

Count shows horseshoe crab spawning season near its peak

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From left, Wendy Scott, marketing manager with Delaware Wild Lands, volunteer Fran Taccone and Delaware Wild Lands conservation programs manager Brenna Ness use a one-meter square to collect a sample count of spawning horseshoe crabs on Big Stone Beach in Milford Tuesday night. (Special Delaware State News/Ariane Müller)

MILFORD — Armed with only a clipboard, 20-meter rope and a 1-meter polyvinyl square, three intrepid ladies set out to participate in what’s become one of the most successful citizen science projects in the country late Tuesday night — the Delaware Bay horseshoe crab spawning survey.

Delaware Wild Lands marketing manager Wendy Scott, conservation programs manager Brenna Ness and volunteer Fran Taccone were responsible for a horseshoe sample count at Big Stone Beach in Milford Neck — one of the 25 count locations along the Delaware and New Jersey bay

shoreline.

“The state, The Nature Conservancy and Delaware Wild Lands collectively owns and manages 10,000 acres in Milford Neck, including almost nine miles of beach,” said Ms. Scott. “There are two beaches here, Big Stone Beach and Bennetts Pier, that have been counted every year for decades. Limuli Laboratories, based in New Jersey, aggregates all the data from all 25 beaches and releases a report. It’s one of the most successful citizen science projects in the country. It’s been going on for so long and the data has been collected so consistently, that they actually use it for federal policy regarding habitat and species management for the horseshoe crab fishing industry and shorebird monitoring.”

It’s a well-known phenomenon that many thousands of horseshoe crabs swarm the Delaware Bay’s shorelines in the spring looking for love. Glenn Gauvry, president of the Ecological Research & Development Group — a 501(c)3 nonprofit organization focused on horseshoe crab conservation efforts — has noted that the bay acts as a “nursery” to one of the most prolific populations of the 450-million-year-old species.

Historically, the region has had various commercial uses for the creatures: as fertilizer, as bait for conch and eel fisheries, and for their unique, blue blood. Their blood is routinely drained and used to synthesize a substance called Limulus Amebocyte Lysate, which is valuable to the medical and pharmaceutical industries.

In times past, these practices were thought to be putting a concerning dent in their population, but subsequent restrictions and regulations now seem to be reaping a return.

At an estimated total population of 20 to 25 million adult horseshoe crabs, Mr. Gauvry notes that the Delaware Bay’s numbers are “stable.”



Female and male horseshoe crabs are counted separately in each sample. They can be identified quickly by their size as males are significantly smaller.

“There was a point in time where we were harvesting almost a million horseshoe crabs per year out of the bay,” he said. “The rebound in population has almost everything to do with regulations that helped reduce that number.”

New England’s populations continue to struggle and are in decline, but beaches along the coasts of southern states are starting to see a small increase in their populations, which were modest to begin with, said Mr. Gauvry.

“The Delaware Bay has the optimum spawning conditions and is historically incredibly productive for the species,” he added. “It has over 150 miles of sandy beaches, low energy in terms of waves that can flip them over. The salinity levels are good and the food resources for juveniles are good too. Also, a lot of the bay is shallow so juveniles can slowly venture out as they get older and go into deeper waters. It’s the perfect nursery.”

Without the help of reliable counts, problems may never have been identified and progress would have been difficult to track.

The procedure for the horseshoe crab survey is simple, but strict. There are three simultaneous counts at the 25 locations during each new moon (when the tide is at its highest point) between April and the end of June. These are considered peak spawning times because horseshoe crabs lay their eggs in the sand at the highest reachable point so they won't get washed away later.

Ms. Scott noted that counts take place along a single kilometer at each beach at 100 randomized points. Although at Big Stone Beach, they only count a 500-meter section because part of the beach is inaccessible.

“We used to do the full kilometer here, but sea level rise made the south part of the beach too dangerous for counters,” she said. “There are abandoned houses down there and at high tide you'd have to be walking underneath the pilings of the houses, which isn't a good idea.”



By the end of the count on Tuesday night, Ms. Scott, Ms. Taccone and Ms. Ness had tallied up

almost 2,000 horseshoe crabs in their sample areas alone. This was the “busiest” Ms. Scott has seen Big Stone Beach in 18 years of counting, she said. (Special to the Delaware State News/Ariane Müller)

At each randomized point along the shoreline, marked by a knot in the 20-meter rope, Ms. Scott lays down her square and tallies the male and female horseshoe crabs that happen to fall in that quadrant. Ms. Ness notes that, over time, quickly identifying the males becomes second nature.

“The females are significantly bigger than the males,” she said. “The males swarm and clasp onto the females, sort of forming a star pattern around her.”

An estimated 90,000 eggs can be laid in one season by a female, according to ERDG. By the fourth day after fertilization, rudimentary appendages can be seen in the egg. The horseshoe juveniles “hatch out” by the 14th day and begin the cycle of growth and molting that will continue until they reach their adult size 10 or 11 years later.

Tuesday night, this high tide point took place at exactly 10:10 p.m. on Big Stone Beach. Ms. Scott said she was stunned by how many spawners they counted.

“We pulled some very impressive stats,” she said. “I’ve been leading crab counts at Milford Neck for 18 years and I’ve personally never experienced as many crabs as we saw that night. Usually on a good night we count a few hundred within the quadrants, but we tallied almost 2,000 that night. That’s only the representative sample number found in the 100 single-meter quadrants, so there were many thousands more than that on the beach.”

Ms. Scott speculates that the high count was probably a product of a cool spring that may have delayed spawners.

“It may have had to do with the fact that we had a cold, late spring,” she said. “The horseshoe crabs may be trying to play catch-up instead of spreading out their spawning season longer. During an April count, I came out and only

found about eight of them.”

Several months from now, Limuli Laboratories will release a report based on all the data collected at the 25 bay points to more reliably illustrate the state of the population. Last year’s report showed an uptick on the New Jersey side of the bay, stability on Delaware’s side and overall population resilience.

Last year’s single peak estimate was 581,872 horseshoe crabs, reached on June 11, 2017 — two days after a full moon. This was the second-highest peak on record after the 586,298 counted during the 2009 peak. Overall “seasonal activity” for 2017 in the bay rang in at a count of over 2 million spawning horseshoe crabs — the third-highest recorded after 2016 and 2009.

Though the count mobilizes an army of volunteers to stumble through the surf on fly-specked shorelines late into the evening, for Ms. Taccone the sacrifice is a worthy one.

“We’re all connected,” she said. “The horseshoe crabs are a part of our ecosystem and I think we’re supposed to take care of the earth and the creatures on it. Being a part of the count is just a small way I can help look after them.”

Reach staff writer Ian Gronau at igronau@newszap.com