

that is used to test injectable drugs and medical devices for bacteria and bacterial by-products. Presently, there is no alternative to LAL derived from the horseshoe crab.

NMFS manages horseshoe crabs in the exclusive economic zone in close cooperation with the Commission. The Commission's Horseshoe Crab Management Board met on April 21, 2000, and recommended that biomedical companies with a history of collecting horseshoe crabs in the Reserve be given an exemption to continue their historic levels of collection not to exceed a combined harvest total of 10,000 crabs annually. The Commission's Horseshoe Crab Plan Review Team has reported that biomedical harvest of up to 10,000 horseshoe crabs should be allowed to continue in the Reserve given that the resulting mortality should be only about 1,000 horseshoe crabs (10 percent mortality during bleeding process). Also, the Commission's Horseshoe Crab Stock Assessment Committee Chairman recommended that, in order to protect the Delaware Bay horseshoe crab population from over-harvest or excessive collection mortality, no more than a maximum of 20,000 horseshoe crabs should be collected for biomedical purposes from the Reserve. In addition to the direct mortality of horseshoe crabs that are bled, it can be expected that more than 20,000 horseshoe crabs will be trawled up and examined for LAL processing. This is because horseshoe crab trawl catches usually include varied sizes of horseshoe crabs and large female horseshoe crabs are the ones selected for LAL processing. The unharvested horseshoe crabs are released at sea with some unknown amount of mortality, but this mortality is expected to be negligible.

Collection of horseshoe crabs for biomedical purposes from the Reserve is necessary because of the low numbers of horseshoe crabs found in other areas along the New Jersey Coast from July through October and in light of the critical role horseshoe crab blood plays in proper health care. In conjunction with the biomedical harvest, NMFS is considering requiring that scientific data be collected from the horseshoe crabs taken in the Reserve as a condition of receiving an EFP. Since the Reserve was established on February 5, 2001, the only fishery data from this area were collected under EFPs issued to Limuli Laboratories on September 28, 2001, which allowed collections until October 31, 2001, and on August 1, 2002, which allowed collections until October 31, 2002, and under Scientific Research Activity Permits issued to Dr. Jim

Berkson, Virginia Polytechnic Institute and State University's Department of Fisheries and Wildlife Science on September 4, 2001 (for collections from September 1–October 31, 2001) and on September 24, 2002 (for collections from September 24–November 15, 2002). Further data are needed to improve the understanding of the horseshoe crab population in the Delaware Bay area and to better manage the horseshoe crab resource under the cooperative state/Federal management program. The information collected through the EFP will be provided to NMFS, the Commission and to the State of New Jersey.

Results of Previous Year's EFP

Limuli Laboratories applied for an EFP to collect horseshoe crabs for biomedical and data collection purposes from the Reserve, in 2002. The EFP application specified that: (1) The same methods would be used in 2002 as in 2001, (2) 10 percent of the bled horseshoe crabs would be tagged, and (3) there had not been any sighting or capture of marine mammals or endangered species in the trawling nets of fishing vessels engaged in the collection of horseshoe crabs, since 1993. An EFP was issued to Limuli Laboratories on August 1, 2002, which allowed them to collect horseshoe crabs until October 31, 2002, in the Reserve. A total of 1,012 horseshoe crabs were collected for the manufacture of LAL. The horseshoe crabs were collected on 11 dates (4 days in August and 7 days in September), transported to the laboratory for the bleeding operation and inspected for sex, size, injuries and responsiveness. Three to four tows were conducted during each fishing trip with the tows lasting no more than 30 minutes to avoid impacting loggerhead turtles. Horseshoe crabs were unloaded and transported to the laboratory by truck. The average sex ratio for the landings was 0.85 males per females, similar to last year's ratio of 0.88. Horseshoe crabs injured during transport and handling numbered 115 or 11.4 percent of the total while 31 horseshoe crabs or 3.1 percent were noted as unresponsive (presumed dead). Therefore, 866 healthy, uninjured crabs were available for LAL processing. Since large horseshoe crabs, which are generally females, are used for LAL processing, most were females. Of those 866 processed for LAL, 200 female crabs were measured (inter-ocular distances and prosoma widths), weighed, aged, and tagged to establish baseline morphometrics and ages, prior to being released. Healed injuries were found on 21.5 percent of the crabs examined in

2002, compared to 30 percent in 2001. More than half of those injuries were broken or worn telsons. Most of the healed injuries were the result of spawning attachments.

Horseshoe crabs were aged in 6 categories using Dr. Carl N. Schuster Jr.'s criteria of aging by appearance: First year or virgin, young, young/medium, medium, medium/old and old age. In 2002, animals were categorized as five percent virgin females, 68 percent young animals, 25 percent young/medium and medium, combined, and 2 percent medium/old and old, combined. This finding supports the basis for the Reserve which was established to protect young horseshoe crabs. The average measurements for the female horseshoe crabs (no males were measured) were 168.10 mm for the inter-ocular distance, 270.93 mm for the prosoma width and 2.5 kg for weight. These averages are slightly higher than seen in 2001. The horseshoe crabs were rated on an activity scale of from one to three, with three being the most active. The vast majority of the 200 that were observed were active (194), with 185 falling in category two and nine in category three. Only six crabs exhibited no movement on the scale and were rated as one. Tagged crabs were released at the water's edge on Higs Beach, New Jersey. The beach was checked frequently, following release, to ensure the crabs had returned to the water.

A total of 450 horseshoe crabs from the Reserve were tagged and released during 2001 and 2002. Nine of the 200 horseshoe crabs tagged in 2001 have been recovered. Of those, 6 crabs were found alive and 3 were found dead. All but one of the live recoveries occurred during the 2002 spawning season. The 3 crab mortalities may have been a consequence of spawning.

Data collected under the EFP were supplied to NOAA Fisheries, the Commission, and the State of New Jersey.

Proposed EFP

Limuli Laboratories proposes to conduct a third year of the study using the same means and methods used during years one and two, as described below under terms and conditions.

The proposed EFP would exempt two commercial vessels from regulations at 50 CFR 697.7(e), which prohibit fishing for horseshoe crabs in the Reserve described in § 697.23(f)(1) and prohibit possession of horseshoe crabs on a vessel with a trawl or dredge aboard in the same Reserve.

Limuli Laboratories, in cooperation with the State of New Jersey's Division of Fish and Wildlife, submitted an