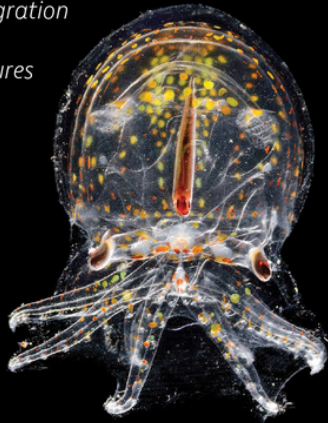


Planktonia

The Nightly Migration
of the Ocean's
Smallest Creatures



ERICH HOYT

An Interview with Author Erich Hoyt

"When people hear the word 'migration,' they think of animals that move from a feeding area to a breeding area and back each year. But the greatest migration on Earth happens twice every night."



Planktonia: The Nightly Migration of the Ocean's Smallest Creatures,
Erich Hoyt, Firefly Books, 2022, 176 pages

You're an esteemed researcher, conservationist, and author best known for your work in marine life. How did a native of Ohio come to spend much of his life devoted to whales, dolphins, and life in the ocean?

Growing up in Ohio, and later in Virginia and Ontario, our family made annual trips to the ocean. It was the highlight of the year. I loved the waves, the salty smell, the wide-open possibility of the ocean. I resolved that when I left home I would always live on or beside the sea. Except for two years in the mountains of British Columbia, I have kept to my resolution. These days I run along the sea in the early mornings and do some of my best thinking. The ocean inspires and it also sustains me. Which is funny because that's literally true that the ocean through the magic of plankton is responsible for more than 50% of the air we breathe.

How did Planktonia come about?

Planktonia would have been impossible to research and write in the pre-internet, or even pre-zoom era. During the lockdowns, I spent many hours talking and corresponding with the plankton scientists and photographers who take these macrophotographs of tiny plankton at night often far out to sea, and I am filled with admiration for them.

How has our knowledge of plankton grown as a result of black water photography? Has this knowledge contributed to our efforts to preserve the health of our oceans?

Scientists are beginning to connect more of the larval and juvenile forms with the adult forms, that is, to identify species that the plankton specialists couldn't identify in the past. At the same time, we are learning that this massive global vertical migration is contributing hugely to biodiversity by the recycling of nutrients through the water column. So, we can look at the creatures in *Planktonia* and enjoy hearing the stories about how they behave and what their lives are like and why they have evolved to look as strange as they do. But they are also for us humans a matter of life and death. These zooplankton are the fundamental part of the system without which there is no life in the sea.

What else do you find is most surprising to readers who are just discovering the world of plankton?

Plankton are full of surprises. First, they are not species from the same family or order but the word plankton simply refers to living organisms that can't swim and make headway against currents or tides. They are drifters. Secondly, in fact, many of them can swim—they have to have some locomotion to move up and down the water column every night. They flail their appendages. But they're no good against a strong current. When we dip into the lifestyles of zooplankton, we learn that many of them are the larvae or juvenile forms of adult fishes, crustaceans and so on, and just like a caterpillar becoming a butterfly, they look dramatically different than their adult forms when they're developing. The evolution of these larval stages is separate and different from the evolution of adult forms. As a planktonic juvenile, a flounder has eyes on both sides of its head and feathery fins which look like stinging jellyfish tentacles which evolved to keep predators away, or at least keep them guessing. By the time a flounder becomes mature and settles on the bottom of the sea, it has eyes on one side of its head and looks dull and brownish-gray, no flamboyant appendages.

What does Planktonia present the reader that had been difficult to share in the past?

Planktonia tells the stories of overlooked groups of species under the catch-all heading of 'plankton' through diverse images brought together from eight places around the ocean. Of course, there are textbooks on plankton, but *Planktonia* is a celebration of the great vertical migration with unlikely stories of how these animals evolved and how they get along, and painterly images that reveal their beauty as never before to a popular audience. I've written the book for teens and adults but even young kids aged 4-5 are amazed and full of questions when they turn the pages.

Planktonia takes the reader across the globe, from the Arctic Circle to Hawaii to the waters off Japan. What would you like readers to know about the photographers and their dedication to their work?

"The photographers live for their art, taking risks by diving at night in the open ocean with no reference points except the surface and the lights. They focus on a few small square cubic centimeters to compose a detailed, colorful image of a moving creature the size of a small ant or smaller."

Recently the photographers have begun to collaborate with scientists to try to identify the larval and juvenile species they are finding, many of which look nothing like the adult forms. Some of the photographers are taking a few samples for DNA barcoding. This has turned these determined photographers into citizen scientists.



Photo ©Mike Bartick from *Planktonia* by Erich Hoyt, Firefly Books Ltd. 2022

This 1/8 inch (0.3 cm) individual, part of the plankton, is an example of *Pleurobranch veliger*. *Veliger* is the larval stage in sea slugs, but the species remains unknown. This photograph was taken some 45 feet (13.7 m) below the surface.

For more information:

To see all the available books by Erich Hoyt, see erichhoyt.com.

For more information on all aspects of whales and dolphins and conservation work, visit whales.org.

For more about the project to identify marine mammal habitats around the world, to make sure that whales have places in the sea to live, feed, breed and raise their young, check out marinemammalhabitat.org, especially the e-Atlas.

An edited version of this interview appears in the Winter 2022-2023 issue of *Nature Book Guide*, www.naturebookguide.com

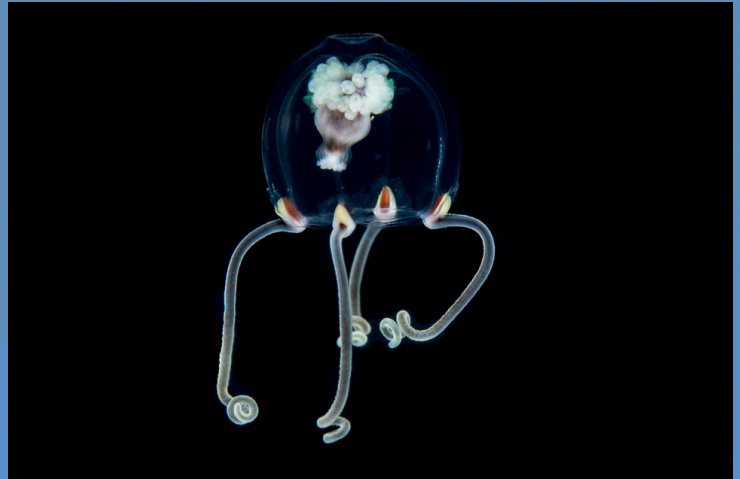


Photo ©Linda Ianniello from *Planktonia* by Erich Hoyt, Firefly Books Ltd. 2022

This hydromedusa is found mainly in tropical and subtropical waters of the global open ocean. It lives in the water column down to 700 feet (210 m) but comes up near the surface to feed at night. This adult individual has a bell less than 1/4 inch (0.5 cm) across. It was found 5 miles (8 km) off the coast of Florida near the western edge of the Gulf Stream.

Your research with whales, dolphins and marine mammals has been key to our understanding of marine mammals, their protection, and ecosystem approaches to conservation. What would you like readers to know about this work, and where can they learn more?

My various books are written for diverse audiences. *Planktonia*, *Strange Sea Creatures*, and the *Encyclopedia of Whales, Dolphins and Porpoises* are written as popular science and nature from age 10 to adult, but I've also written for older students and adults who want to dive deeper into subjects like Marine Protected Areas for Whales, Dolphins and Porpoises. The nonfiction narrative *Creatures of the Deep*, the anthology *Insect Lives*, and my E.O. Wilson ant book *The Earth Dwellers* explore worlds far away from whales.

"...they are also for us humans a matter of life and death. These zooplankton are the fundamental part of the system without which there is no life in the sea."

Erich Hoyt is a whale and dolphin researcher, conservationist, lecturer and award-winning author of 26 books, including children's books and scholarly works. He wrote the first book on whale watching and is currently Research Fellow with WDC, Whale and Dolphin Conservation and Director of Marine Mammals for marinebio.org. He lives in Dorset, United Kingdom.