

Harbor Porpoise Bycatch Estimates Used to Evaluate Temporal Closures of the Coastal Gulf of Maine Harbor Porpoise Consequence Closure Area

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On September 26, 2012 NOAA Fisheries announced that a gillnet fishery closure that was to be implemented in the coastal Gulf of Maine during October-November 2012 would instead be enacted in February-March 2013 (NOAA Fisheries 2012). Prior to this announcement, the Northeast Fisheries Science Center had calculated harbor porpoise bycatch estimates for the proposed closure area during each of these two-month blocks using harbor porpoise bycatch data collected from three multi-annual time periods: (1) February 1999 through March of 2012 (to include all years since the HPTRP was implemented), (2) February 2008 through March of 2012 (to evaluate more recent data than those data that were evaluated for the 2010 HPTRP amendments), and (3) October 2010 through March 2012 (to evaluate those data available since implementation of the 2010 HPTRP amendments; Table 1). In these analyses, only the months and areas under consideration for the closure were evaluated; other months and areas were not examined. Therefore, the bycatch estimates do not consider the effects of likely areal shifts in fishing activity in response to the closures.

Our estimates of total harbor porpoise bycatch in the gillnet fishery in the coastal Gulf of Maine Closure Area during October-November and February-March were developed by applying harbor porpoise bycatch rates derived from the Northeast Fishery Observer Program (NEFOP) and At-Sea Monitor (ASM) databases for the area and months in question and multiplying these rates by the estimated total gillnet fishing activity (expressed as total landings in metric tons) in this area and months (Table 1). ASM data are only available after May 2010. Monthly estimates of the number of bycaught harbor porpoise were calculated and then summed to estimate the total bycatch for each two-month block across the three different multi-annual time frames. For each 2-month closure block, the average bycatch was then calculated and compared between the two 2-month blocks (Table 2).

The method used above to estimate harbor porpoise bycatch differs slightly from the protocol used in deriving the estimates of harbor porpoise provided in the annual U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessment Reports (SARs). The bycatch estimates in Tables 1 and 2 used only Vessel Trip Report (VTR) data to approximate total fishing activity, whereas the SAR estimates use VTR data combined with Dealer data to obtain the best possible estimates of total fishing activity. VTR data alone give a reasonable estimate of fishing activity, but probably slightly underestimate total fishing activity. The total bycatch estimates in Tables 1 and 2 may therefore be biased low. However, the VTR data should be representative of total fishing activity, and the incorporation of the Dealer data would not be expected to change any general patterns prominent in the VTR data. Bycatch rates presented in this report were not stratified by pinger use as is done for the SAR estimates, but the general pattern of bycatch per time-area would not be appreciably different if this stratification had been performed.

Harbor porpoise bycatch estimates for each 2-month block varied considerably between years (Figure 1). When averaged across years, the value of the point estimate of harbor porpoise bycatch in October-November over the entire 1999-2012 time period was slightly higher than the value for February-March

(Tables 1 and 2). However, the values of point estimates of average bycatch in more recent years (February 2008 - March of 2012, and October 2010-March 2012) were slightly higher in February-March. Bycatch calculations for similar regions from January 1999 through May of 2007 can be found in Palka and Orphanides (2008).

Additional more detailed analyses are underway and will be presented at the upcoming Harbor Porpoise Take Reduction Team meeting planned for late October 2012. Some of these analyses include examination of changes in spatial patterns of fishing effort and landings during the time periods examined in this paper. Also, bycatch patterns and fishing activity will be examined for areas and times other than the four months analyzed for the Coastal Gulf of Maine Closure Area.

References

NOAA Fisheries. 2012. Statement from John Bullard: Decision to Temporarily Shift the Gillnet Fishery Closure to Protect Harbor Porpoise to February 2013. Available from:

<http://www.nero.noaa.gov/mediacenter/2012/09/12presstatementhp092612.pdf>

Palka DL, Orphanides CD. 2008. Harbor porpoise bycatch rates that indicate compliance with pinger regulations for the Northeast gillnet fishery. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 08-10; 13 p.

TABLES

Table 1. Observed number of harbor porpoise taken, observed gillnet fishing activity (total landings, metric tons), bycatch rates (harbor porpoise/metric ton of landings), total gillnet fishing effort (from Vessel Trip Reports, metric tons of landings), and total harbor porpoise bycatch estimates (number of animals) within the boundaries of the Coastal Gulf of Maine Consequence Closure Area during February-March and October-November from February 1999 through March 2012. Observed harbor porpoise and fishing activity include both Northeast Fishery Observer Program (NEFOP) and At-Sea Monitor (ASM) data. Total bycatch estimates for each 2-month block were calculated by summing the two monthly total estimates. Total and average bycatch per season (number of harbor porpoise) are provided in Table 2.

Time Period	Months	Observed HP	Observed Effort	Bycatch Rate Estimate	Total Effort Estimate	Total Bycatch Estimate
Feb 99 - Mar 12	Feb	24	191.44	0.125	1410.68	176
	Mar	32	172.18	0.186	1799.39	335
	Feb-Mar Total	56	363.62	0.154	3210.07	511
	Oct	21	418.95	0.050	3699.33	185
	Nov	34	563.34	0.060	5858.16	351
	Oct-Nov Total	55	982.29	0.056	9557.49	536
Feb 08 - Mar 12	Feb	17	128.02	0.133	809.20	108
	Mar	26	93.73	0.277	711.63	197
	Feb-Mar Total	43	221.75	0.194	1520.83	305
	Oct	10	232.38	0.043	1217.71	52
	Nov	10	305.5	0.033	2117.26	70
	Oct-Nov Total	20	537.88	0.037	3334.97	122
Oct 10 - Mar 12	Feb	11	103.36	0.106	213.34	23
	Mar	12	68.17	0.176	186.12	33
	Feb-Mar Total	23	171.53	0.134	399.46	56
	Oct	8	203.11	0.039	562.57	22
	Nov	7	270.47	0.026	825.56	21
	Oct-Nov Total	15	473.58	0.032	1388.13	43

Table 2. Estimated harbor porpoise bycatch within the boundaries of the Coastal Gulf of Maine Consequence Closure Area.

Time Period	Season	Total Bycatch Estimate	Average Bycatch Per Season
Feb 99-Mar 12	Feb-Mar	511	37
	Oct-Nov	536	41
	Difference	-25	-4
Feb 08-Mar 12	Feb-Mar	305	61
	Oct-Nov	122	31
	Difference	183	30
Oct 10-Mar 12	Feb-Mar	56	28
	Oct-Nov	43	22
	Difference	13	6

FIGURE

Figure 1. Estimated harbor porpoise bycatch within the boundaries of the Coastal Gulf of Maine Closure Area for February-March and October-November time periods for each calendar year during 1999-2012. Time periods for which At-Sea Monitor (ASM) data were available and used in bycatch estimation are indicated with an "*".

