	OCEAN POUT
Less than 30 ft	199,008	78,117	471	4,166	251	125	305,521	139,319	11,749	52	109	48
30 to less than 50 ft	4,751,303	2,063,011	646,669	737,270	1,012,046	512,537	2,866,386	1,309,785	122,508	34,015	4,646	3,627
50 to less than 75 ft	3,351,617	4,108,999	7,706,098	4,700,587	3,142,184	1,715,312	4,145,418	1,996,799	373,973	83,036	4,350	2,060
75 ft and over	2,749,388	8,759,623	5,522,297	4,044,955	1,901,387	1,313,816	2,537,427	1,633,030	514,016	51,133	5,976	0
Unknown	1,520,655	384,631	567,921	423,269	381,867	136,345	963,926	340,030	64,691	9,398	5,729	179
Grand Total	12,571,971	15,394,381	14,443,456	9,910,247	6,437,735	3,678,135	10,818,678	5,418,963	1,086,937	177,634	20,810	5,914

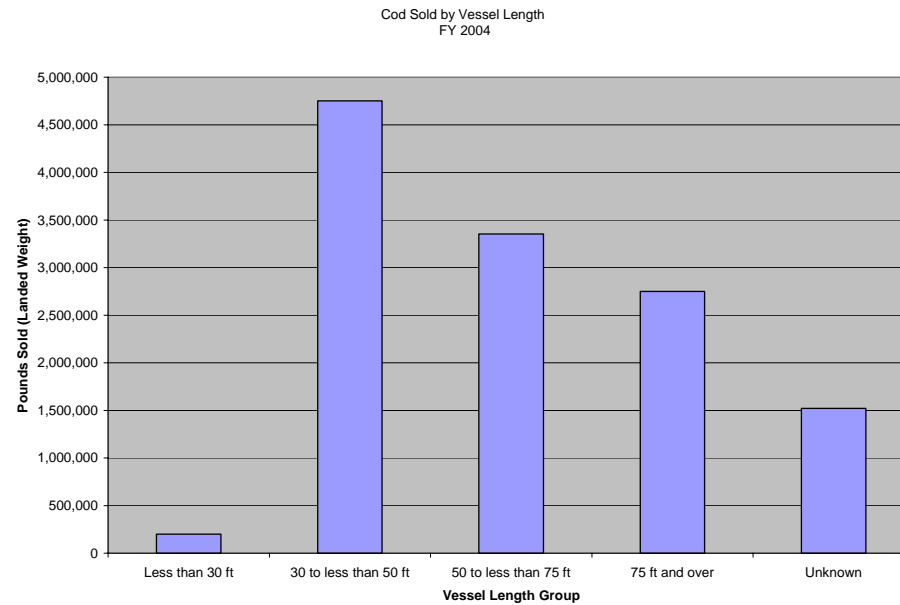
**Table 2 FY 2004 regulated groundfish revenues (nominal dollars) (Source: NMFS dealer data, October 17, 2005)**

Length Group	COD	HADDOCK	YELLOWTAIL	WINTER	WITCH	PLAICE	POLLOCK	WHITE HAKE	REDFISH	WINDOW PANE	HALIBUT	OCEAN POUT
Less than 30 ft	\$340,981	\$112,262	\$589	\$4,767	\$568	\$164	\$156,766	\$129,131	\$5,402	\$20	\$337	\$21
30 to less than 50 ft	\$8,052,511	\$3,061,409	\$789,625	\$1,036,216	\$1,396,728	\$501,335	\$1,777,296	\$965,402	\$67,974	\$18,448	\$21,468	\$3,327
50 to less than 75 ft	\$5,561,380	\$4,707,117	\$4,928,485	\$4,840,195	\$4,213,139	\$1,951,678	\$2,392,144	\$1,841,927	\$197,447	\$44,083	\$18,412	\$882
75 ft and over	\$4,370,688	\$10,052,130	\$3,774,269	\$4,281,096	\$2,756,232	\$1,672,780	\$1,335,563	\$1,500,973	\$255,550	\$22,122	\$26,055	\$0
Unknown	\$2,553,498	\$539,163	\$399,453	\$508,436	\$553,572	\$132,919	\$581,603	\$241,817	\$33,397	\$7,340	\$26,866	\$171
Grand Total	\$20,879,058	\$18,472,081	\$9,892,421	\$10,670,710	\$8,920,239	\$4,258,876	\$6,243,372	\$4,679,250	\$559,770	\$92,013	\$93,138	\$4,401

**Table 3 – FY 2004 cod landings (percent of pounds, landed weight), by vessel size and homeport state (Source: NMFS dealer data, October 17, 2005)**

HOMEST	Length Group					Grand Total
	Less than 30 ft	30 to less than 50 ft	50 to less than 75 ft	75 ft and over	Unknown	
CT	0%	0%	0%	0%	0%	0%
DE	0%	0%	0%	1%	0%	1%
FL	0%	0%	0%	0%	0%	0%
LA	0%	0%	0%	0%	0%	0%
MA	2%	23%	21%	17%	0%	61%
MD	0%	0%	0%	0%	0%	0%
ME	0%	6%	2%	1%	0%	8%
NC	0%	0%	0%	0%	0%	0%
NH	0%	9%	1%	0%	0%	10%
NJ	0%	0%	0%	0%	0%	0%
NY	0%	0%	1%	2%	0%	3%
PA	0%	0%	0%	0%	0%	1%
RI	0%	0%	1%	1%	0%	1%
VA	0%	0%	0%	0%	0%	0%
WV	0%	0%	1%	1%	0%	2%
Unknown	0%	0%	0%	0%	12%	12%
Grand Total	2%	38%	27%	22%	12%	100%

**Figure 1 – FY 2004 cod sold (pounds, landed weight) by vessel size class (Source: NMFS dealer data, October 17, 2005)**



**Table 4 – FY 2004 cod sold (pounds, landed weight) by vessel size class ((Source: NMFS dealer data, October 17, 2005)**

Length Group	Total
Less than 30 ft	199,008
30 to less than 50 ft	4,751,303
50 to less than 75 ft	3,351,617
75 ft and over	2,749,388
Unknown	1,520,655

**Table 5 – FY 2004 cod sold (pounds, landed weight), by length group and month**

MONTH	Length Group					Grand Total
	Less than 30 ft	30 to less than 50 ft	50 to less than 75 ft	75 ft and over	Unknown	
05	5,712	114,445	308,358	227,934	62,027	718,476
06	18,601	641,328	329,893	177,188	197,964	1,364,974
07	25,667	950,331	306,499	49,074	210,992	1,542,563
08	25,918	472,450	158,209	69,378	105,906	831,861
09	33,538	393,461	169,857	138,401	138,428	873,685
10	17,010	318,781	151,827	182,731	87,819	758,168
11	20,570	408,326	264,440	230,121	144,787	1,068,244
12	26,499	580,220	305,829	166,561	273,488	1,352,597
01	14,682	414,979	277,032	146,625	160,348	1,013,666
02	4,443	203,249	217,154	266,601	47,823	739,270
03	4,827	185,026	294,229	487,988	52,984	1,025,054
04	1,541	68,707	568,290	606,786	38,089	1,283,413
Grand Total	199,008	4,751,303	3,351,617	2,749,388	1,520,655	12,571,971

**Table 6 – FY 2004 cod sold (pounds, landed weight), by length group and gear (only gear that accounted for more than 1 percent shown – 99 percent of total)**

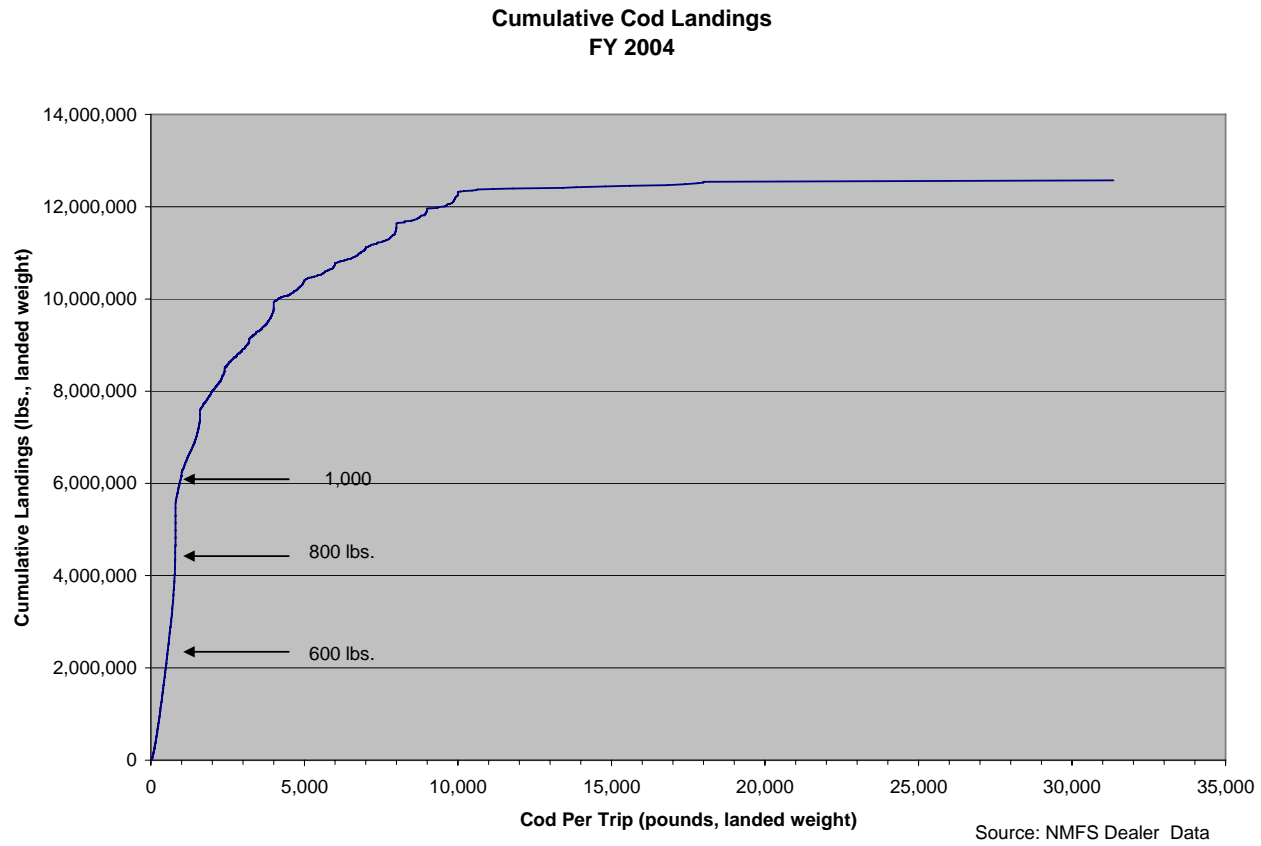
Note: records shown as mid-water trawl were examined and appear to be a data entry error.

GEAR	Length Group					Grand Total
	Less than 30 ft	30 to less than 50 ft	50 to less than 75 ft	75 ft and over	Unknown	
Trawl	0%	9%	20%	18%	3%	51%
Sink Gillnet	0%	20%	2%	0%	6%	28%
Handgear	1%	2%	1%	0%	1%	5%
Unknown	0%	2%	1%	1%	1%	5%
Bottom Longline	0%	3%	1%	0%	0%	4%
Dredge, other	0%	0%	1%	1%	0%	2%
Pound Net	0%	0%	0%	1%	0%	1%
Box Trap	0%	1%	0%	0%	0%	1%
Pots, other	0%	0%	0%	0%	0%	1%
520	0%	0%	0%	0%	0%	1%
Midwater trawl	0%	0%	0%	0%	0%	1%

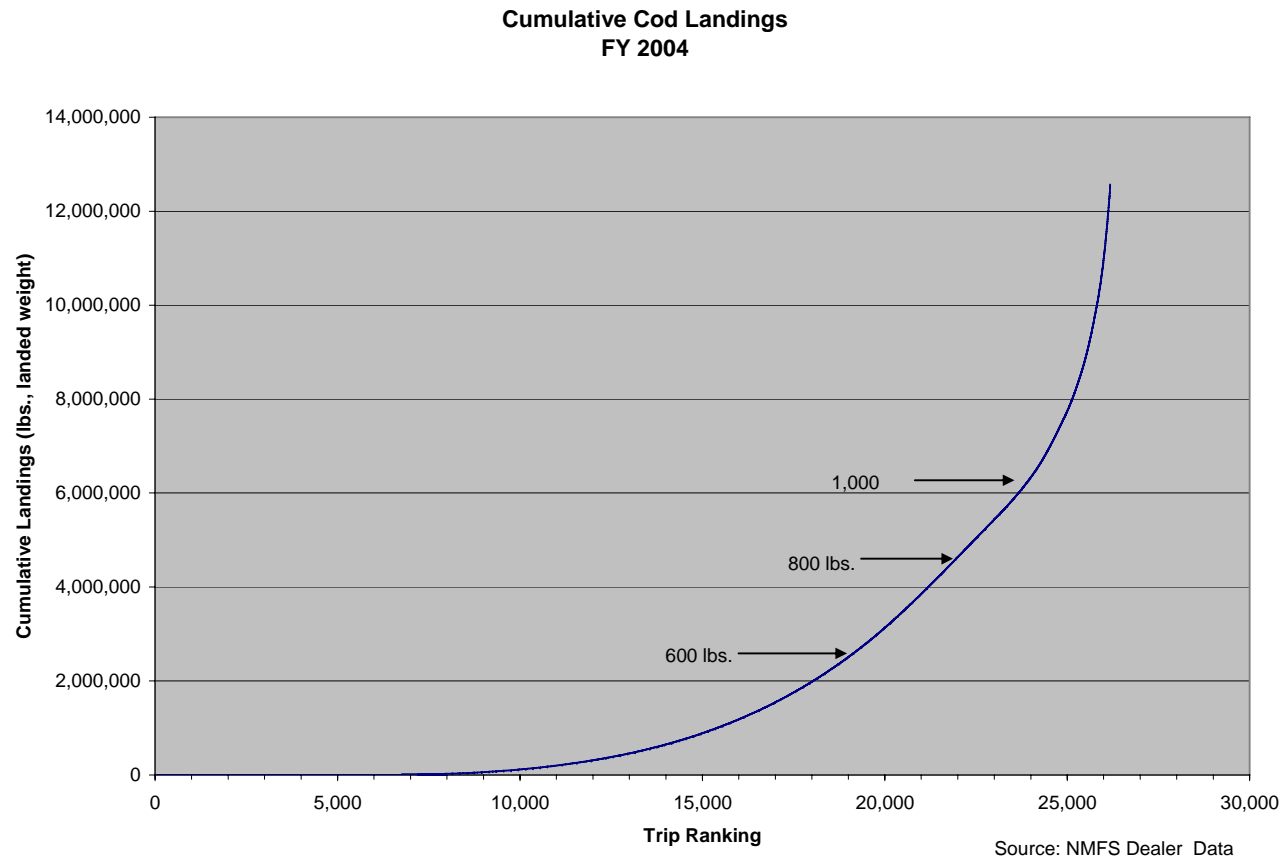
**Table 7 – FY 2004 cod (pounds, landed weight) per trip on trips that sold regulated groundfish**

<i>Pounds per Trip</i>	<i>All</i>		<i>Less than 30</i>		<i>30-49</i>		<i>50-74</i>		<i>75 and Over</i>		<i>Unknown</i>	
	<i>Frequency</i>	<i>Cumulative %</i>	<i>Frequency</i>	<i>Cumulative %</i>	<i>Frequency</i>	<i>Cumulative %</i>	<i>Frequency</i>	<i>Cumulative %</i>	<i>Frequency</i>	<i>Cumulative %</i>	<i>Frequency</i>	<i>Cumulative %</i>
0	6,251	24%	40	6%	1,746	14%	2,626	43%	386	25%	1,453	29%
0-99	4,902	43%	187	34%	2,918	36%	729	55%	101	32%	967	48%
100-199	2,597	53%	126	53%	1,404	47%	443	62%	85	37%	539	59%
200-299	1,850	60%	107	69%	977	55%	318	67%	74	42%	374	66%
300-399	1,430	65%	42	75%	837	61%	211	71%	57	46%	283	72%
400-499	1,200	70%	44	82%	712	67%	166	74%	42	49%	236	76%
500-599	1,072	74%	24	86%	669	72%	166	76%	47	52%	166	80%
600-699	964	77%	27	90%	564	77%	139	79%	42	54%	192	84%
700-799	2,887	88%	39	95%	2,057	93%	278	83%	41	57%	472	93%
800-899	409	90%	4	96%	249	95%	67	84%	21	58%	68	94%
900-999	352	91%	3	97%	188	96%	63	85%	26	60%	72	96%
1000-1999	1,232	96%	18	99%	432	99%	454	93%	168	71%	160	99%
2000-2999	368	97%	0	99%	59	100%	181	96%	94	77%	34	100%
3000-3999	285	99%	5	100%	16	100%	133	98%	118	85%	13	100%
4000-4999	103	99%	0	100%	1	100%	38	98%	60	89%	4	100%
5000-9999	257	100%	0	100%	3	100%	85	100%	165	99%	4	100%
10000 and over	17	100%	0	100%	0	100%	8	100%	9	100%	0	100%

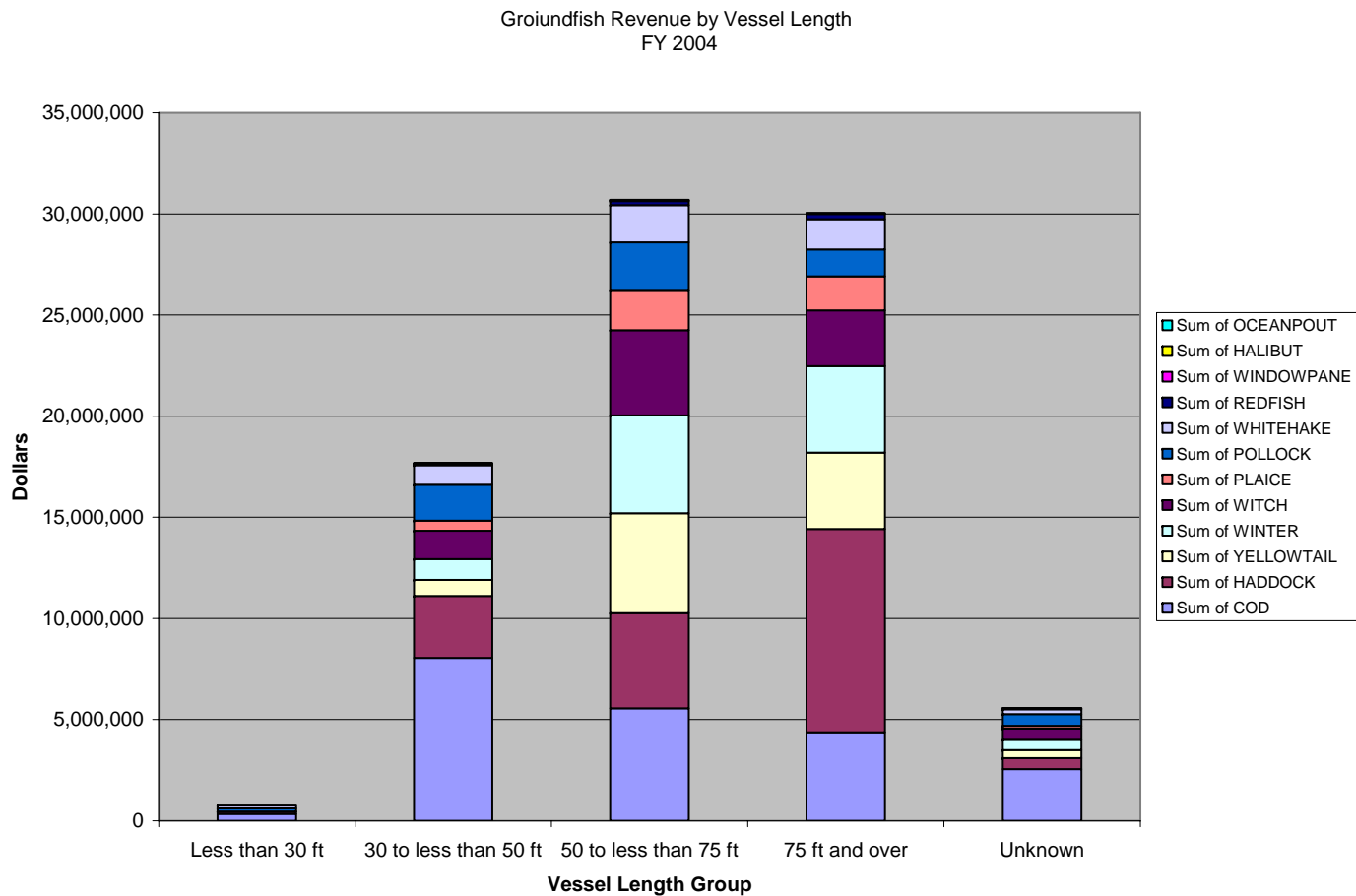
Figure 2 – FY 2004 cumulative cod landings vs. cod per trip



**Figure 3 – FY 2004 cumulative cod catch vs. ordinal ranking of trips landing groundfish**



**Figure 4 – FY 2004 regulated groundfish revenues (nominal dollars), by vessel length and species**



**Figure 5 – FY 2004, groundfish species revenues as a percent of total groundfish revenues**

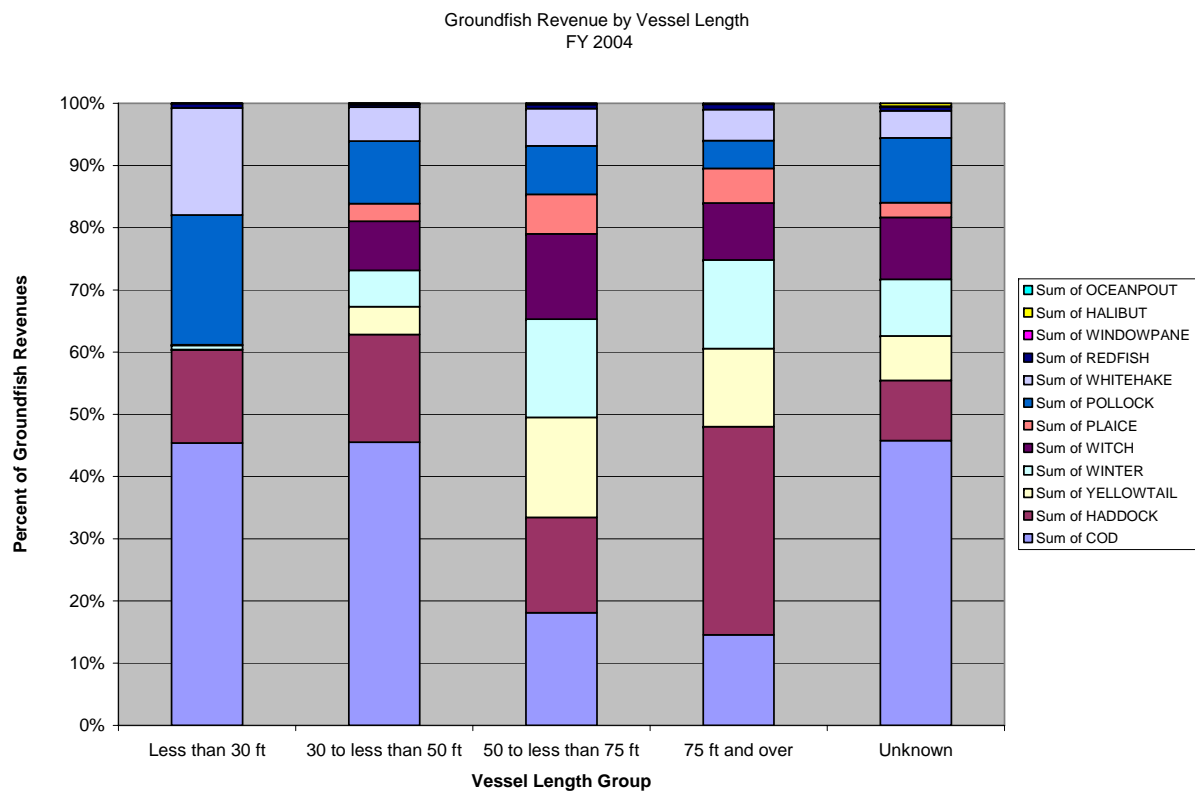


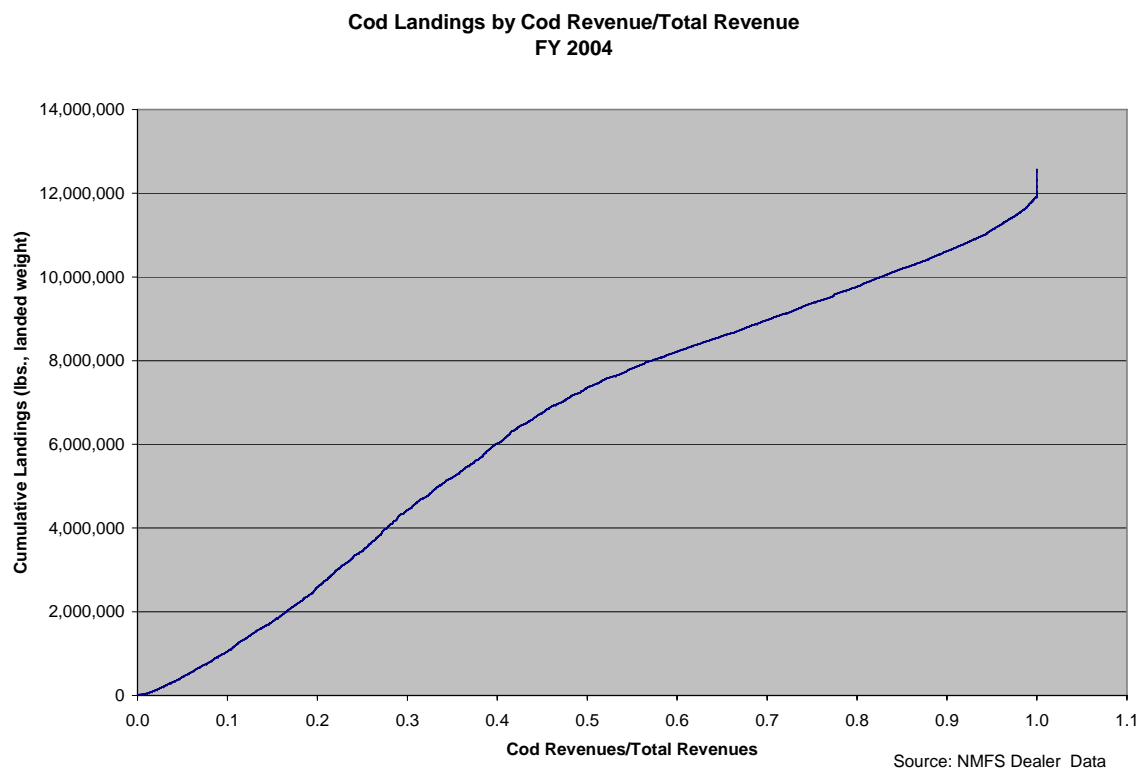
Table 8 – FY 2004 distribution of trips showing cod revenues as percent of total trip revenues

Cod Revenues/Total Revenues	All		Less than 30		30-49		50-74		75 and Over		Unk	
	Frequency	Cumulative %	Frequency	Cumulative %	Frequency	Cumulative %	Frequency	Cumulative %	Frequency	Cumulative %	Frequency	Cumulative %
0	6,301	24%	42	6%	1,771	14%	2,635	43%	387	25%	1,466	29%
0.1	4,518	41%	44	13%	2,009	29%	1,361	65%	634	66%	470	38%
0.2	2,238	50%	12	15%	1,152	38%	557	75%	212	80%	305	44%
0.3	1,812	57%	19	18%	996	46%	385	81%	141	89%	271	50%
0.4	1,525	63%	17	20%	846	53%	293	86%	91	95%	278	55%
0.5	1,413	68%	15	22%	826	59%	252	90%	36	98%	284	61%
0.6	1,142	72%	14	24%	723	65%	171	93%	15	99%	219	65%
0.7	1,136	77%	32	29%	766	71%	130	95%	9	99%	199	69%
0.9	2,581	87%	113	46%	1,743	84%	219	98%	2	99%	504	79%
1	3,510	100%	358	100%	2,000	100%	102	100%	9	100%	1,041	100%
More	0	100%	0	100%	0	100%	0	100%	0	100%	0	100%
	26,176		666		12,832		6,105		1,536		5,037	

Table 9 – FY 2004 distribution of trips showing cod (pounds, landed weight) as percent of groundfish (pounds, landed weight)(only trips where groundfish pounds is not zero)

Bin	Frequency	Cumulative %	Frequency	Cumulative %	Frequency	Cumulative %	Frequency	Cumulative %	Frequency	Cumulative %	Frequency	Cumulative %
0	6,251	24%	40	6%	1,746	14%	2,626	43%	386	25%	1,453	29%
0.1	3,906	39%	45	13%	1,572	26%	1,330	65%	636	67%	323	35%
0.2	2,200	47%	28	17%	1,146	35%	539	74%	200	80%	287	41%
0.3	1,720	54%	20	20%	941	42%	383	80%	110	87%	266	46%
0.4	1,467	59%	23	23%	828	49%	294	85%	74	92%	248	51%
0.5	1,318	64%	27	27%	800	55%	223	88%	51	95%	217	55%
0.6	1,218	69%	21	31%	745	61%	199	92%	37	97%	216	60%
0.7	1,243	74%	31	35%	784	67%	181	95%	21	99%	226	64%
0.9	2,543	84%	107	51%	1,735	80%	186	98%	10	99%	505	74%
1	4,310	100%	324	100%	2,535	100%	144	100%	11	100%	1,296	100%
More	0	100%	0	100%	0	100%	0	100%	0	100%	0	100%
	26,176		666		12,832		6,105		1,536		5,037	

**Figure 6 – F 2004 cumulative cod catch vs. ratio of cod trip revenues/total trip revenues**



## **GOM Cod**

The preceding summary of groundfish landings and revenues for the fishery as a whole was developed from dealer data alone and is not stock specific. Information on GOM cod trips was developed by combining VTR and dealer data. Total GOM cod landings by gear, vessel size, and landing state were determined for FY 1999 through FY 2004 (FY 2004 data may be incomplete due to VTR and dealer reports not yet submitted). Tables for individual years are attached as an appendix, with summaries shown below. Data for FY 1996 and 1998 were reported in Amendment 13 and are not repeated here.

Amendment 13 also included information for FY 1999 through 2001; the data for those years reported here differs, particularly for the number of other gear vessels landing GOM cod. The specific reason for the differences has not been identified, but may be due to different data queries used to extract the data.

Since FY 1999, the total number of vessels landing GOM cod declined from 614 in FY 1999 to 526 in FY 2004, a change of -14.4 percent. The number of otter trawls declined from 302 to 263 (thirteen percent), gillnets declined from 138 to 130 (six percent), longline vessels increased from 39 to 43 (ten percent), and other gear (including handline) declined from 200 to 134 (thirty-three percent). The number of vessels landing GOM cod actually increased sixteen percent between FY 1999 and FY 2001, but has declined each year since. Similar trends occurred for each gear type: the number of vessels peaked in either FY 2001 or FY 2002 and has since declined. With respect to vessel size, the number of vessels less than 51 GRT declined from 494 to 401 (18.9 percent), vessels 51 to 150 GRT declined from 104 to 101 (2.9 percent), and vessels over 150 GRT increased from 16 to 24 (50 percent). (Table 10)

Landings by gear and vessel size are summarized in Table 11. Total landings of GOM cod during this period peaked at 10.4 million pounds in FY 2001, and declined to 8.2 million pounds in FY 2004, the second highest amount during this period. Landings in FY 2004 were more than two and a half times greater than in FY 1999 (due in part to the low trip limit implemented in FY 1999). There has been a shift in the distribution of cod landings by gear. From FY 1999 through FY 2003, trawl vessels accounted for more than half GOM cod landings, but declined to 46.6 percent in FY 2004. Gillnet vessels have increased their share of landings from thirty percent in FY 1999 to 47.3 percent in FY 2004. Landings by longline gear declined from 3.5 percent in FY 1999 to 2.4 percent in FY 2004, while landings by other gear declined from 12.1 percent in FY 1999 to 3.6 percent in FY 2004. Gillnet gear has also increased the amount of GOM cod landed since FY 1999 and FY 2001. While trawl gear landed more GOM cod in FY 2004 than in FY 1999, the amount landed by this gear declined by thirty-five percent since FY 2001.

All three size classes had higher landings in FY 2004 than in FY 1999, but only the largest vessels have increased landings since FY 2001. With respect to vessel size, the share of landings by vessels less than 51 GRT increased from 68 in percent in FY 1999 to 76 percent in FY 2004. Landings by vessels of 51 to 150 GRT declined from 25 percent to 21 percent of the total during this period, while landings by vessels over 150 GRT increased from two percent to three percent of GOM cod landings (Table 11). Figure 7

through Figure 9 summarize the primary gears and landings states for GOM cod from FY 1999 through FY 2004. Most GOM cod is landed in Massachusetts,

Annual landings were summarized by the number of vessels that landed GOM cod in ten thousand pound increments. These data show that many of the participants in the GOM cod fishery landed relatively small amounts of GOM cod. With the exception of FY 1999 (when a low trip limit was in place), roughly sixty percent of the vessels in the fishery land 10,000 pounds or less. Over time, however, the percentage of participants landing larger amounts of cod has increased. Where in FY 1999 ninety-nine percent of the vessels landed less than 50,000 pounds, this percentage declined to ninety-four percent in FY 2001 and ninety-two percent in FY 2004. In terms of the amount of GOM cod landed, in FY 1999 ninety-six percent was caught by vessels that landed fifty-thousand pounds or less, in FY 2001 seventy-three percent, and in FY this had declined to sixty-four percent. (Table 12 and Table 13)

**Table 10 – Number of vessels landing GOM cod, FY 1999 through FY 2004**

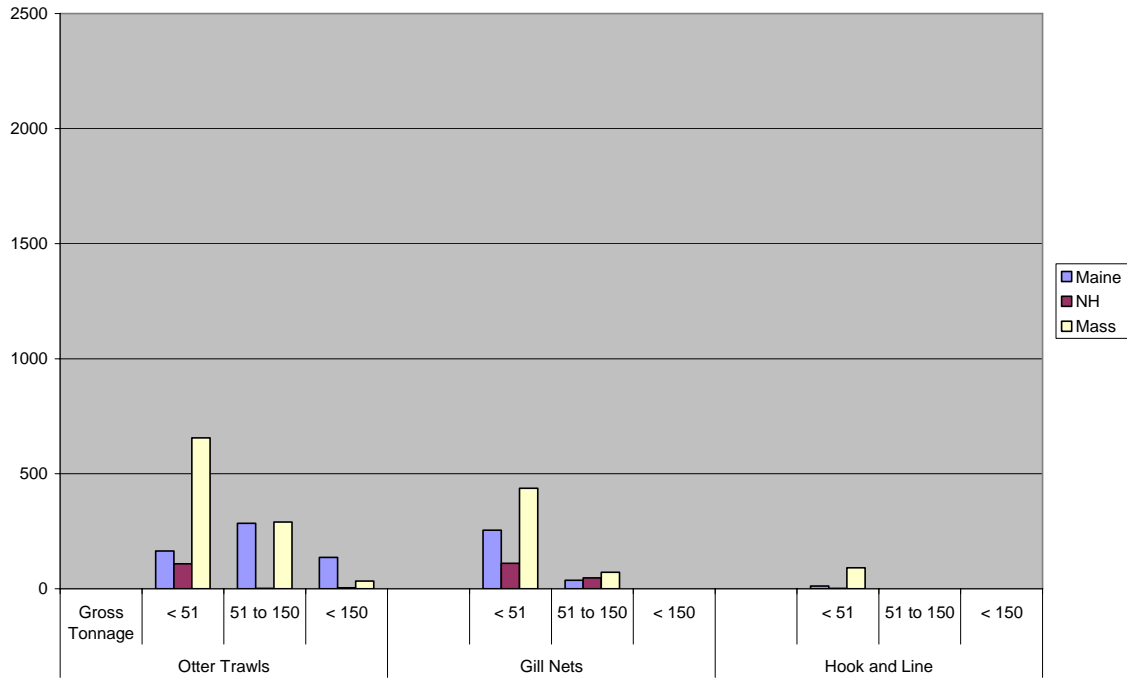
Gear Category	Gross Tonnage	FY 1999		FY 2000		FY 2001		FY 2002		FY 2003		FY 2004	
		All	%	All	%	All	%	All	%	All	%	All	%
Otter Trawls	< 51	196	32%	194	28%	192	27%	191	29%	181	29%	151	29%
	51 to 150	90	15%	101	15%	101	14%	104	16%	99	16%	89	17%
	> 150	16	3%	21	3%	21	3%	21	3%	24	4%	23	4%
	<b>Total</b>	<b>302</b>	<b>49%</b>	<b>316</b>	<b>46%</b>	<b>314</b>	<b>44%</b>	<b>316</b>	<b>48%</b>	<b>304</b>	<b>50%</b>	<b>263</b>	<b>50%</b>
Gill Nets	< 51	130	21%	127	19%	135	19%	126	19%	124	20%	119	23%
	51 to 150	8	1%	12	2%	11	2%	10	2%	10	2%	11	2%
	> 150	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
	<b>Total</b>	<b>138</b>	<b>22%</b>	<b>139</b>	<b>20%</b>	<b>146</b>	<b>21%</b>	<b>136</b>	<b>21%</b>	<b>134</b>	<b>22%</b>	<b>130</b>	<b>25%</b>
Hook and Line	< 51	38	6%	30	4%	49	7%	45	7%	36	6%	43	8%
	51 to 150	Conf.	0%	0	0%	0	0%	0	0%	Conf.	0%	0	0%
	> 150	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
	<b>Total</b>	<b>39</b>	<b>6%</b>	<b>30</b>	<b>4%</b>	<b>49</b>	<b>7%</b>	<b>45</b>	<b>7%</b>	<b>37</b>	<b>6%</b>	<b>43</b>	<b>8%</b>
Other Gear	< 51	191	31%	232	34%	248	35%	206	31%	180	29%	130	25%
	51 to 150	8	1%	10	1%	10	1%	5	1%	4	1%	3	1%
	> 150	Conf.	0%	3	0%	2	0%	0	0%	0	0%	Conf.	0%
	<b>Total</b>	<b>200</b>	<b>33%</b>	<b>245</b>	<b>36%</b>	<b>260</b>	<b>37%</b>	<b>211</b>	<b>32%</b>	<b>184</b>	<b>30%</b>	<b>134</b>	<b>25%</b>
Total	< 51	494	80%	542	79%	567	80%	522	79%	480	78%	401	76%
	51 to 150	104	17%	118	17%	120	17%	118	18%	110	18%	101	19%
	> 150	16	3%	24	4%	23	3%	21	3%	24	4%	24	5%
	<b>Total</b>	<b>&gt; 611</b>	<b>100%</b>	<b>684</b>	<b>100%</b>	<b>710</b>	<b>100%</b>	<b>661</b>	<b>100%</b>	<b>&gt; 612</b>	<b>100%</b>	<b>&gt; 525</b>	<b>100%</b>

**Table 11 – GOM cod landings, FY 1999 through FY 2004**

Gear Category	Gross Tonnage	FY 1999		FY 2000		FY 2001		FY 2002		FY 2003		FY 2004	
		All	%	All	%	All	%	All	%	All	%	All	%
Otter Trawls	< 51	939	29%	2,524	33%	3,727	36%	2,713	34%	2,539	32%	2,254	28%
	51 to 150	594	19%	1,241	16%	1,788	17%	1,288	16%	1,192	15%	1,355	17%
	> 150	206	6%	246	3%	195	2%	255	3%	257	3%	209	3%
	<b>Total</b>	<b>1,739</b>	<b>54%</b>	<b>4,012</b>	<b>52%</b>	<b>5,710</b>	<b>55%</b>	<b>4,256</b>	<b>53%</b>	<b>3,989</b>	<b>50%</b>	<b>3,817</b>	<b>47%</b>
Gill Nets	< 51	805	25%	2,662	35%	3,249	31%	2,687	34%	3,111	39%	3,616	44%
	51 to 150	156	5%	283	4%	249	2%	241	3%	190	2%	258	3%
	> 150	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
	<b>Total</b>	<b>961</b>	<b>30%</b>	<b>2,945</b>	<b>38%</b>	<b>3,498</b>	<b>34%</b>	<b>2,927</b>	<b>37%</b>	<b>3,301</b>	<b>41%</b>	<b>3,873</b>	<b>47%</b>
Hook and Line	< 51	109	3%	149	2%	257	2%	287	4%	281	4%	199	2%
	51 to 150	1	0%	0	0%	0	0%	0	0%	1	0%	0	0%
	> 150	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%
	<b>Total</b>	<b>111</b>	<b>3%</b>	<b>149</b>	<b>2%</b>	<b>257</b>	<b>2%</b>	<b>287</b>	<b>4%</b>	<b>282</b>	<b>4%</b>	<b>199</b>	<b>2%</b>
Other Gear	< 51	330	10%	483	6%	756	7%	359	5%	287	4%	180	2%
	51 to 150	55	2%	86	1%	174	2%	129	2%	103	1%	115	1%
	> 150	0	0%	1	0%	1	0%	0	0%	1	0%	1	0%
	<b>Total</b>	<b>386</b>	<b>12%</b>	<b>570</b>	<b>7%</b>	<b>932</b>	<b>9%</b>	<b>488</b>	<b>6%</b>	<b>391</b>	<b>5%</b>	<b>296</b>	<b>4%</b>
Total	< 51	2,184	68%	5,818	76%	7,990	77%	6,046	76%	6,218	78%	6,249	76%
	51 to 150	807	25%	1,609	21%	2,211	21%	1,658	21%	1,486	19%	1,727	21%
	> 150	206	6%	248	3%	197	2%	255	3%	258	3%	210	3%
	<b>Total</b>	<b>3,196</b>	<b>100%</b>	<b>7,675</b>	<b>100%</b>	<b>10,398</b>	<b>100%</b>	<b>7,959</b>	<b>100%</b>	<b>7,962</b>	<b>100%</b>	<b>8,185</b>	<b>100%</b>

**Figure 7 – FY 1999 and FY 2000 GOM cod landings by gear, size and state of landing**

**1999 Gulf of Maine Cod Landings by Vessel Class and Gear Type**



**2000 Gulf of Maine Cod Landings by Vessel Class and Gear Type**

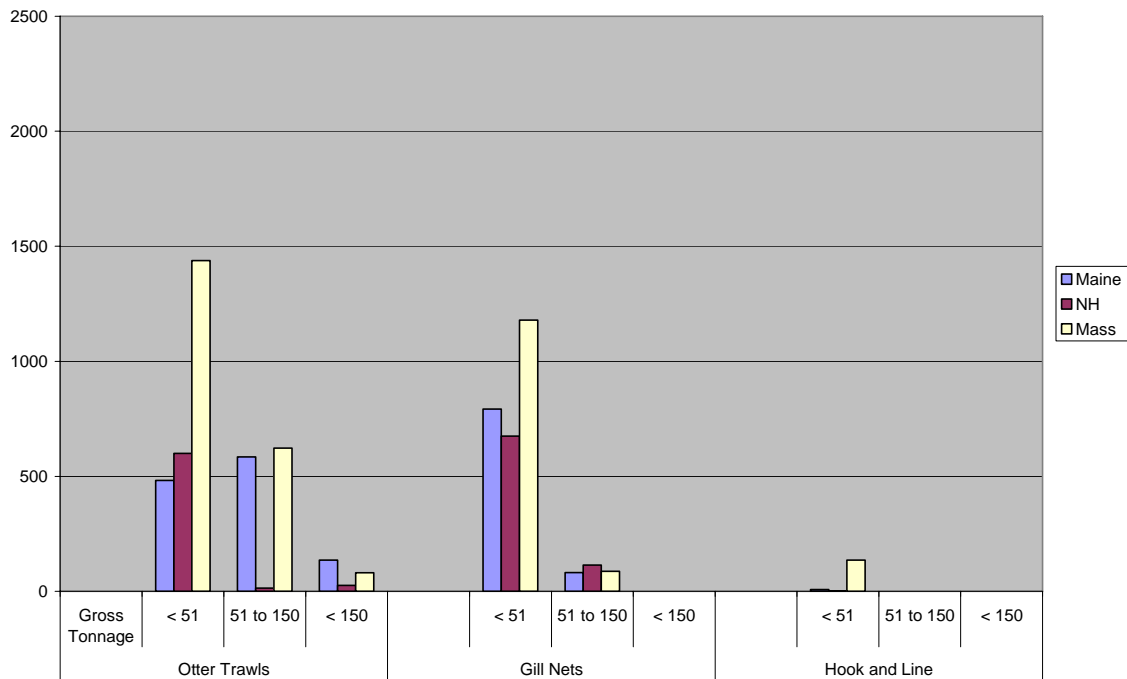
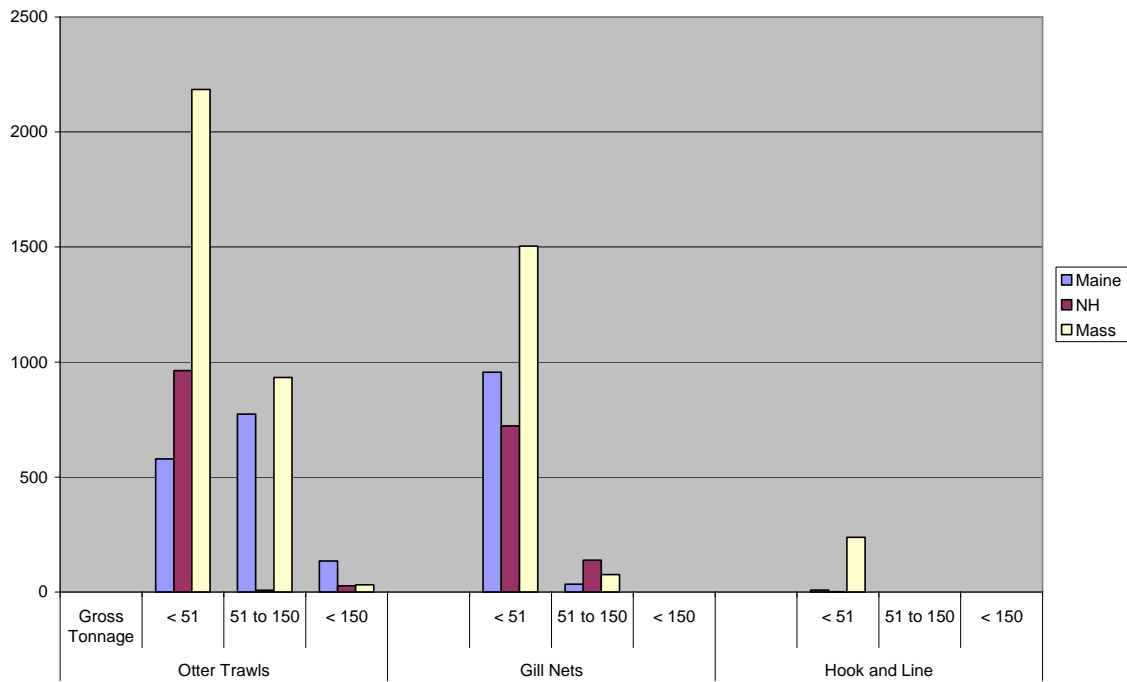
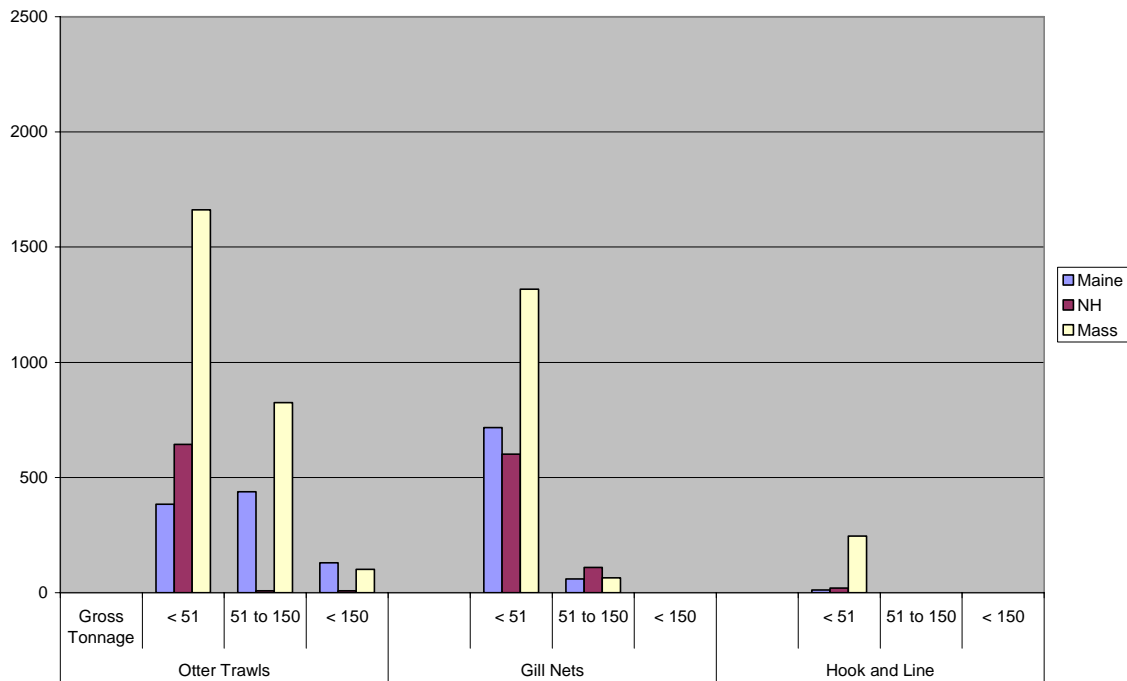


Figure 8 – FY 2001 and FY 2002 GOM cod landing by gear, vessel size, and state

2001 Gulf of Maine Cod Landings by Vessel Class and Gear Type

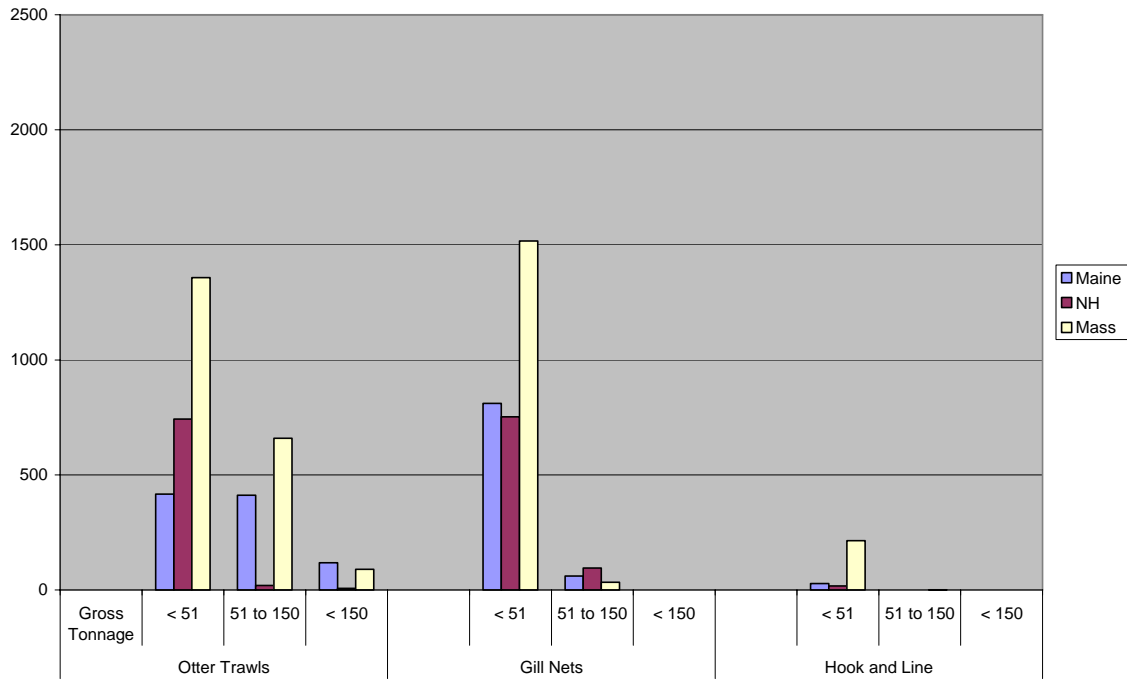


2002 Gulf of Maine Cod Landings by Vessel Class and Gear Type

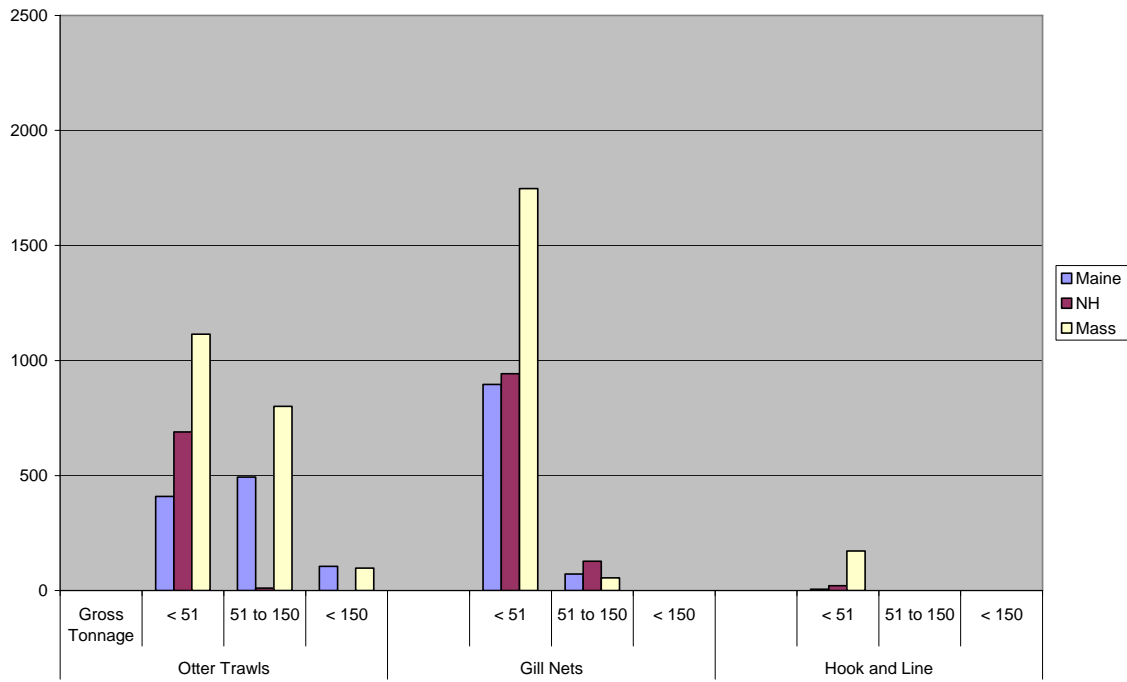


**Figure 9 – FY 2003 and FY 2004 GOM cod landings by gear, size and state of landing**

**2003 Gulf of Maine Cod Landings by Vessel Class and Gear Type**



**2004 Gulf of Maine Cod Landings by Vessel Class and Gear Type**



**Table 12 - Frequency Distribution of Vessels' Annual Gulf of Maine Cod Landings for Fishing Year 1999 through FY 2004**

Individual Vessel Landings Group	FY 1999 Participating Vessels		FY 2000 Participating Vessels		FY 2001 Participating Vessels		FY 2002 Participating Vessels		FY 2003 Participating Vessels		FY 2004 Participating Vessels	
	#	%	#	%	#	%	#	%	#	%	#	%
0 to 10	516	84%	432	63%	407	57%	399	60%	359	58%	301	57%
11 to 20	70	11%	108	16%	111	16%	122	18%	108	18%	86	16%
21 to 30	21	3%	66	10%	70	10%	70	11%	71	12%	51	10%
31 to 40	2	0%	46	7%	50	7%	31	5%	33	5%	33	6%
41 to 50	3	0%	15	2%	26	4%	26	4%	17	3%	16	3%
51 to 130	Conf.	0%	17	3%	46	6%	13	2%	26	4%	39	7%
<b>Total</b>	<b>&gt;612</b>	<b>100%</b>	<b>684</b>	<b>100%</b>	<b>710</b>	<b>100%</b>	<b>661</b>	<b>100%</b>	<b>614</b>	<b>100%</b>	<b>526</b>	<b>100%</b>
Source: Fishing Vessel Trip Reports and Dealer Weighout Reports												

**Table 13 - Frequency Distribution of Vessels' Annual Gulf of Maine Cod Landings for Fishing Year 1999 (pounds) through FY 2004**

Individual Vessel Landings Group	FY 1999 Pounds Landed		FY 2000 Pounds Landed		FY 2001 Pounds Landed		FY 2002 Pounds Landed		FY 2003 Pounds Landed		FY 2004 Pounds Landed	
	1,000 Pounds	%	1,000 Pounds	%	1,000 Pounds	%	1,000 Pounds	%	1,000 Pounds	%	1,000 Pounds	%
0 to 10	1,235.6	41%	1,015.9	14%	1,125.3	11%	1,177.1	15%	942.9	12%	761.0	9%
11 to 20	973.4	32%	1,582.1	21%	1,681.3	17%	1,813.1	23%	1,579.5	20%	1,253.6	16%
21 to 30	500.7	17%	1,620.2	22%	1,687.9	17%	1,731.3	22%	1,743.5	22%	1,265.2	16%
31 to 40	70.0	2%	1,602.1	21%	1,749.6	17%	1,064.2	14%	1,155.2	15%	1,128.6	14%
41 to 50	123.5	4%	660.1	9%	1,144.3	11%	1,164.6	15%	750.0	10%	716.4	9%
51 to 130	122.2	4%	1,010.5	13%	2,752.4	27%	854.1	11%	1,659.2	21%	2,953.8	37%
<b>Total</b>	<b>3,025.4</b>	<b>100%</b>	<b>7,490.8</b>	<b>100%</b>	<b>10,140.8</b>	<b>100%</b>	<b>7,804.6</b>	<b>100%</b>	<b>7,830.3</b>	<b>100%</b>	<b>8,078.6</b>	<b>100%</b>
Source: Fishing Vessel Trip Reports and Dealer Weighout Reports												

## GOM Cod Landings Per Trip

Using information reported in VTRs, the number and length of trips landing GOM cod, and the amount of cod landed on those trips, was determined for FY 2004. The cod landing numbers are not identical to those shown in the previous section because VTR landings in this section were not pro-rated to dealer landings. In addition, trip length cannot be calculated for some trips because of missing data, so those landings are not included in the following summaries. Trip length is based on the difference between time of sailing and time of landing as reported on the VTR, and does not reflect the DAS that may have been charged for a trip, particularly for day gillnet vessels but also for vessels using a VMS.

A total of 15,833 trips reported landing GOM cod through VTRs in FY 2004. Most trips were less than twenty-four hours in length (80.5 percent). Just over one percent of the trips were less than three hours, and 4.5 percent were between three and six hours. Trips over three days in length accounted for eight percent of the total trips landing GOM cod. Otter trawls (50.7 percent of trips) and gillnets (40.9 percent of trips) were used on most trips. (Table 14)

In terms of pounds landed, 66.5 percent of GOM cod was landed on trips of twenty-four hours or less. Trips of less than three hours accounted for only 1.4 percent of GOM cod landings, while trips between three and six hours accounted for 4.8 percent. Trips of between six and twelve hours accounted for 36.1 percent of GOM cod landings, trips of twelve to twenty-four hours for 24.2 percent, and trips of over three days accounted for 16.3 percent of cod landings. Trips between one and three days accounted for 11.5 percent to GOM cod landings.

GOM cod kept for the given length of trip was explored in more detail; there are minor difference from the previous analysis due to additions and corrections to the data base.. The total cod reported kept was about 6.1 million pounds (landed weight). Consistent with data presented earlier, sixty-five percent of the GOM cod kept catch was landed on trips of twenty-four hours or less in length. Twelve percent was landed on trips of one to two days in length, ten percent on trips between two and three days in length, and fourteen percent on trips of four days or more. Seventy-two percent of the cod was landed on trips that reported keeping 800 pounds or less. (Table 16)

Since almost two-thirds of GOM cod kept was landed on trips of less than one day, these trips were summarized in three hour blocks of time. Note that the percent of cod kept is in reference to the cod kept on these trips and not the total cod kept on trips of all lengths. To get the percent of total cod, multiply percents in these tables by sixty-five percent, the percent of cod caught on one day trips. Ninety-two percent of the GOM cod reported kept on these short trips was landed on trips of fifteen hours or less in length, and only eight percent was landed on trips of between fifteen and twenty-four hours. Eighty-one percent was landed on trips of between six and fifteen hours. Sixty percent of the cod caught on trips of less than one day (or thirty-nine percent of the total cod kept) was landed on trips

that reported keeping between six hundred and eight hundred pounds, fifteen percent (or ten percent of the total) on trips that kept between seven hundred and eight hundred pounds, and thirty-five percent (or twenty-percent of the total) on trips that kept eight hundred pounds of cod. Many of the trips that landed between six and eight hundred pounds of cod were twelve hours or less in length (2,254 trips, or seventy-four percent) and landed twenty-eight percent of the cod landed on days of twenty-four hours or less. (Table 17)

Trips of twenty-four hours or less in length were further broken down by trawl, sink gillnet, and bottom longline gear. This was done to provide information that can be used to evaluate the impacts of counting DAS as a minimum of either twelve or twenty-four hours. Pounds landed are rounded in this paragraph to simplify the discussion. As reported in the previous paragraph, ninety-two percent of GOM cod kept on trips of one day or less was caught on trips of fifteen hours or less. This is roughly sixty percent of the total GOM cod reported kept (ninety-two percent of sixty-five percent). Trips by day gillnet vessels, however, are already charged a minimum of fifteen hours in DAS for all trips of between three and fifteen hours, so a change that imposes a minimum of twelve hours will not have any impact on these vessels. Gillnet vessels accounted for about forty percent (2.5 million of 6.1 million pounds) of the total GOM cod kept in FY 2004. They also accounted for nearly sixty-three percent of the cod landed on trips of one day or less (2.5 million of 3.97 million pounds). Ninety-six percent of the GOM cod kept by gillnet vessels on trips of one day or less was kept on trips of fifteen hours or less. Note that current regulations charge day gillnet vessels a minimum of fifteen hours all of these trips over three hours in length. None of these trips would be affected by a twelve hour minimum DAS charge. (Table 18)

For trawl vessels, fifty-one percent (about 675,000 pounds) of the GOM cod kept on trips of one day or less was landed on trips of twelve hours or less. This is about fifty-five percent of the trawl trips of one day or less. Trips of fifteen hours or less accounted for about eighty-three percent of the cod caught by trawls and about eighty-eight percent of the trips. Longline vessels landed small amounts of GOM cod totaling less than four percent of the landings on trips of less than one day. (Table 19, Table 20)

In terms of GOM cod landings, based on FY 2004 fishing activity a minimum twelve hour DAS charge will have little effect on gillnet catches since day gillnet vessels are already charged a minimum of fifteen hours. About half the trawl trips of less than one day would be affected, but these trips accounted for only seventeen percent of the cod caught on one day and only about eleven percent of the total reported cod kept (675,000 of 6.1 million pounds). In FY 2004, much of the GOM cod kept (nearly eighty-six percent) would not have been affected by a twelve hour minimum DAS charge because it was either caught by gillnet vessels or caught on trips longer than twelve hours.

**Table 14 – Number of trips landing GOM cod, FY 2004 (Source: NMFS VTR database)**

<b>Trip Duration</b>	<b>Gillnet</b>	<b>Hand Line</b>	<b>Bottom Longline</b>	<b>Other</b>	<b>Otter Trawl</b>	<b>Total</b>
<= 3 hours	145	2	8	0	24	179
> 3 hours up to 6 hours	363	55	23	1	187	629
> 6 up to 12 hours	2,885	371	239	40	2,108	5,643
> 12 up to 24 hours	1,495	42	226	14	2,294	4,071
> 24 hours up to 1.5 days	137	1	23	2	568	731
> 1.5 up to 2 days	76	1	9	0	273	359
> 2 days up to 2.5 days	69	1	3	2	213	288
> 2.5 days up to 3 days	33	0	2	3	112	150
More than 3 days	265	1	9	23	825	1,123
<b>Total Trips by Gear</b>	<b>5,468</b>	<b>474</b>	<b>542</b>	<b>85</b>	<b>6,604</b>	<b>13,173</b>

<b>Trip Duration</b>	<b>Gillnet</b>	<b>Hand Line</b>	<b>Longline</b>	<b>Other</b>	<b>Otter Trawl</b>	<b>Total Trips by Trip Duration</b>
<= 3 hours	1%	0%	0%	0%	0%	1%
> 3 hours up to 6 hours	3%	0%	0%	0%	1%	5%
> 6 up to 12 hours	22%	3%	2%	0%	16%	43%
> 12 up to 24 hours	11%	0%	2%	0%	17%	31%
> 24 hours up to 1.5 days	1%	0%	0%	0%	4%	6%
> 1.5 up to 2 days	1%	0%	0%	0%	2%	3%
> 2 days up to 2.5 days	1%	0%	0%	0%	2%	2%
> 2.5 days up to 3 days	0%	0%	0%	0%	1%	1%
More than 3 days	2%	0%	0%	0%	6%	9%
<b>Total Trips by Gear</b>	<b>42%</b>	<b>4%</b>	<b>4%</b>	<b>1%</b>	<b>50%</b>	<b>100%</b>

**Table 15 – GOM cod landings by length of trip and gear, FY 2004 (lbs., landed weight and percent of total) (Source: NMFS VTR database)**

Trip Duration	Gillnet	Hand Line	Longline	Other	Otter Trawl	Total Cod by Trip Duration
<= 3 hours	82,242	76	4,418	0	13,787	100,523
> 3 hours up to 6 hours	216,434	6,682	10,647	20	83,116	316,899
> 6 up to 12 hours	1,510,239	44,156	75,382	4,232	529,761	2,163,770
> 12 up to 24 hours	641,979	7,098	51,201	2,251	690,750	1,393,279
> 24 hours up to 1.5 days	64,367	95	4,875	60	430,168	499,565
> 1.5 up to 2 days	35,482	109	3,234	0	147,262	186,087
> 2 days up to 2.5 days	52,782	48	1,399	645	198,302	253,176
> 2.5 days up to 3 days	21,957	0	1,754	130	66,906	90,747
More than 3 days	360,439	125	3,232	5,084	690,283	1,059,163
Total Cod by Gear	2,985,921	58,389	156,142	12,422	2,850,335	6,063,209

Trip Duration	Gillnet	Hand Line	Longline	Other	Otter Trawl	Proportion by Trip Duration
<= 3 hours	1%	0%	0%	0%	0%	2%
> 3 hours up to 6 hours	4%	0%	0%	0%	1%	5%
> 6 up to 12 hours	25%	1%	1%	0%	9%	36%
> 12 up to 24 hours	11%	0%	1%	0%	11%	23%
> 24 hours up to 1.5 days	1%	0%	0%	0%	7%	8%
> 1.5 up to 2 days	1%	0%	0%	0%	2%	3%
> 2 days up to 2.5 days	1%	0%	0%	0%	3%	4%
> 2.5 days up to 3 days	0%	0%	0%	0%	1%	1%
More than 3 days	6%	0%	0%	0%	11%	17%
Proportion by Gear	49%	1%	3%	0%	47%	100%

**Table 16 – FY 2004 distribution of GOM cod catch by trip length (days) and pounds landed weight kept (Source: NMFS VTR database)**

Reported Kept	Days Absent												Total Trips	Total Kept
	1 or less		>1 to 2		>2 to 3		>3 to 4		>4 to 5		>5			
	Trips	Kept	Trips	Kept	Trips	Kept	Trips	Kept	Trips	Kept	Trips	Kept		
0	227	0%	2	0%	1	0%		0%	1	0%	6	0%	237	0%
>0-200	4,384	6%	393	1%	156	0%	106	0%	105	0%	143	0%	5,287	7%
>200-400	1,783	9%	155	1%	57	0%	49	0%	46	0%	73	0%	2,163	11%
>400-500	705	5%	70	1%	25	0%	12	0%	20	0%	41	0%	873	7%
>500-600	573	5%	44	0%	13	0%	10	0%	12	0%	27	0%	679	6%
>600-700	571	6%	42	0%	14	0%	20	0%	11	0%	19	0%	677	7%
>700-800	757	9%	29	0%	11	0%	5	0%	6	0%	10	0%	818	10%
800	1,735	23%	62	1%	7	0%	7	0%	5	0%	9	0%	1,825	24%
>800-1200	37	1%	66	1%	39	1%	28	0%	36	1%	68	1%	274	5%
>1200-1600	13	0%	217	5%	52	1%	15	0%	23	1%	34	1%	354	9%
>1600-2000	1	0%	12	0%	26	1%	8	0%	12	0%	28	1%	87	3%
>2000-2400	2	0%	7	0%	44	2%	39	2%	51	3%	81	4%	224	11%
>4000	1	0%	3	0%		0%		0%	1	0%		0%	5	1%
Grand Total	10,789	65%	1,102	12%	445	6%	299	4%	329	5%	539	9%	13,503	100%

**Table 17 - FY 2004 distribution of GOM cod catch by trip length (days) and pounds landed weight kept, trips one day or less. Percent of GOM cod kept is percent of cod kept on trips of one day or less in length and not percent of total cod kept. (Source: NMFS VTR database)**

	Days Absent (Hours)														Total Trips	Total Cod
	0-3 HRS		>3-6 HRS		>6-9 HRS		>9-12 HRS		>12-15 HRS		>15-18 HRS		>18-24 HRS			
Reported Kept	Trips	Cod	Trips	Cod	Trips	Cod	Trips	Cod	Trips	Cod	Trips	Cod	Trips	Cod		
0	6	0%	9	0%	66	0%	100	0%	39	0%	6	0%	1	0%	227	0%
>0-200	38	0%	232	0%	826	2%	1,645	3%	1,220	3%	251	1%	172	0%	4,384	9%
>200-400	22	0%	81	1%	342	3%	579	5%	563	4%	113	1%	83	1%	1,783	14%
>400-500	16	0%	35	0%	148	2%	251	3%	201	2%	34	0%	20	0%	705	8%
>500-600	17	0%	21	0%	123	2%	193	3%	169	2%	31	0%	19	0%	573	8%
>600-700	8	0%	43	1%	152	3%	177	3%	139	2%	29	0%	23	0%	571	10%
>700-800	24	0%	93	2%	227	4%	243	5%	124	2%	24	0%	22	0%	757	15%
800	75	2%	184	4%	490	10%	538	11%	343	7%	70	1%	35	1%	1,735	35%
>800-1200		0%	7	0%	10	0%	8	0%	1	0%	3	0%	8	0%	37	1%
>1200-1600	1	0%	1	0%	2	0%		0%	3	0%	1	0%	5	0%	13	0%
>1600-2000		0%	1	0%		0%		0%		0%		0%		0%	1	0%
>2000-2400		0%		0%		0%	1	0%	1	0%		0%		0%	2	0%
>4000		0%		0%		0%		0%	1	0%		0%		0%	1	0%
Total	207	3%	707	8%	2,386	25%	3,735	32%	2,804	24%	562	5%	388	3%	10,789	100 %

**Table 18 - FY 2004 distribution of GOM cod catch by trip length (days) and pounds landed weight kept, trawl trips one day or less (Source: NMFS VTR database)**

Reported Kept	Days Absent (Hours)														Total Trips	Total Cod
	0-3 HRS		>3-6 HRS		>6-9 HRS		>9-12 HRS		>12-15 HRS		>15-18 HRS		>18-24 HRS			
	Trips	Cod	Trips	Cod	Trips	Cod	Trips	Cod	Trips	Cod	Trips	Cod	Trips	Cod		
0			4	0	22	0	44	0	3	0	2	0			75	0
>0-200	6	777	85	4,770	393	23,568	1,101	78,019	829	69,272	139	13,381	102	8,481	2,655	198,268
>200-400	3	1,050	24	7,545	52	15,705	171	51,735	301	90,287	73	22,266	62	19,472	686	208,060
>400-500	3	1,262	8	3,840	24	11,205	47	21,940	77	35,939	26	12,002	12	5,644	197	91,832
>500-600	1	600	2	1,168	14	8,153	36	20,160	85	48,916	18	10,404	15	8,366	171	97,767
>600-700	1	613	10	6,774	23	15,465	36	24,376	61	40,307	18	12,038	14	9,443	163	109,016
>700-800	3	2,310	16	12,255	33	25,249	68	52,269	48	36,396	17	12,804	13	9,795	198	151,078
800	9	7,200	57	45,600	118	94,400	145	116,000	133	106,400	51	40,800	23	18,400	536	428,800
>800-1200			5	4,444	3	2,414	4	4,405	1	850	1	805	7	6,681	21	19,599
>1200-1600	1	1,600	1	1,545	1	1,600			3	4,277	1	1,518	5	7,640	12	18,180
>1600-2000			1	1,925											1	1,925
>2000-2400							1	3,914							1	3,914
Grand Total	27	15,412	213	89,866	683	197,759	1,653	372,818	1,541	432,644	346	126,018	253	93,922	4,716	1,328,439

**Table 19 - FY 2004 distribution of GOM cod catch by trip length (days) and pounds landed weight kept, gillnet trips one day or less (Source: NMFS VTR database)**

	Days Absent (Hours)														Total Trips	Total Cod
	0-3 HRS		>3-6 HRS		>6-9 HRS		>9-12 HRS		>12-15 HRS		>15-18 HRS		>18-24 HRS			
Reported Kept	Trips	Cod	Trips	Cod	Trips	Cod	Trips	Cod	Trips	Cod	Trips	Cod	Trips	Cod		
0					1	0	8	0	10	0			1	0	20	0
>0-200	26	1,941	74	6,525	219	21,978	304	33,306	278	25,638	96	7,881	42	3,273	1,039	100,542
>200-400	18	5,855	40	13,095	242	77,788	352	111,386	224	71,021	36	11,428	15	4,539	927	295,112
>400-500	12	5,761	24	11,613	119	56,724	183	87,525	116	55,300	8	3,697	4	1,880	466	222,500
>500-600	15	8,803	15	8,603	101	58,536	140	80,765	80	45,941	12	6,719	4	2,310	367	211,677
>600-700	6	4,067	29	19,470	119	81,338	134	91,026	76	51,513	10	6,815	7	4,651	381	258,880
>700-800	19	14,567	75	58,040	184	141,015	166	127,125	68	51,729	7	5,419	9	6,904	528	404,799
800	65	52,000	125	100,000	364	291,200	387	309,600	209	167,200	19	15,200	12	9,600	1,181	944,800
>800-1200			2	1,801	5	4,425	3	2,490			1	850			11	9,566
>1200-1600					1	1,500									1	1,500
>2000-2400									1	3,000					1	3,000
>4000									1	8,000					1	8,000
Grand Total	161	92,994	384	219,147	1,355	734,504	1,677	843,223	1,063	479,342	189	58,009	94	33,157	4,923	2,460,376

**Table 20 - FY 2004 distribution of GOM cod catch by trip length (days) and pounds landed weight kept, longline trips one day or less (Source: NMFS VTR database)**

	Days Absent (Hours)														Total Trips	Total Cod
	0-3 HRS		>3-6 HRS		>6-9 HRS		>9-12 HRS		>12-15 HRS		>15-18 HRS		>18-24 HRS			
Reported Kept	Trips	Cod	Trips	Cod	Trips	Cod	Trips	Cod	Trips	Cod	Trips	Cod	Trips	Cod		
0					1	0									1	0
>0-200	2	240	7	986	28	2,366	105	10,488	91	9,461	10	978	26	2,550	269	27,069
>200-400	1	250	7	2,480	13	3,630	33	10,090	35	10,309	3	950	5	1,183	97	28,892
>400-500	1	500	2	950	4	1,941	19	8,834	7	3,475			4	1,895	37	17,595
>500-600	1	595	3	1,700	5	2,804	16	9,043	3	1,750	1	600			29	16,492
>600-700	1	700	4	2,627	8	5,488	7	4,527	2	1,393	1	700	2	1,400	25	16,835
>700-800	2	1,500	2	1,525	6	4,587	7	5,362	7	5,361					24	18,335
800	1	800	2	1,600	8	6,400	5	4,000	1	800					17	13,600
>800-1200					2	1,950							1	880	3	2,830
Grand Total	9	4,585	27	11,868	75	29,166	192	52,344	146	32,549	15	3,228	38	7,908	502	141,648

## **DAS Use by Vessels Landing GOM Cod**

Using the VTR database, 532 permits were identified that reported landing cod from statistical areas 511, 512, 513, 514, or 515 in FY 2004. (Note that this total differs slightly from the totals in Table 10). This list of permits was used to query the DAS databases to determine DAS allocated and used. 420 of these permits were found to have been allocated DAS. DAS used by these permits were divided by DAS net allocations (allocations after leases, adjustments, etc.) to determine the percent of net allocations used by vessels landing GOM cod. The same analysis was done a second time, but limited to vessels that landed GOM cod from SA 514, which encompasses most of the area proposed for differential DAS counting. There were 309 permits that landed GOM cod from SA 514 that used DAS. Note that this analysis does not indicate where the DAS were used; it only indicates the percentage of net allocation used by vessels that at some time during the year reported landing GOM cod.

Most vessels landing cod from the GOM statistical areas used a relatively high percentage of their net allocation of DAS. Seventy-nine percent used 50 percent or more of their allocated DAS, and fifty percent used 80 percent or more of their net allocations. Vessels that landed GOM cod from SA 514 showed similar patterns. Seventy-nine percent used more than half their DAS, while forty-eight percent used more than 80 percent of their net allocation. Any vessel that used more than sixty-six percent of its allocation is likely to be affected by differential DAS; this applies to about sixty-eight percent of the vessels.

The total number of net DAS allocated to the 309 vessels that landed cod from SA 514 and were allocated DAS was 18,580 Category A DAS. Overall, these vessels used 14,533 DAS, or seventy-eight percent. Vessels that used more than sixty percent of their net allocation accounted for 15,496 allocated Category A DAS (83 percent of the allocated DAS) and used 13,438 DAS (92 percent of the used DAS). The vessels that used more than sixty percent of their net allocation used eighty-seven percent of the Category A DAS they were allocated.

**Table 21 – DAS used, percent of net allocation, for vessels landing cod from the GOM and SA 514  
(Source: NMFS VTR, DAS databases)**

<i>% of Net DAS Allocation Used</i>	<i>GOM</i>		<i>SA 514</i>	
	<i>Frequency</i>	<i>Cumulative %</i>	<i>Frequency</i>	<i>Cumulative %</i>
0	7	2%	4	1%
0.1	8	4%	5	3%
0.2	17	8%	13	7%
0.3	15	11%	11	11%
0.4	16	15%	13	15%
0.5	24	21%	19	21%
0.6	22	26%	16	26%
0.66	24	32%	21	33%
0.7	18	36%	12	37%
0.8	57	50%	48	52%
0.9	88	70%	61	72%
1	110	97%	77	97%
More	14	100%	9	100%

## Impacts of Differential DAS Counting

Differential DAS counting at the rate of 1.5:1 may be implemented in the inshore GOM in order to reduce fishing effort on GOM cod and CC/GOM yellowtail flounder. Two areas are under consideration, but most of either area is encompassed by SA 514. The effectiveness of differential DAS counting as a mortality reduction tool depends on whether it constrains DAS use by vessels that fish in the area. In order to determine if this is a concern, the DAS used in FY 2004 by vessels landing cod from SA 514 was multiplied by 1.5, and then compared to the vessels' net DAS allocations. Since a default measure will reduce DAS allocations by 8.3 percent in FY 2006, net allocations were reduced by this percentage for this analysis. Any vessel with a ratio of one or greater will not be able to fish in the same manner as in FY 2004 (possible vessel operator responses are discussed below). Three key assumptions in this analysis are:

- The net allocation of Category A DAS available to each permit in FY 2006 is 8.3 percent less than the net allocation in FY 2004.
- Vessels intend to fish in the same areas and in the same manner as in FY 2004.
- Vessels that did not use DAS in FY 2004 will not use DAS in FY 2006.

The results suggest that 226 of the 309 vessels, or seventy-three percent, may be affected by the combination of differential DAS counting and the default reduction in Category A DAS. There are a number of possible adjustments that vessel operators could make in response to these measures. These include:

- Increase net DAS allocations through leasing or the DAS transfer program.
- Choose to fish in other areas, including in the GOM outside the differential DAS counting area.
- Make shorter trips while targeting a full day's trip limit of cod in order to take the same number of trips and maximize fishing revenue.

**Table 22 – Impact of differential DAS counting and DAS reduction applied to FY 2004 DAS use by vessels landing GOM cod from SA 514**

<i>% of Net DAS Allocation Used</i>	<i>Frequency</i>	<i>Cumulative %</i>
0	4	1%
0.1	3	2%
0.2	3	3%
0.3	8	6%
0.4	7	8%
0.5	9	11%
0.6	8	14%
0.66	4	15%
0.7	3	16%
0.8	15	21%
0.9	12	25%
1	7	27%
More	226	100%

## Top Landers of GOM Cod

By comparing Table 12 and Table 13, it is clear that in FY 2004 nearly half (forty-six percent) of the GOM cod landings were landed by 55 vessels (ten percent of the vessels landing GOM cod). This is similar to FY 2003, when 12 percent of the vessels landed 47 percent of GOM cod, but is a change from earlier years when the top 10 percent of the vessels landed less than 40 percent of cod. The DAS database and the dealer database were queried to obtain additional information on these vessels.

Using the VTR database, the fifty-five permits that landed the most GOM cod were identified. Forty-nine percent of the GOM cod was landed by gillnet vessels, forty-seven percent by trawl vessels, two and a half percent by bottom longlines, one percent by handgear, and the remained by various other gears. While most vessels fished only one gear, a few vessels used both gillnet and bottom longlines. Dealer data was queried to determine the proportion of groundfish revenues and total revenues earned from GOM cod for these permits. Cod landings from the GOM (according to VTR reports) were compared to cod pounds (landed weight?) sold according to dealer data. Of the fifty-five vessels, forty-nine (ninety percent) caught eighty percent or more of the cod that they sold from the Gulf of Maine. Only two vessels appear to have sold similar amounts of cod from both the GOM and GB stock areas, while for four vessels the origin of cod could not be determined due to inconsistencies between the databases. For these four vessels, the sales of cod reported in the dealer database were much lower than landings in VTRs, likely due to missing or incomplete records. Cod revenues (without respect to stock area) accounted for more than half of regulated groundfish revenues for forty-two (seventy-six percent) of the vessels. Cod revenues accounted for more than half of total revenues for twenty-two vessels (forty percent), and for more than forty percent of total revenues for thirty-four vessels (sixty-two percent). (Table 23)

DAS databases were queried to determine DAS allocations and use by these fifty-five vessels. In general, these vessels had more than 52.8 DAS available and tended to fish a high percentage of their available DAS. Of the fifty-five vessels, thirty-five acquired DAS through the leasing program. These thirty-five vessels are about twenty percent of the vessels that acquired DAS through the leasing program. As a group they fished 3,658 DAS out of 4,303 they had available, or eighty-five percent. As a result of leasing, these vessels fished 670 more DAS than their initial base allocation. These 670 days represent less than ten percent of the total DAS acquired by the fleet through the leasing program. Sixty-five percent of the vessels had net allocations of sixty or more DAS. Seventy-six percent of the vessels used more than fifty DAS, and fifty-one percent used more than sixty DAS. In terms of base DAS allocations, fifty-five percent used more than base allocations. In terms of net allocations, forty percent used greater than ninety percent of their net allocations.

To illustrate the impacts of differential DAS counting on these vessels, it was assumed they would have the same number of DAS available in FY 2006 as they had available in

FY 2004 (4,303). If all DAS were used in the differential DAS area and were charged at a rate of 1.5:1 for each DAS used, this DAS allocation would be the same as fishing 2,869 DAS at a ratio of 1:1, or a reduction of 21.4 percent from the number of DAS by these vessels in FY 2004.

Eighty-seven percent of the trips by these vessels were charged one DAS or less, but only seven percent were charged less than twelve hours. There is a distinct mode between twelve and fifteen hours, reflecting the minimum amount of DAS charged to day gillnet vessels for any trip over three hours in length. Seventy-two percent of the vessels took sixty or more DAS trips, while thirty-one percent took more than one hundred DAS trips. (Table 26) Thirty-eight of the vessels made more trips than their net allocation of DAS. The number of trips by twenty-three vessels was between one and one and half times their net DAS allocation, while fifteen vessels made between one and a half and two times as many trips as net DAS allocated.

The average DAS per trip were calculated for each of these fifty-five vessels by dividing the number of DAS charged by the number of trips. The pounds (live weight) of GOM cod landed for each permit were then plotted against the average trip lengths. This graph shows that for fifty-five vessels that landed nearly half the GOM cod, most (about seventy percent) was landed by vessels that averaged less than one DAS per trip. (Figure 10)

**Table 23 – Cod revenues as a percent of groundfish and total revenues, FY 2004, for top landers of GOM cod**

<i>Cod \$/Gifsh\$</i>	<i>Frequency</i>	<i>Cumulative %</i>	<i>Cod \$/Total\$</i>	<i>Frequency</i>	<i>Cumulative %</i>
0%	0	0%	0%	0	0%
10%	0	0%	10%	0	0%
20%	0	0%	20%	3	5%
30%	2	4%	30%	7	18%
40%	4	11%	40%	11	38%
50%	7	24%	50%	12	60%
60%	13	47%	60%	11	80%
70%	6	58%	70%	4	87%
80%	9	75%	80%	5	96%
90%	9	91%	90%	1	98%
100%	5	100%	100%	1	100%
More	0	100%	More	0	100%

**Table 24 – FY 2004 distribution of net DAS allocation and DAS used for top landers of GOM cod**

<i>Net DAS Allocation</i>	<i>Frequency</i>	<i>Cumulative %</i>	<i>DAS Used</i>	<i>Frequency</i>	<i>Cumulative %</i>
0	0	0%	0	0	0%
10	0	0%	10	0	0%
20	0	0%	20	0	0%
30	0	0%	30	1	2%
40	1	2%	40	3	7%
50	0	2%	50	9	24%
60	18	35%	60	14	49%
70	3	40%	70	5	58%
80	9	56%	80	8	73%
90	5	65%	90	7	85%
100	8	80%	100	5	95%
More	11	100%	More	3	100%

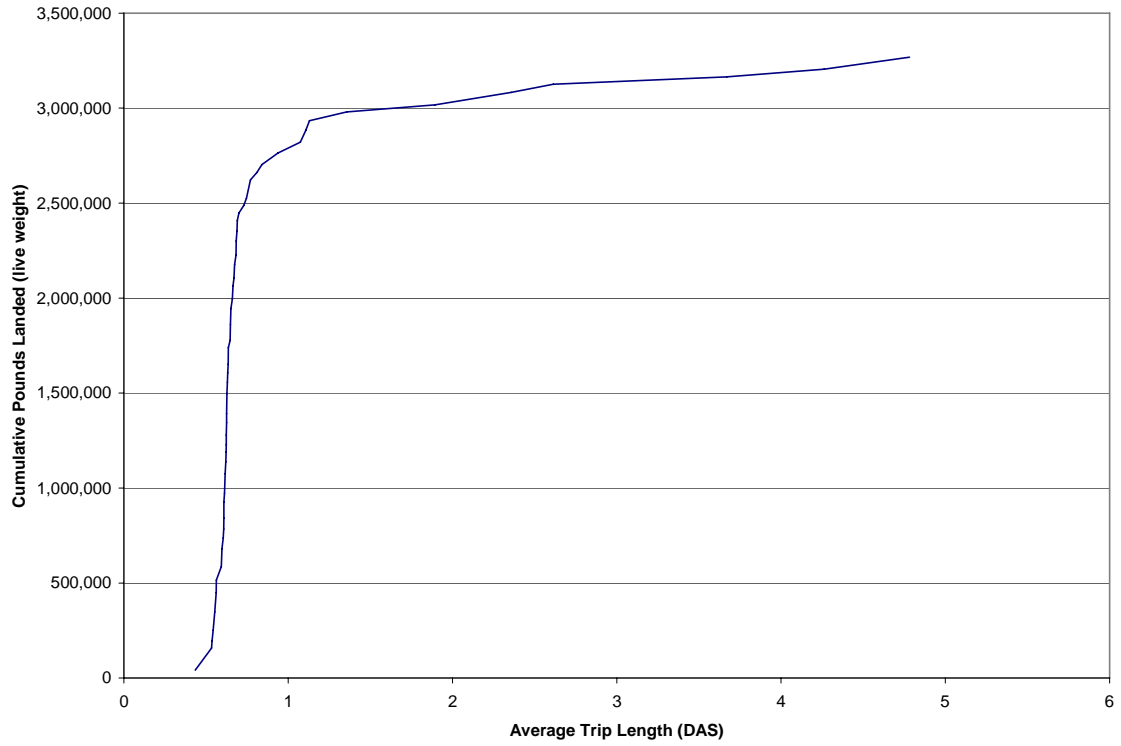
**Table 25 – FY 2004 distribution of DAS used as a percentage of base and net DAS allocations for top landers of GOM cod**

<i>% of Base</i>	<i>Frequency</i>	<i>Cumulative %</i>	<i>% of Net</i>	<i>Frequency</i>	<i>Cumulative %</i>
0	0	0%	0	0	0%
0.1	0	0%	0.1	0	0%
0.2	0	0%	0.2	0	0%
0.3	0	0%	0.3	0	0%
0.4	0	0%	0.4	0	0%
0.5	1	2%	0.5	1	2%
0.6	0	2%	0.6	1	4%
0.7	2	5%	0.7	6	15%
0.8	1	7%	0.8	7	27%
0.9	7	20%	0.9	18	60%
1	14	45%	1	20	96%
More	30	100%	More	2	100%

**Table 26 – FY 2004 distribution of trip length and number of trips for top landers of GOM cod**

<i>Trip Length (DAS)</i>	<i>Frequency</i>	<i>Cumulative %</i>	<i>Number of Trips</i>	<i>Frequency</i>	<i>Cumulative %</i>
0.00	2	0%	0	0	0%
0.13	145	3%	20	0	0%
0.25	79	5%	40	6	11%
0.38	124	7%	60	4	18%
0.50	339	15%	80	15	45%
0.63	3232	83%	100	13	69%
0.75	133	86%	120	9	85%
0.88	55	87%	140	5	95%
1.00	103	89%	More	3	100%
1.50	214	93%			
2.00	98	95%			
2.50	76	97%			
3.00	27	98%			
More	111	100%			

**Figure 10 – Cumulative cod catch vs. average DAS charged per trip, FY 2004, for the top fifty-five vessels landing GOM cod**



## **FY 2004 GOM Cod Discard Ratios**

Discard estimates for GOM cod were calculated for FY 2004 in GARM II. The assessment calculated quarterly ratios by gear using both observer and VTR information. Observer estimates were only developed for gillnet and trawl gear. VTR estimates were developed for otter trawl, gillnet, hook and line, and other gear. The last benchmark assessment concluded that the VTR based estimates for this stock were unreliable, so GARM II relied primarily on observer estimates.

Discard to kept ratios by calendar year quarter using observer data for trawl and gillnet gear are shown in Table 27 and Figure 11. Total discards by gear – shown in Table 29 - were estimated by applying this ratio to the landings (Table 28). With the exception of quarter one, the discard to kept ratios for both gear are similar. In quarter one, the ratio for trawl gear was more than twice as large as the ratio for gillnet gear. The ratio for trawl gear was higher than for gillnet gear in three of four quarters. The data suggest that the increase in the GOM cod trip limit may have reduced discards in quarters two through four. Based on these data, discard and trawl gear appear to have similar discard to kept ratios for GOM cod in FY 2004. There is no evidence that gillnets have a higher discard ratio than trawl gear. While not used in the assessment, VTR ratios are shown for comparison in Table 30 and Figure 12. These results also show that the discard ratios for the two gears are similar.

**Table 27 – CY 2004 GOM cod discard to kept ratio based on observer data**

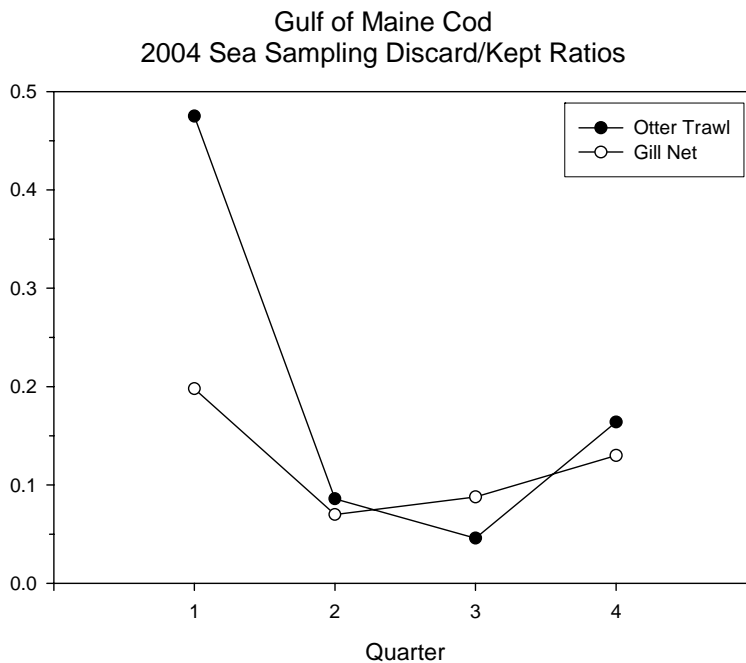
Observer Discard:Kept Ratio	Q1	Q2	Q3	Q4
Otter Trawl	0.48	0.09	0.05	0.16
Gillnet	0.20	0.07	0.09	0.13
Otter Trawl:Gillnet Ratio	2.4	1.2	0.5	1.3

**Table 28 - GOM cod landings by quarter and gear**

Total Landings (mt)	Q1	Q2	Q3	Q4	Total
Otter Trawl	401.4	345.1	503.6	432.3	1682.4
Otter Trawl Percent	46%	54%	41%	41%	44%
Gillnet	381.4	272.5	685.6	580.5	1920.0
Gillnet Percent	44%	43%	56%	54%	51%
Hook & Line and Other	80.7	21.7	40.6	52.9	195.9
HL and Other Percent	9%	3%	3%	5%	5%
Total	863.5	639.3	1229.8	1065.7	3798.3

**Table 29 – CY 2004 GOM cod discards (mt) based on observer data**

Discards (mt)	Q1	Q2	Q3	Q4	Total
Otter Trawl	190.7	29.7	23.2	70.9	314.4
Otter Trawl Percent	72%	61%	28%	48%	58%
Gillnet	75.5	19.1	60.3	75.5	230.4
Gillnet Percent	28%	39%	72%	52%	42%
Hook & Line and Other	No Data	No Data	No Data	No Data	
HL and Other Percent					
Total	266.2	48.8	83.5	146.4	544.8



**Figure 11 - CY 2004 GOM cod discard to kept ratios based on observer data**

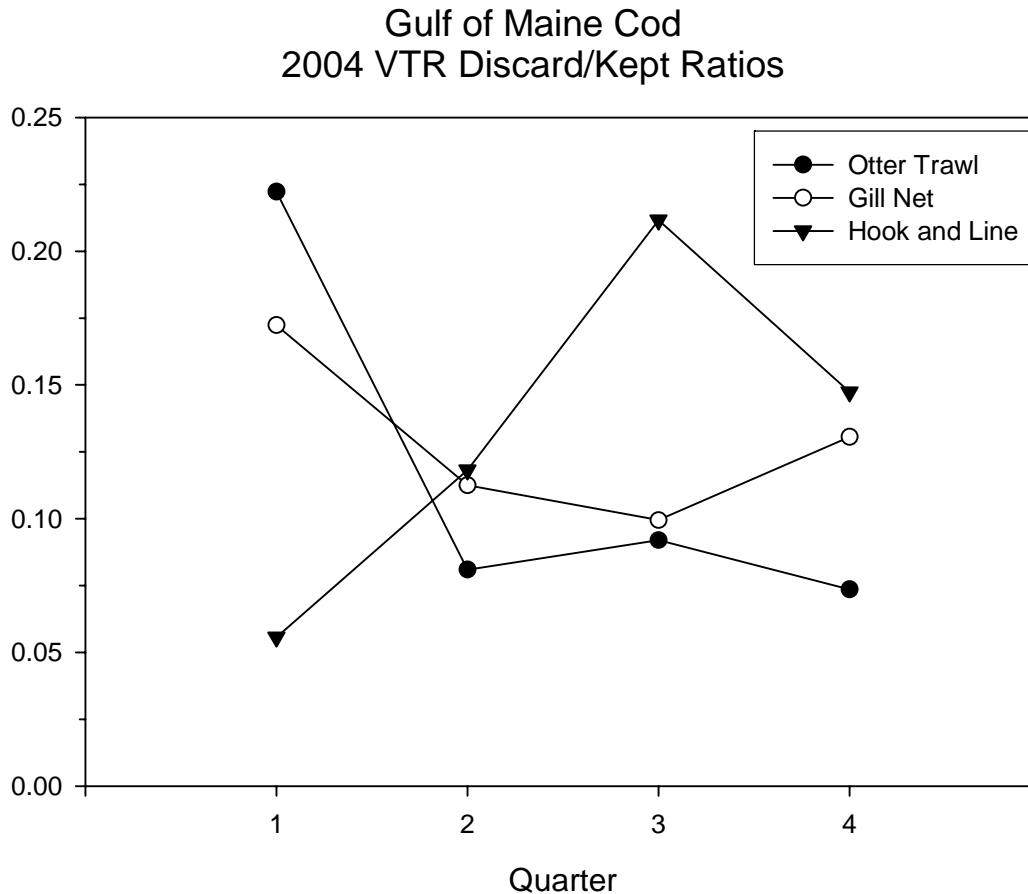
**Table 30 – CY 2004 GOM cod discard to kept ratios based on VTRs**

VTR Discard:Kept Ratio	Q1	Q2	Q3	Q4
Otter Trawl	0.22	0.08	0.09	0.07
Gillnet	0.17	0.11	0.10	0.13
Hook & Line	0.06	0.12	0.21	0.15
Otter Trawl:Gillnet Ratio	4.0	0.7	0.4	0.5

**Table 31 - CY 2004 GOM cod discards (mt) based on VTRs**

Discards (mt)	Q1	Q2	Q3	Q4	Total
Otter Trawl	89.2	28.0	46.3	31.8	195.3
Otter Trawl Percent	56%	47%	39%	28%	43%
Gillnet	65.7	30.7	68.2	75.8	240.4
Gillnet Percent	41%	51%	58%	67%	53%
Hook & Line	4.5	1.3	4.0	6.2	15.9
Hook & Line Percent	3%	2%	3%	5%	4%
Other	No Data	No Data	No Data	No Data	No Data
Other Percent					
<b>Total</b>	<b>159.4</b>	<b>59.9</b>	<b>118.5</b>	<b>113.9</b>	<b>451.6</b>

**Figure 12 – CY 2004 GOM cod discard to kept ratios based on VTRs**



## **Observed Trawl Trips Catching Cod on GB and in the GOM**

Observed trips that used trawls to target regulated groundfish in FY 2004 were examined in order to characterize cod fishing behavior. As of October 19, 2005, records were entered into the observer database system only for trips beginning prior to April 30, 2005. The OBDBS was queried just prior to an update of all observer records for FY 2004, so some data may not yet have been entered when this analysis was completed.

### **Data**

The NMFS OBDBS was queried to extract all observed trawl trips and tows that targeted any regulated groundfish species in CY 2004 and 2005. Data elements extracted include date, days absent, position of tow (haul end position and statistical area), all catch, catch disposition (kept or discarded), reason for discards (fish disposition), mesh size, mesh geometry (diamond, square, etc.), and haul duration. All weights recorded as dressed weight were converted to round weight. Each tow was assigned to a cod stock area either GB or GOM) using the statistical area identified for the tow by the observer.

### **Results**

A total of 1,043 observed trawl trips that targeted regulated groundfish were recorded in the OBDBS through October 19, 2005. Cod was identified as a target species on tows during 388 trips but there were 687 observed trips that caught (kept or discarded) cod. 391 trips were observed that caught cod in the GB cod stock area, with 381 of those trips retaining cod. These trips kept 937,546 pounds (live weight) and discarded 65,643 pounds, for an overall D/K ratio of 0.07. 369 trips were observed that caught cod in the GOM cod stock area, with 369 trips retaining cod. These trips kept 153,894 pounds of cod and discarded 19,645 pounds, for an overall D/K ratio of 12.7 percent. 73 observed trips (10.6 percent of the total) caught cod in both stock areas; all of these trips retained cod. Trips that caught cod in both stock areas kept 65,613 pounds and discarded 3,915 pounds of GB cod, and kept 43,227 pounds and discarded 3,478 pounds of GOM cod. For the observed trips, those trips that caught cod in both stock areas kept twenty-eight percent of the GOM cod caught on observed trips.

Seventy-three observed trawl trips caught cod in both the GB and GOM stock areas. For seventy-four percent of the trips, cod was less than ten percent of the total live weight of regulated groundfish and monkfish that were kept. For these 73 observed trawl trips, 95 percent of the trips kept less than 4,000 pounds, seventy-one percent kept less than 2,000 pounds, and forty-seven percent kept less than 1,000 pounds. GOM cod accounted for less than half the cod kept on fifty-eight percent of the trips, and accounted for all cod kept on nine trips (twelve percent). In only seven percent of the trips was cod more than half the total kept catch weight). The kept catch of cod per day absent was 600 pounds or less on eighty-nine percent of the trips observed catching cod in both areas and was between 600 and 800 pounds on four trips (six percent). (Table 33)

Cod was caught on more than one tow on all of these trips. Thirty-eight of the trips (fifty-two percent) kept cod first from GB, while the other thirty-five trips (forty-eight percent) kept cod first from the GOM stock area. None of the trips that kept cod from both stock

areas caught all the cod kept on one tow. Forty-seven (sixty-four percent) of the trips kept cod from ten or more tows, while only ten trips caught cod on fewer than five tows. For eighty-two percent of the tows, the cod kept on each tow amounted to ten percent or less of the cod kept on the trip. In only four percent of the tows was the cod kept greater than thirty percent of the total cod kept (Table 34).

On twenty-six of these trips, more than half the cod for the trip was caught on one day. On fourteen of these trips (days), the cod was caught in the GB cod stock area while on eleven of the trips the cod was caught in the GOM stock area; one trip caught cod in both areas. On eight trips more than seventy-five percent of the cod was caught on one day. Five of these eight trips caught the cod in the GOM stock area, two in the GB stock area, and one fished in both areas.

**Table 32 – Distribution of observed trips that caught cod in the GB and GOM stock areas, cod as percent of total kept catch (live weight)**

<i>Cod/Total Trip Kept Catch</i>	<i>Number of Trips</i>	<i>Cumulative %</i>
0	0	0%
0.1	54	74%
0.2	10	88%
0.3	1	89%
0.4	2	92%
0.5	1	93%
0.6	2	96%
0.7	1	97%
0.8	2	100%
0.9	0	100%
1	0	100%
More	0	100%

**Table 33 – Summary information for observed trawl trips that caught cod in both the GB and GOM cod stock areas in FY 2004. All pounds are live weight. (Source: NMFS OBDBS)**

<i>Pounds/ Trip</i>	<i>Number of Trips</i>	<i>Cum. %</i>	<i>GOM /Total</i>	<i>Number of Trips</i>	<i>Cum. %</i>	<i>Pounds/ DA</i>	<i>Number of Trips</i>	<i>Cum. %</i>
0	0	0%	0	1	1%	0	0	0%
200	8	11%	0.1	16	23%	200	41	56%
400	6	19%	0.2	8	34%	400	17	79%
600	6	27%	0.3	4	40%	600	7	89%
800	7	37%	0.4	9	52%	800	4	95%
1000	7	47%	0.5	4	58%	1000	3	99%
2000	18	71%	0.6	9	70%	More	1	100%
3000	15	92%	0.7	6	78%			
4000	2	95%	0.8	4	84%			
More	4	100%	0.9	3	88%			
			1	9	100%			
			More	0	100%			

**Table 34 – Cod per tow/cod per trip and number of tows keeping cod for observed trawl trips keeping cod that fished in both the GOM and GB cod stock areas, FY 2004 (Source: NMFS OBDBS)**

<i>Cod-Tow/Cod-Trip</i>	<i>Number of Tows</i>	<i>Cumulative %</i>	<i>Tows Keeping Cod</i>	<i>Number of Trips</i>	<i>Cumulative %</i>
0	0	0%			
0.1	887	82%	1	0	0%
0.2	111	92%	2	3	4%
0.3	43	96%	3	5	11%
0.4	20	98%	4	2	14%
0.5	8	99%	5	2	16%
0.6	1	99%	6	4	22%
0.7	7	100%	7	4	27%
0.8	2	100%	8	5	34%
0.9	1	100%	9	0	34%
1	0	100%	10	1	36%
			More	47	100%