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Addendum IV to the Interstate Fishery Management Plan for Horseshoe Crab

June 2006

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INTRODUCTION

The Horseshoe Crab Management Board approved the Interstate Fishery Management Plan for Horseshoe Crab (FMP) in October 1998. The goal of the FMP includes "management of horseshoe crab populations for continued use by: current and future generations of the fishing and non-fishing public (including the biomedical industry, scientific and educational research); migratory shorebirds; and, other dependent fish and wildlife (including federally listed (threatened) sea turtles" (ASMFC 1998). Among other things, the FMP maintained controls on the harvest of horseshoe crabs put in place by New Jersey, Delaware, and Maryland prior to the approval of the FMP. These measures were necessary to protect horseshoe crab spawning within and adjacent to the Delaware Bay, which is the epicenter of spawning activity along the Atlantic coast. However, subsequent increased landings in other states largely negated these conservation efforts.

In April 2000, the Management Board approved Addendum I to the Horseshoe Crab FMP. Addendum I established a coastwide, state-by-state annual quota system to further reduce horseshoe crab landings. Through Addendum I the Board recommended to the federal government the creation of the Carl N. Schuster Jr. Horseshoe Crab Reserve, an area of nearly 1,500 square miles in federal waters off the mouth of Delaware Bay that is closed to horseshoe crab harvest. In May 2001, the Management Board approved Addendum II, which established criteria for voluntary quota transfers between states. The Board approved Addendum III in March 2004 to further restrict harvest in New Jersey, Delaware, and Maryland. The Management Board approved this Addendum in May 2006.

STATEMENT OF THE PROBLEM

There is growing public concern regarding the horseshoe crab population and its ecological role in the Delaware Bay. Horseshoe crab eggs provide a crucial food source for migratory shorebirds (including the red knot) in the Delaware Bay. Also, successful conch and eel trap fisheries depend on horseshoe crabs for bait.

The U.S. Fish and Wildlife Service (USFWS) Shorebird Technical Committee has reported that the red knot population is at low levels. Red knots have shown no sign of recovery, despite a four-fold reduction in horseshoe crab landings since 1998 (Table 1). Population counts of red knots in its Tierra del Fuego wintering ground have dropped from 51,255 in 2000 to 17,653 in 2005. Further evidence of the red knot population decline are seen in the Delaware Bay counts that have decreased from 43,145 individuals in 2000 to 15,300 in 2005. If recent "levels of annual survival prevail, the population is predicted to approach extremely low numbers by 2010 when the probability of extinction will be correspondingly higher than it is today" (Baker et al. 2004).

While there are a number of reviews on the status of horseshoe crabs, there is no externally peer-reviewed coastwide estimate of horseshoe crab abundance accepted by the Horseshoe Crab

Technical Committee. However, the Technical Committee's estimate of horseshoe crab abundance in 2004 in the Delaware Bay is 13.3 million crabs. Horseshoe crab bait landings have been reduced by 76 percent since 1998, with a preliminary coastwide total of 730,890 crabs landed in 2005 (Table 1).

The USFWS's Shorebird Technical Committee concluded a moratorium of horseshoe crab harvest could provide more eggs for the birds to feed upon. The ASMFC's Horseshoe Crab Technical Committee indicated that both the partial and full moratorium on bait harvest in New Jersey and Delaware would provide a small increase in egg availability for shorebirds. The Board approved the current Addendum to address the needs of the migratory shorebirds, particularly the red knot, while allowing a limited commercial bait fishery. The Addendum is designed to maximize egg availability to migratory shorebirds in the Delaware Bay by prohibiting harvest of horseshoe crab prior to and during the peak spawning season for the crabs as well as the peak feeding period for shorebirds.

Table 1. Reported Horseshoe Crab Landings (in number) for Bait

Jurisdiction	Reference Period Landings (RPL)	Addendum I Quota[a]	Addendum III Quota[a]	1998	1999	2000	2001	2002	2003	2004	Preliminary 2005
ME	13,500	13,500	13,500	13,500	1,500	1,391	100	150	98	0	0
NH	350	350	350	200	350	180	0	120	0	0	0
MA	440,503	330,377	330,377	400,000	545,715	272,930	134,143	138,613	125,364	69,436	73,740
RI	26,053	26,053	26,053	-	26,053	13,809	3,490	3,886	5,824	6,030	8,260
CT[b]	64,919	48,689	48,689	34,583	45,050	15,921	11,508	32,080	13,386	23,788	15,240
NY	488,362	366,272	366,272	352,462	394,026	628,442	129,074	177,271	134,264	142,279	155,108
NJ	604,049	453,037	150,000	241,456	297,680	398,629	261,239	281,134	113,940	46,569	87,250
PA	-	0	0	75,000	0	0	0	0	0	0	0
DE	482,401	361,801	150,000	479,634	428,980	248,938	244,813	298,318	356,380	127,208	154,269
MD	613,225	459,919	170,653	114,458	134,068	152,275	170,653	278,211	168,865	161,928	169,821
PRFC	-	0	0	-	0	0	0	0	0	0	0
DC	-	0	0	-	0	0	0	0	0	0	0
VA	203,326	152,495	152,495	1,015,700	650,640	145,465	48,880	42,954	106,577	94,713	59,865
NC	24,036	24,036	24,036	21,392	28,094	14,973	9,130	12,906	24,367	9,437	7,337
SC	-	0	0	-	0	0	0	0	0	0	0
GA	29,312	29,312	29,312	-	29,312	0	0	0	0	0	0
FL	9,455	9,455	9,455	200	19,446	10,462	0	200	1,628	0	0
TOTAL	2,999,491	2,275,296	1,471,192	2,748,585	2,600,914	1,903,415	1,013,030	1,265,843	1,050,693	681,388	730,890
Pct. Reduction Relative to RPL				8.4	13.3	36.5	66.2	57.8	65.0	77.3	75.6
Pct. Reduction Relative to Quota I						16.3	55.5	44.4	53.8	70.1	67.9
Pct. Reduction Relative to Quota III										53.7	50.3

[a] States that qualify for de minimis status are not required to reduce landings by 25%

[b] CT landings prior to 2000 are estimated based on bait usage in the eel and conch fisheries.

COMMERCIAL FISHERIES MANAGEMENT MEASURES

The provisions of this Addendum are limited to New Jersey, Delaware, Maryland, and Virginia. All other jurisdictions remain status quo as defined by the FMP and Addenda.

Bait Harvest Level Threshold/Closed Season Combinations

Addendum IV prohibits directed harvest and landing of all horseshoe crabs in New Jersey and Delaware from January 1 through June 7, and female horseshoe crabs in New Jersey and Delaware from June 8 through December 31. It also limits New Jersey and Delaware's harvest to 100,000 horseshoe crabs per state per year. These provisions are in place for two years, from October 1, 2006 to September 30, 2008.

Based on tagging release and recapture information from the USFWS tagging database, the Horseshoe Crab Technical Committee and Plan Development Team found that at least a portion of crabs harvested in Maryland and Virginia waters are "crabs of Delaware Bay origin." Crabs tagged in Delaware Bay were recaptured in state waters of New Jersey, Delaware, Maryland, and Virginia from 1999 to 2003.

To provide additional protection to crabs of Delaware Bay origin, Addendum IV prohibits directed harvest and landing of horseshoe crabs in Maryland from January 1 through June 7 for two years, from October 1, 2006 to September 30, 2008. It also prohibits the landing of horseshoe crabs in Virginia from federal waters from January 1 through June 7. Addendum IV mandates that no more than 40% of Virginia's annual quota may be harvested east of the COLREGS line in ocean waters. It also requires that horseshoe crabs harvested east of the COLREGS line and landed in Virginia must be comprised of a minimum male to female ratio of 2:1.

Biomedical Harvest Restrictions

Adult horseshoe crabs are also harvested for use by the biomedical industry. Their blood contains a clotting agent called Limulus Amoebocyte Lysate (LAL), which detects human pathogens in patients, drugs, and all intravenous devices. The LAL test is currently the worldwide standard for screening medical equipment and drugs for bacterial contamination.

Based on data collected and reported by the states, the Horseshoe Crab Plan Review Team (PRT) calculated that 292,760 crabs were harvested for biomedical purposes and returned to the harvest area in 2004. [An additional 50,366 crabs were bled in Massachusetts but all were harvested as bait and counted against state quotas.] The PRT estimated total coastwide mortality from biomedical harvest and processing in 2004 to be between 38,205 and 58,845 crabs. Currently, there are five biomedical companies within ASMFC's jurisdiction. Three fall within the scope of this Addendum: a bleeding facility in New Jersey, a manufacturer of LAL endotoxin detection reagents in Maryland, and a manufacturer in Virginia.

Addendum IV maintains an earlier provision in the FMP that harvest and landing of horseshoe crabs for biomedical use are not subject to the restrictions placed on harvest and landing of crabs for bait use (ASMFC 1998). This exemption is contingent upon relatively low mortality from

the biomedical process including transport and bleeding. Any horseshoe crabs harvested for biomedical use that could not be returned alive to the general area of capture shall be made available to the bait industry and counted against that state's quota.

COMPLIANCE

Affected states must implement this Addendum no later than the following dates:

June 16, 2006: States must submit state programs to implement Addendum IV, including management and monitoring programs, for approval by the Management Board.

October 1, 2006: States with approved management and monitoring programs shall begin implementing Addendum IV.

LITERATURE CITED

Atlantic States Marine Fisheries Commission (ASMFC). 1998. Interstate Fishery Management Plan for Horseshoe Crab. FMR No. 32. 58pp.

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