

Reading Resources: Plankton and Deep Sea

The Earth's oceans cover about 70% of its surface. The average depth of the oceans is 2.7 miles deep. Many sea creatures live in these depths, including the amphipod *Phronima sedentaria*. Living in the deep sea, they endure freezing temperatures, darkness and intense underwater pressure.

The swiftest, largest, fastest-growing and most migratory fishes on Earth live in the open ocean. They range from tiny drift fish to plankton-straining whale sharks and to streamlined predators such as tuna and marlin.

All ocean animals are threatened by ocean acidification. Since the Industrial Revolution, concentrations of carbon dioxide (CO₂) in the atmosphere have increased primarily due to the burning of fossil fuels. The ocean absorbs about 30% of the CO₂ that is released into the air. As levels of atmospheric CO₂ increase, so do the CO₂ levels in the ocean, causing the seawater to become more acidic.

High acidic seawater increases hydrogen ions and reduces carbonate ions. Oysters, clams, coral and some plankton species need carbonate ions to build and maintain shells and calcium. Various fish are unable to detect predators in highly acidic waters. Ocean acidification can put the entire food web at risk on land as well as in the open ocean, as many populations of the world rely on seafood as their primary source of protein.

Books for Adults

Creatures of the Deep / Erich Hoyt. 2nd ed, Updated and expanded.
Firefly Books, 2014.

Discoveries of the Census of Marine Life: Making Ocean Life Count / Paul V.R. Snelgrove. (Chapter 8 : Into the Deep, pp. 175-210, with bibliography). 2010

Ecology of Harmful Algae: 189 (Ecological Studies) E. Granéli (Author, Editor), Jefferson T. Turner (Author, Editor)

Fishes of the Open Ocean: A Natural History and Illustrated Guide / Julian Pepperell.
Univ. of Chicago Press, 2010.

Marine Biodiversity, Climatic Variability and Global Change / Grelgory Beaugrand.
Routledge, 2015.

Toxic Algae: How to Treat and Prevent Harmful Algal Blooms in Ponds, Lakes, Rivers
and Reservoirs Paperback – December 22, 2014.

World Ocean Census: A Global Survey of Marine Life / Darlene T. Crist.
Census of Marine Life, 2009.

Books for Kids

Sea Monsters / Mary Pope Osborne. Fact Tracker, Nonfiction companion to Magic Tree
House #39.

Deep Sea Creatures / Kids Explore!

Featured Websites

Harmful Algal Blooms Program

<http://hab.ioc-unesco.org/>

Jelly Watch

www.jellywatch.org

Jelly Watch allows 'jellywatchers' to record and submit their jellies sightings. There are
2 free apps offered, one Android and one iOS that enable users to take pictures of their
sightings and send them to Jelly Watch!

Marine Mammal Center / Domoic Acid

<http://www.marinemammalcenter.org/science/top-research-projects/domoic-acid-toxicity.html>

Ocean Portal – Census of Marine Life

<http://ocean.si.edu/census-marine-life>

Predicting HABs

<http://oceantoday.noaa.gov/predictinghabs/>