

Horseshoe Crabs: Living Fossils

28 Mar 2014 Written by DAWN BRUT | PHOTOS BY DAWN & SHIRLEY BRUT

WHAT ANIMAL HAS 10 EYES, TELLS TIME WITH ITS TAIL, CHEWS WITH ITS LEGS AND IS 445 MILLION YEARS OLD?

If you guessed a **horseshoe crab** you are correct! The American Horseshoe Crab (*Limulus polyphemus*) is an amazing creature that can be found in our coastal waters and sometimes on our beaches. The horseshoe crab is not a true crab like a blue crab or ghost crab. Although it is related to true crabs, the horseshoe crab is surprisingly even more closely related to spiders and scorpions.

The horseshoe crab spends most of its time moving along the ocean floor like a small tank, eating shellfish, worms and dead and decaying matter. Ten walking legs, a mouth, two chelicera (appendage use for placing food in their mouth), and book gills, are located on the underside of the horseshoe crab. They are protected by a hard exoskeleton.

The **telson** (tail) might look like a weapon but is actually used to steer and to help the crab right itself if it gets flipped over. It is not used as a weapon and is not a poisonous stinger.

The telson also has a series of **light sensors** that help the horseshoe crab keep track of day and night in addition to five other light sensing eyes and two compound eyes (similar to insects) used primarily to find a mate located on the top of the shell. There are also two eyes on the underside, possibly used to orient the body when swimming (yes they can swim and they swim upside down). This body design must work really well for the horseshoe crab since it has been around for millions of years.

The oldest horseshoe crab fossil, found in Manitoba, Canada, is 445 million years old. This is why the horseshoe crab is called a “**living fossil**.”

This “living fossil” will begin to appear on our beaches each spring. **March through June** is spawning season for horseshoe crabs. During the new moon and the full moon high tides (called spring high tides ... not named after the season) female horseshoe crabs will crawl out of the



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ocean, often already dragging a male who is attached to her using his hook-like front legs. Once the female is on the beach she will dig a hole in the sand underneath her body with her legs. As she lays her eggs the attached male, and possibly several other satellite males, release sperm to fertilize those eggs.

A female horseshoe crab will lay **about 2,000 to 4,000 eggs** per nest, she will lay several nests, and possibly as many as 80,000 eggs per season. The eggs develop under the sand for 2 to 4 weeks until they hatch just in time to hitch a ride on the next spring high tide.

Horseshoe crabs molt their exoskeleton as they grow bigger. They molt more often when they are younger and usually molt about 16 to 18 times in the first 10 years of their 17- to 20-year life. Once they are sexually mature, around the age of 10, they are done growing and use that energy for reproduction instead of growth.

If you like treasure hunting on the beach, keep your eyes open for those smaller horseshoe crab molts that will wash up on the beach.

Historically horseshoe crabs have been harvested and used as eel bait and fertilizer.

Currently, in South Carolina, horseshoe crabs may only be harvested for biomedical use by those who are permitted by the state to do so. Horseshoe crab blood contains a clotting agent called ***Limulus ameobocyte lysate*** (LAL) that can be used to detect bacteria in pharmaceutical drugs and medical supplies.



Chances are you have used something or had something used on you that has been tested using LAL.

Horseshoe crabs do not have to give their lives to keep us safe. After about 1/3 of their blood is drained they are returned to the coastal water where they were collected.

In addition to saving our lives, horseshoe crabs play many other important roles. They are an important part of the food web and help to feed the loggerhead sea turtles that nest on our beaches.

Their eggs also help fuel a variety of migratory bird species, including the Red Knot which is a threatened species.

You can help to protect this species by doing simple things like picking up trash off the beach and just flipping a horseshoe crab back over if it is stuck on its back. It will not hurt you but please **don't pick it up by the tail** ... that could injure the crab. Just flip 'em!®



If you see a **horseshoe crab with a tag** on it please call the number on the tag and report the tag number (take a picture or write it down before the crab runs away). Reporting tags will help organizations like the South Carolina Department of Natural Resources learn more about these incredible creatures. If you are interested in learning more about horseshoe crabs please visit the Ecological Research and Development Group website at <http://horseshoecrab.org/>



This is a great site and this organization provides resources and programs to help educate children and adults. Of course the South Carolina Department of Natural Resources at www.dnr.sc.gov is always an incredible resource.

The Coastal Discovery Museum on Hilton Head Island offers horseshoe crab programs every spring and takes participants to see spawning crabs.

The Coastal Discovery Museum also offers horseshoe crab programs for school groups and a Crabs in the Classroom workshop for local teachers that would like to raise crabs in their classroom and educate their students about these fascinating “living fossils.”

Visit www.coastaldiscovery.org to learn more.

Dawn Brut is Curator of Education for the Coastal Discovery Museum. She will host a program titled "Horseshoe Crabs: Living Fossils" at 6:30 p.m. on April 13 and 28, then May 13 and 27 at the Coastal Discovery Museum at Honey Horn. The cost is \$15 per person. For reservations, call 843-689- 6767, ext. 223.