Horseshoe Crab Technical Committee Meeting
Baltimore, MD
17 April 2001

Update on the Implementation of Recommended Research and Monitoring Needs

Dr. Lisa Kline (ASMFC) informed the TC that the Fish and Wildlife Foundation has agreed to provide 50 % match to the state challenge funds for Dr. Jim Berkson's horseshoe crab studies. The funded research will include a pilot horseshoe crab trawl survey study, a study to develop methods to identify newly mature horseshoe crabs, and a study to investigate the use of aerial videography to support spawning surveys. The states of MD, DE and NJ have contributed a total of $125K to support these studies and Dr. Tim King's microsatellite DNA analysis of the coastwide horseshoe crab population. The USFWS has also contributed $15K for Dr. King's work. Dr. Kline notified the TC that the ASMFC will keep $10,000 of the state challenge funds to cover indirect costs. This will result in an $18K decrease in funding to Dr. Berkson's project because the matching funds will also be decreased.

Dr. Jim Berkson gave an overview of his proposed work. He has hired a post doctoral researcher from VIMS who has extensive experience with trawl surveys and trawl survey design to work on the pilot trawl survey study. He anticipates convening a 1-2 day trawl survey workshop in late June or early July. The results of this workshop will be used to design the pilot survey. Surveying is expected to begin in August, probably in the Delaware Bay area. Dr. Berkson foresees an adaptive design that will allow for survey expansion / improvement over time.

Dr. Berkson will be working with Dr. Steve Smith from VA Techs. Vet School in developing methods to reliably and consistently identify new recruits (in the field if possible) into the HSC spawning population. Animals will be examined in the field and held in tanks at the schools new $60K horseshoe crab research facility. A senior student (experienced in aquaculture?) will be hired for tank maintenance..

The use of aerial videography to survey or support surveys of spawning horseshoe crabs will be investigated using a fixed-wing aircraft equipped with night vision videography equipment. The night vision equipment has been loaned by the manufacturer to the study free of charge. Initial tests will be performed near VA Tech on horseshoe crab-sized objects. The equipment will then be used along spawning beaches.

Dr. Tim King presented preliminary results from the horseshoe crab microsatellite DNA work he has completed to date. The technical committee was very encouraged by these results. His preliminary work showed more diversity in horseshoe crabs than encountered in any other population. He has processed samples from Delaware Bay (DE & NJ), Chesapeake Bay (MD), Maine and South Carolina. Preliminary results showed that animals collected from Maine were very different from the Chesapeake, Delaware Bay and South Carolina animals. Also, the samples from the Delaware Bay were very different from the Chesapeake Bay samples. There is less difference between animals from the Delaware Bay and South Carolina, although there is some uncertainty as to the exact origin of the South Carolina animals.

Dr. King requested direction from the TC on how best to allocate sampling to meet management needs. After some discussion, the TC and Dr. King agreed that it would be appropriate to get at least 1 sample (50 crabs) from each state for analysis using the state challenge money - recognizing that samples from the states of DE, NJ, MD, ME and SC have already been processed. States that suspect more than one population exists in their waters are encouraged to collect samples from those populations since sample collection is easily accomplished and cost little to preserve. These additional samples could be worked up at the state's expense or as additional funding becomes available.

The TC also agreed that its members should facilitate sample collection where necessary. The NMFS will collect samples from their surveys. Sample collection involves clipping a small portion from one of the non-feeding pincers. Samples are preserved in 90% ethanol in microcentrifuge tubes, which Dr. King will provide. Samples

should be collected from the spawning beaches. Dr. King stated that samples could be processed at about one state per week.

A proposal from Dr. David Smith to develop a "user-friendly" software program to compute and analyze the annual Delaware Bay spawning survey index was also discussed. It was recognized that this item was a low-cost/high benefit need. Dr. Smith has been calculating the annual index values for Delaware and New Jersey through his good graces. The development of this software would facilitate calculation of the index values by the states. Development cost is about $5K. The state of Delaware is attempting to secure funding through penalty monies. However, it is not clear if the proposal will be funded or what the timeline is for review or disbursal of funds. It was noted that the survey is currently our best tool for monitoring the horseshoe crab population. The TC discussed using some of the state challenge funds, but recognized that trawl sampling was already being reduced by overhead charges. It was recommended that the Board be informed of this need, so that other funding solutions might be found.

Sheila Eyler of the USFWS presented results from the biomedical tagging program. A total of 8,684 HSCs was tagged in 1999 and 2,499 were tagged in 2000. To date there have been 297 returns. The public reported 204 returns of these 50 were reported by commercial fishermen (21 of which were sold), and 120 were found dead on the beach. There was some discussion regarding movement by tagged crabs. Although Ms. Eyler did not specifically look at movement versus days-at-large, she recalled that all returned tags were from the general area of release (i.e. crab released in Chincoteague, VA were not recaptured in MA or SC). Tom O'Connell stated that there have never been any recaptures of Maryland Chesapeake Bay tagged crabs in the Delaware Bay and vice-versa. This information supports the preliminary findings of Dr. King and supports the existence of separate stocks.

The TC discussed a charge by the MB to estimate the long-term (10-year) costs of the horseshoe crab stock assessment program. The TC concluded that it would be far more practical to address this issue upon completion of the genetic work and pilot trawl survey.

Draft Addendum II to the Horseshoe Crab FMP-

Tom O'Connell reviewed Addendum II and reported on the public hearings. The hearings were held in MA, NJ, DE, MD and VA The hearings were poorly attended, but additional written comments were received. In summary, conservation community representatives are opposed to quota transfers, VA fishermen favor Option D, several fishermen in states other than VA oppose quota transfers.

The TC discussed the issue of quotas at length. The TC prepared the following summary for the Management Board:

[Insert Edited Version]

The Technical Committee recognizes the potential importance of quota transfers as a management tool. The TC is currently unable to assess the impacts of quota transfers and recommends that the MB considers the following points in their review of Addendum II:

rent state-by-state landing caps are based on the history of landings rather than biological reference points.

genetic information suggests a strong population structure in HSCs with many subpopulations. An underage in the harvest of one n could have significant impacts if transferred to a different population.

her the magnitude the quota transfer, the greater the risk to the target population. The TC can not identify a threshold level of quota hat would be acceptable given the current available information.

on necessary to delineate stocks and determining biological reference points is critical to assessing quota transfers. Stock delineation ly being addressed, but information to determine appropriate biological reference points remains a long-term initiative. The TC to recommend that collection of this information remains a high priority requiring an on-going commitment by the management

Establishment of Protocols for Managing the Use of Horseshoe Crabs by the Biomedical Industry -

Mr. Peter Himchak reported on the results of the biomedical working group meeting. The meeting was attended by Dieter Busch (ASMFC), four members of the TC, four members from four of the five biomedical companies and a representative from the FDA. The FDA reported that it no longer has regulations in place regarding the return of crabs to the water. The FDA is responsible only for issues regarding the product (essentially what goes on in the facility). Requirements for returning crabs to the water are license provisions that can be modified by a company simply notifying the FDA. The FDA does not have enforcement power, and could only take administrative action if a violation of a licensing provision was noted. It was agreed by all parties present that the states have clear authority to regulate the use of the resource. Up to this point, states have simply relegated authority to the FDA. It is anticipated that a written statement clearly affirming this point will be written.

Several options regarding biomedical harvest were presented at the working group meeting. The group agreed that Option 4 of the document was most reasonable and practical. Specifically, Option 4 allows horseshoe crabs collected for bait purposes to be used for biomedical purposes and then returned to the bait market. These crabs would be deducted from the state's annual ASMFC quota. The live release of any crabs landed for bait purposes must be to the waters from which they were collected. Horseshoe crabs collected for biomedical purposes through each state's established biomedical collection permit must be returned to the waters from which they were collected. If a state fills its annual bait quota, then only crabs collected by permitted biomedical harvesters could be landed and must be returned to the waters from which they came. This option reduces overall horseshoe crab mortality, without negatively impacting biomedical and bait availability.

The Technical Committee agreed with this approach. Further, this option is in keeping with the FMP in its current form.

Mr. Himchak also reviewed the preliminary results from the questionnaires sent to each biomedical company. The net increase in the number of crabs bled in 1998 (281,663) versus crabs bled in 2000 (284,018) was fewer than 3,000 crabs. (How about the increase in #s collected, more significant?)The number of crabs rejected by the facilities increased by 30,586 crabs. Forty-five percent (45%) of these were injured, 27% were too small and 28% were rejected for unknown reasons.

Under the FMP the Commission is responsible for reevaluating potential restrictions if mortality associated with collecting, shipping, handling or use exceeds 57,500 crabs per year. It is difficult to ascertain if mortality has exceeded this number under current monitoring. Estimates of mortality from bleeding of 10-15% are reported in the literature. This does not include capture or handling mortality up to the point of bleeding. The biomedical work group recommended that additional studies be made to better assess capture and handling mortality.

Review of 2000 State Compliance Reports / 2001 Management Proposals

The Technical Committee reviewed annual state compliance reports and management proposals. The Technical Committee noted only a few concerns with state monitoring reports / management plans :

- Although NY exceeded its 2000 quota allocation, the TC representative reported that NY intends to subtract this overage from its 2001 allocation.
- NY contracted for horseshoe crabs to be included in port sampling (characterization of the catch), the contractor failed to implement this task. NY intends to ensure this information is collected in 2001.
- NY has not attempted to identify horseshoe crab nursery and spawning habitat due to the unavailability of staff and funds. This requirement was not addressed in the state's 2001 management proposal.
- NY has not submitted their 1999 horseshoe crab landings to the ASMFC.

Horseshoe Crab Tagging Program - Plans for 2001

Sheila Eyler reported that the USFWS is currently maintaining the database for crabs tagged by the biomedical companies. The Service will be tagging crabs in Delaware Bay in 2001 to determine the frequency of return spawning activity by female horseshoe crabs. Crabs tagged in this study will also be entered into the database.

The TC is concerned that a large number of horseshoe crab tagging initiatives are being conducted along the coast using various tag types and reporting numbers. MA reported six different initiatives occurring in that state alone. Many of the current horseshoe crab tagging initiatives lack clearly defined objectives. Such initiatives can increase mortality and yield little or no information on the population.

It was recommended that the TC chair contact the ASMFC tagging group to obtain any guidelines that they may have developed. The TC will also consider convening a tagging workshop to better coordinate existing tagging efforts and investigate the utility of these initiatives.