

January & February 2020

Aeon for ocean

Monthly Newsletter

All About Sea Turtles

Past and Future Events



"AWARENESS BEGINS WITH KNOWLEDGE. LEARN, THINK, AND ACT
TO REDUCE THE HUMAN IMPACT ON THE OCEANS!"



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All About Sea Turtles

By Ashley Sexton

Sea Turtles are easily-recognized and widely-loved marine animals. These graceful animals can be found across the globe and swim in all waters except for the polar seas. Our fascination with sea turtles stretches back millennia, with creation, lifecycle, and cultural references to sea turtles appearing in civilizations as widespread as the ancient Maya, Chinese, Hawaiian and Hindu mythology and modern-day Iroquois, Moche, and Seri people. Sea turtles capture our interest and imagination in a way few other marine animals can. Let's find out more about these awesome creatures and how we can help keep them safe for future generations.



There are currently 7 types of sea turtles found on Earth: green, hawksbill, kemp's ridley, leatherback, loggerhead, and olive ridley. Each of these have their own unique characteristics but there are plenty of similar traits they share. One way all sea turtles are the same is that unlike freshwater turtles, a sea turtle's head and limbs are fixed outside of its shell and cannot be retracted. So, if you have ever pretended to be a turtle, now you know that you don't need

to disappear inside your own shirt! Having fixed, elongated limbs makes sea turtles very hydrodynamic which allows them to swim and move with their trademark grace and fluidity. Sea turtles are not typically fast swimmers but they can reach speeds of up to 22 miles per hour when frightened. They are also deep divers: Leatherbacks having been seen to reach depths as far as 3000 feet!



Sea turtles have evolved clever ways to live their lives under the water. As reptiles they need to come to surface to breathe air but they can slow their heart rate so dramatically that they only need to surface once each 4 to 7 hours when they are resting. Sea turtles also have special large glands near their eyes that work to remove salt from their bodies. Since turtles ingest a lot of salty sea water when they eat, it is important for them to have a mechanism to remove some of that salt. These special glands do just that by releasing salt from the turtle's body. Since these glands work both on land and while in the water, it may appear that a turtle is crying when it is spotted on a beach.

Sea turtles hatch from small, round eggs that are laid on the shore in a sandy nest dug by the mother turtle. Hatchlings emerge about two months later, with those at the bottom of the nest end up pushing those above right out of the nest. Once out of the nest the hatchlings must navigate their way to the water while dodging predators like crabs, dogs, and raccoons. Because they use the nighttime horizon light as a guide to the water, many coastal communities with nesting turtles restrict night lighting from roads and buildings so there is less light pollution that would confuse the hatchlings. Male sea turtles spend their entire lives at sea, while females return to the beach where they hatched to lay their own eggs.

At this time, all seven species of sea turtle are listed as at least “vulnerable to extinction” on the IUCN's Red List with threats coming from many angles:

- Climate change trends that are causing warmer than typical temperatures can lead to loss of historical foraging areas, destruction of nesting beaches, and impact to the male to female natural ratio of hatchlings.
- Sea turtles have been targeted for many years for meat and eggs as well as shell material.
- Fishing gear can entangle sea turtles, with abandoned fishing nets an especially vicious culprit.

- Pollution of all kinds poses a grave danger to sea turtles, especially floating plastic trash that may be eaten when thought to be a delicious jelly fish.

Each of us can help in our own way by keeping trash out of our oceans, buying responsibly when shopping for seafood, being mindful of the ecosystem when visiting a beach, and thinking twice about buying any products made from turtles (for example, tortoise shell combs). Sea turtles have graced the Earth for over 100 million years and deserve a chance to do so for many more to come.

References:

<https://ocean.si.edu/ocean-life/reptiles/sea-turtles>

<https://www.nwf.org/Educational-Resources/Wildlife-Guide/Reptiles/Sea-Turtles>

<https://www.fisheries.noaa.gov/sea-turtles>

<https://www.nationalgeographic.com/animals/reptiles/group/sea-turtles/>

<https://www.worldwildlife.org/species/sea-turtle>

Mahogany Tides in Baltimore

by Jessica Jenkins

This winter, mahogany tides (also known as red tides) have taken over Baltimore's inner harbor. These massive dinoflagellate algal blooms are made up of a specific type of algae called *Prorocentrum minimum*. This type of algae grows near the surface of the water, giving it a reddish brown tint and creating larger problems for the other animals in the harbor and the whole Chesapeake Bay ecosystem.

These algal blooms block the sun from reaching to the bottom of the harbor where submerged aquatic vegetation (SAV) lives. SAVs are the main source for dissolved oxygen in the water that all aquatic animals need to survive. Less dissolved oxygen causes fish kills, invertebrate kills, and loss of habitat for both small feeder species and their larger predators. The blooms can also occasionally cause venerupin shellfish poisoning: shellfish are poisoned by eating the algae and are no longer suitable for human consumption.

These blooms happen naturally every year but have been happening

more and more in recent years. Usually they occur in the Spring/Summer due to the change of seasons from cold to warm. However, this year's unusually warm winter with drastic day-to-day temperature changes has seen these blooms arising as early as December. These unusual weather conditions are believed to be the result of climate change.



- The University of Maryland Center for Environmental Science believes that there are "more blooms, more often and lasting longer."
- According to the National Aquarium, "a normal range of chlorophyll fluctuates between 2ug/L – 15ug/L in the harbor. Due to a combination of unseasonably warm weather, sunshine, low winds, and little precipitation, chlorophyll reached over 650 ug/L. Since the Aquarium installed continuous water quality monitoring in 2016, we've been able to better understand what is triggering these blooms. It is also eye opening to a changing climate that results in intense winter blooms (something that is typically seen during hot summer days)."

Beyond the results of climate change, these blooms have other triggers. Runoff from commercial and household fertilizers causes high levels of nitrogen and phosphorus in our waters and in turn causes these blooms to explode in growth.

- According to the Maryland Department of Natural Resources, "It is believed the cells are typically delivered to the upper Chesapeake Bay in spring by traveling in the up-bay moving, higher salinity bottom waters from the lower Bay. As waters mix and upwell in the mid and upper Bay,

cells are delivered to nutrient and light rich surface waters and commonly result in areas of mahogany tides.”

It is important that people, despite where they live, do what they can to prevent toxic fertilizer from ending up in our waterways, like switching to a phosphorus-free fertilizer (and using less of it) and reducing urban runoff by planting native plants to filter out toxins like nitrogen and phosphorus.

Education Team Updates

Our education team at Aeon for Ocean is currently working on developing new courses and programs in the following areas of Marine Education:

- K to 12 curriculums on school presentation
- VR programs for grade 6 and above

Stay tuned for more details in our future newsletters!

Past Events

STEM Conference Mpls, MN



The Aeon team was able to join in on the 9th annual conference of interactive exhibits and inspiring conversations designed to encourage ALL Minneapolis Public Schools 8th grade students to build a strong academic foundation in STEM (science, technology, engineering, math), design thinking and problem-solving skills.

The event was a great success! We distributed literature about Aeon of Ocean and had a steady stream of excited kids trying out our new Oculus VR headsets playing **The Hydrous Presents: IMMERSE** program (VR program donated by Hydrous leader Dr.

Erika Woolsey.



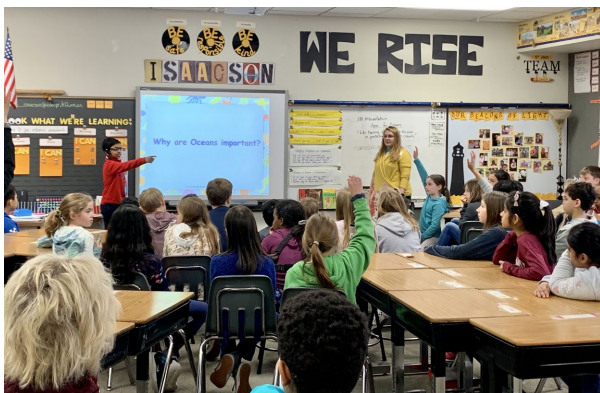
Izzy's Ice Cream Fundraiser

Izzy's Ice Cream store in Minneapolis and St. Paul included Aeon for Ocean in their 13 Days of Giving Event. Each day a new organization was spotlighted at both stores. The Aeon team spread the word on Friday, February 7!



K2W Presentations

Our school presentation for the year started with presentation to 84 5th graders on Feb 12. We had a great time interacting with the kids. We were excited to have our resident marine biologist and K2W program manager with us.



Upcoming Events

EARTHx 2020 in Dallas, Texas

Aeon for Ocean will be presenting at the [EXPO Earthx2020 APRIL 24-26](#).

Spring Vendor Show at Grace Church, Eden Prairie, MN

March 14, 11:30 am - 3:30 pm

Aeon for Ocean will have a table at this very popular fundraising event.

<https://chriswivholm.org/event/spring-vendor-show/>

VR Program & Coral Project

March 24th and March 26th

K2W Presentations

March 11th

Aeon for Ocean will be scheduling numerous Krill-to-Whale presentations and VR Programs in upcoming months.

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