New Hampshire Estuaries Project
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Horseshoe crabs amazing, ancient
By Eric Aldrich

Right now, something remarkable is happening on the shores of the Great Bay Estuary. During the high tides of early summer, horseshoe crabs (Limulus polyphemus) make their way to shore to spawn. Along beaches, females lay up to 90,000 tiny eggs before returning to the water.

This is a great opportunity to see an animal that we know both a lot and a little about, according to Dr. Win Watson, a professor of zoology at the University of New Hampshire's Center for Marine Biology. Watson has studied horseshoe crabs for years and has authored several research papers about their heart, blood, gills, nervous system and behavior.

Despite all his research on horseshoe crabs, Watson is still astounded by what he learns.

"One of the things that amazes me about horseshoe crabs is that they're such a tough animal," he says. "They can survive without eating for a long time and they can survive a few days out of water without oxygen."

Because of research by Watson and many others, we do know some interesting facts about the horseshoe crab.

It is a living fossil, the closest living relative of the trilobite. They came on the scene at least 100 million years before dinosaurs and have changed very little in the past 200 million years. Whatever the horseshoe crab is doing to survive, it's working.

Despite its name, the horseshoe crab isn't really a crab at all. It's in a large group of animals called arthropods, which includes lobsters, insects, spiders and crabs. The harmless horseshoe crab itself is more closely related to spiders, scorpions and ticks.

The horseshoe crab we see along North America's Atlantic coast is one of four species worldwide. The other three are found in Indonesia, the Philippines and Japan.

They play a crucial role for shorebirds migrating north in the spring, especially in the Delaware Bay, where horseshoe crabs spawn by the hundreds of thousands. Along Delaware Bay, migrating shorebirds stop, rest and fill up on eggs that horseshoe crabs have laid along the beaches. This high-calorie food is vital to birds as they continue their northward migration.

Their blue blood makes an important contribution to human medicine. Scientists have found that horseshoe crab blood coagulates in the presence of certain bacterial toxins. An extract of their blood (Limulus Amoebocyte Lysate or LAL) is widely used to detect toxins in medical fluids, human blood and other body fluids.

In New Hampshire, the state Fish and Game Department has in recent years, conducted an annual inventory of horseshoe crabs at five sites around Great Bay from May through September. Fish and Game's Clare McBane

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has found as many as 130 horseshoe crabs along 150 feet of shoreline at Emery Point in Newington, although she notes that the numbers can fluctuate dramatically from year to year.

There's still a lot that we don't know about horseshoe crabs. Win Watson notes that people tend to see horseshoe crabs only during the two months or so when they're spawning. "But we know very little about what horseshoe crabs are doing when they're not mating," Watson says. "We know from anecdotal evidence that they migrate as much as 100 miles offshore, but we don't know much more than that." Although Watson has done some tracking of horseshoe crabs with telemetry units, he notes more research needs to be done. "We need to know some basic information, like where they go in the winter."

In the past, horseshoe crabs were shoveled up by the thousands in Delaware Bay for use as fertilizer. Today, they are no longer used for fertilizer but their numbers are still declining in southern New England and the mid-Atlantic states, partly the result of harvesting for eel bait and perhaps partly for LAL production. These actions alone do not account for the declining numbers and scientists are trying to understand the many other factors at work. Because of the horseshoe crab's many connections to Great Bay, restoring healthy numbers of the species is part of the Nature Conservancy's objectives for the estuary.

Jay Odell, Great Bay marine ecologist for The Nature Conservancy, calls them the "consummate ecological generalist." They're not a canary in a coal mine; they're the ultimate survivor ... so far. But Great Bay's horseshoe crabs deserve careful attention and protection because good spawning habitat is limited and more research on their movements and populations is needed. As scientists try to answer more questions about the horseshoe crab, they hope this amazing and ancient animal can survive for another 200 million years.

For more information, visit www.horseshoecrab.org.

On June 23, at Sandy Point Discovery Center in Stratham, you can discover remarkable things about horseshoe crabs. The center is hosting "Horseshoe Crabs Ashore." For more information, call 778-0015.

Eric Aldrich is a member of the N.H. Chapter of The Nature Conservancy. The views presented here are not necessarily those of Seacoast Newspapers.

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