

Horseshoe Crab Advisory Panel Report

April 24, 2008

The Advisory Panel met on April 21st to review recent research, monitoring, and landings. The group discussed options included in draft Addendum V as well as issues beyond Delaware Bay. Panel members in attendance represented harvesters (horseshoe crab and conch), dealers, processors, biomedical companies, and the conservation community. The meeting was held at the Holiday Inn – BWI Airport in Linthicum, Maryland. The following is a summary of the meeting.

Attendees

Advisory Panel Members

Jim Cooper (SC), Chair
Rick Robins (VA)
John Turner (NY)
Peter Wenczel (NY)
Jay Harrington (MA)

Mick Dawson (MA)
Allen Burgenson (MD)
Jeff Eutsler (MD)
Merrill Campbell Jr. (MD)
Brad Spear (ASMFC), Staff

Recent Landings

Bait

The Panel noted decreased landings in 2007 for New Jersey, Delaware, and Virginia. This is because of regulations and not lack of demand for crabs. As a result, increased landings are seen in states such as New York and Massachusetts. Both of these states recently took action to set a quota lower than what is required by ASMFC (i.e. 170,000 crabs in New York and 165,000 crabs in Massachusetts). Both states also lowered trip limits. In MA the intent is thought to be to reduce the likelihood that crabs will be stockpiled and sold to out of state buyers. NY is using the lowered trip limit to better manage its quota. Panel members expressed frustration that out of state buyers are hurting the fishermen and ultimately the crabs in these states. At least one panel member believes the new regulations in MA and NY will put people, from both in and out of state, out of the business. In conclusion, the AP believes Addendum IV is achieving the goal of maximizing female horseshoe crabs in Delaware Bay, but that it has led to displaced effort and economical impacts in states outside of the Delaware Bay region.

AP members requested that ASMFC's state-by-state landings table include a column showing state quotas in place that are more restrictive than ASMFC's quotas. Staff agreed that this would provide a more accurate account of regulations and harvest. Please see the revised bait landings table at the end of this report (Table 1).

Biomedical

The AP reviewed the Plan Review Team's (PRT) account of reported biomedical landings and estimated mortality for 2007 (See PRT report, "2008 Review of the FMP in 2007 for Horseshoe Crab"). Biomedical landings of horseshoe crabs noticeably increased in 2007 over the past few years. Mortality estimated by the PRT was above the threshold noted in the 1998 Horseshoe Crab Fishery Management Plan. However, panel members argued strongly that using 15% to estimate crab mortality after they are bled is an overestimate. They noted the study that reported a 15% mortality is flawed. Also, it was conducted ten years ago. The Panel notes that since then

handling practices have improved, which has led to increased survival of bled crabs. One biomedical company, Lonza, provided the Board a report on it's handling practices and mortality at its meeting in October 2007. One panel member pointed out that there are no recent studies on this topic published in the peer-reviewed literature. He suggested biomedical companies partner with university researchers, states, or anyone else interested to conduct a mortality estimate study and get it published.

AP Motion 1: Whereas the Horseshoe Crab (HSC) Advisory Panel has discussed the “2008 Review of the FMP in 2007 for Horseshoe Crab” and has observed that the 15% mortality estimate for biomedical application appears to be exceedingly high, when considering current practices for harvest and release and harvester experience, the HSC Advisory Panel requests that the HSC Management Board review, update and appropriately revise the data that supports mortality of HSCs associated with their use in the biomedical industry. *This motion was passed unanimously by the Advisory Panel members in attendance.*

The Thompson study, which concluded a 15% mortality, was an early attempt to estimate mortality from biomedical use; the study was adversely affected by inappropriate containment procedures. For example, the bled crabs were inadvertently left in the sun for several hours before placed in a shallow holding area. Subsequent studies have improved the experimental conditions and more accurately reflect mortality. Several biomedical industry representatives believe that the following publication is the most suitable reference for mortality associated with biomedical applications:

Elizabeth A. Walls and Jim Berkson. Effects of blood extraction on horseshoe crab, *Limulus polyphemus*. Fisheries Bulletin 101:457-9, 2003.

Issues Beyond the Delaware Bay

The Panel would like to underscore the effect of recent regulations to increase harvest pressure toward the north (e.g. New York and Massachusetts). It is reported that conch fishermen in those states are having trouble getting enough crabs to supply their bait needs. The Panel notes that not providing enough bait to fishermen is inconsistent with the goals of the plan.

Based on the Technical Committee recommendation that horseshoe crab management should be regional or embayment specific, the Panel recommends more data should be collected outside Delaware Bay. It's important to know what proportion of the population is migratory and what proportion is localized. Virginia Tech is planning a cooperative research project with fishermen to look at mark/recapture of crabs in Chincoteague Bay, Virginia.

Economic Assessment of Mid-Atlantic Horseshoe Crab and Dependent Fisheries

The AP reviewed the economic assessment conducted by Industrial Economics, Inc (IEc). IEc noted in the report data gaps for most of the states. Panel members believe this was not highlighted enough and that the study was very incomplete and misleading. As stated in the report several states do not require reporting of conch landings. Based on two panel members' accounts of their individual landings in 2006, the report grossly underestimates catch numbers for conch. They suspect it is the same for eel landings reported in the study. Virginia recently implemented mandatory dealer reporting of conch. Panel members recommended that other states follow suit. Accurate data helps everyone involved in fisheries management. It was the

conviction of one panel member that a very poor job was done in the research and analysis of the study, and the Board should not make decisions based on it.

Adaptive Resource Management

The AP is very interested in the ARM modeling work that has recently started. They see value in using good science and data to determine how many crab eggs (and crabs) are need to support the energetic needs of shorebirds passing through Delaware Bay. It will be useful to then know how many crabs can be harvested from the system while supporting the needs of the shorebirds. The AP urged the ARM modeling process to move as quickly as possible. One panel member recommended changing language used to describe the process in the Technical Committee's January 17, 2008, report. Staff agreed with the recommendation and will edit the report.

AP Motion 2: Whereas the output of the Adaptive Resource Management (ARM) model may ultimately drive the horseshoe crab FMP, and whereas stakeholder involvement is critical to the ARM process, the AP requests that the ASMFC Horseshoe Crab Management Board appoint a representative from the biomedical industry and from the horseshoe crab fishery to participate in the joint Adaptive Resource Management meetings of the Horseshoe Crab and Shorebird Technical Committees to ensure that the full range of stakeholders are represented in the discussions concerning the ARM. The AP also requests the opportunity to review and comment on the output of the ARM modeling group. *This motion was passed unanimously by the Advisory Panel members in attendance.*

Draft Addendum V

The AP reviewed the same draft Addendum V that the Board will review at its May 7th meeting. Members recommended clarifying the option to allow a one-year extension of Addendum V provisions through a Board vote, as opposed to the standard addendum process. They asked to make it clear that this option is for a one-time extension not for an indefinite number of extensions. It appears this is consistent with the Board's intention. Panel members were encouraged by the findings of the TC and recent survey results showing strong improvements of all age classes of horseshoe crabs in the Delaware Bay region, and supported continuation of Addendum IV provisions for New Jersey, Delaware, Maryland, and Virginia. They stress to the Board that we need to allow time for the management plan to work. Members also noted it is not useful to debate the moratorium option for NJ and DE and recommended removing it from the document, since the present management strategy is consistent with population growth and recent peer reviews of the latest horseshoe crab science indicate that additional management in the region will not accelerate the population recovery (Hata and Hallerman, 2008).

Representatives from Maryland stated they would support a requirement for their state to land no more females than a 1 to 1, male to female, ratio would allow. However, through conservation equivalency, they would accept a 2 to 1 male to female ratio if the state quota was increased to 200,000 crabs. Because female crabs are worth more to the industry, they would need more males to compensate for the loss in harvest of females. The rest of the panel supported Maryland's position and recommends including these options in draft Addendum V. The Panel noted that Maryland has had an extremely conservative history in its management of this resource, and that a portion of Maryland's crabs spawn locally in coastal bays in Maryland and Virginia.

Table 1. Horseshoe Crab Bait Landings (in numbers of crabs) for Atlantic Coast States (1998 – 2007)

| Jurisdiction | RPL | Addendum IV | | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | Preliminary 2007 |
|--|------------------|--------------------|--------------------------|------------------|------------------|------------------|------------------|------------------|------------------|----------------|----------------|----------------|---------------------|
| | | Quota ^a | State Quota ^c | | | | | | | | | | |
| ME | 13,500 | 13,500 | - | 13,500 | 1,500 | 1,391 | 100 | 150 | 98 | 0 | 0 | 0 | 0 |
| NH | 350 | 350 | - | 200 | 350 | 180 | 0 | 120 | 0 | 0 | 0 | 0 | 5 |
| MA | 440,503 | 330,377 | 165,000 | 400,000 | 545,715 | 272,930 | 134,143 | 138,613 | 125,364 | 69,436 | 73,740 | 171,906 | 150,829 |
| RI | 26,053 | 26,053 | 14,655 | - | 26,053 | 13,809 | 3,490 | 3,886 | 5,824 | 6,030 | 8,260 | 15,274 | 15,564 |
| CT ^b | 64,919 | 48,689 | - | 34,583 | 45,050 | 15,921 | 11,508 | 32,080 | 13,386 | 23,788 | 15,240 | 25,280 | 24,761 |
| NY | 488,362 | 366,272 | 170,000 | 352,462 | 394,026 | 628,442 | 129,074 | 177,271 | 134,264 | 142,279 | 155,108 | 172,381 | 284,120 |
| NJ | 604,049 | 100,000 | 0 | 241,456 | 297,680 | 398,629 | 261,239 | 281,134 | 113,940 | 46,569 | 87,250 | 3,444 | 0 |
| PA ^d | - | 0 | - | 75,000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | - |
| DE | 482,401 | 100,000 | - | 479,634 | 428,980 | 248,938 | 244,813 | 298,318 | 356,380 | 127,208 | 154,269 | 147,813 | 76,663 |
| MD | 613,225 | 170,653 | - | 114,458 | 134,068 | 152,275 | 170,653 | 278,211 | 168,865 | 161,928 | 169,821 | 136,733 | 172,117 |
| PRFC | - | 0 | - | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DC | - | 0 | - | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| VA | 203,326 | 152,495 | - | 1,015,700 | 650,640 | 145,465 | 48,880 | 42,954 | 106,577 | 94,713 | 97,957 | 155,704 | 79,570 |
| NC | 24,036 | 24,036 | - | 21,392 | 28,094 | 14,973 | 9,130 | 12,906 | 24,367 | 9,437 | 7,462 | 10,331 | 7,091 |
| SC | - | 0 | - | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GA | 29,312 | 29,312 | - | - | 29,312 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FL | 9,455 | 9,455 | - | 200 | 19,446 | 10,462 | 0 | 200 | 1,628 | 0 | 0 | 469 | 0 |
| TOTAL | 2,999,491 | 1,371,192 | | 2,748,585 | 2,600,914 | 1,903,415 | 1,013,030 | 1,265,843 | 1,050,693 | 681,388 | 769,107 | 839,335 | 810,720 |
| Pct. Reduction Relative to RPL | | | | 8.4 | 13.3 | 36.5 | 66.2 | 57.8 | 65.0 | 77.3 | 74.4 | 72.0 | 73.0 |
| Pct. Reduction Relative to Addendum IV Quota | | | | | | | | | | | | | 40.9 |
| ^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. | | | | | | | | | | | | | |
| ^c State quotas listed for states that have adopted quotas more restrictive than ASMFC. | | | | | | | | | | | | | |
| ^d Pennsylvania was removed as a member of the Horseshoe Crab Management Board in 2007. It no longer reports landings. | | | | | | | | | | | | | |
| RPL = Reference Period Landings | | | | | | | | | | | | | |