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PG 16

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PG 16

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PG 18

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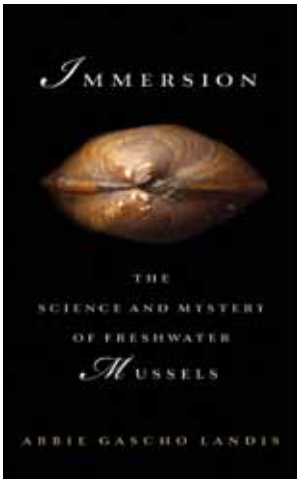
PG 42

ABOUT THE COVER

Our cover image was taken by Mark Hatcher, a 75-year-old amateur photographer and retired account/controller from Raleigh, North Carolina. The photo was taken on Lake Michigan in June near Charlevoix, Michigan.

"The white/silver line is what caught my eye," said Hatcher. "It's the sun reflecting off a shallow layer of fog on the horizon. Never seen that effect before."

Ten years ago, Mark and his wife (a retired statistician) decided to travel the country and photograph lighthouses. "You get to see everything off the beaten path and see parts of the country you would have never seen otherwise."



Credit: Island Press

FRONT

Science and Mystery of Freshwater Mussels

BY SARAH BOON

FRESHWATER MUSSELS may not have the charismatic cuddliness of a panda bear or the wild grace of a sage grouse dancing on a lek, but they're just as threatened. Of the approximately 300 mussel species native to North America, more than 100 are endangered or threatened and 70 more are of special concern. The United States Geological Survey (USGS) calls them the "most imperiled group of organisms in the country." Ontario alone has 41 mussel species, 11 of which are endangered and 1 of which is threatened.

Most people have never heard of freshwater mussels, an organism that's over 500 million years old. In Immersion: The Science and Mystery of Freshwater Mussels, author and veterinarian Abbie Gascho Landis gives us a peek inside the world of these fascinating creatures and introduces us to the many scientists working not only to maintain existing mussel populations, but to increase them. Landis immerses herself fully in her research, including snorkelling in streams to find mussels—bringing the reader along on her journey to learn everything she can about these prehistoric creatures.

Mussels live on the beds of freshwater rivers, feeding from the river water and filtering over 40 litres of water a day in the process. Thus, they not only provide us with clean water but are excellent barometers of river health given their existence at the intersection of land and water. Their ideal habitat includes a stationary river bed, moderate water flow that allows them to stay attached to the river bed so they don't get washed away, and an average amount of suspended sediments and nutrients from which to draw sustenance.

Human activities, however, have substantially reduced mussel populations. Initially mussels were harvested to make buttons. Then they were harvested so pieces of their shells could be implanted in saltwater mussels to create pearls. More recently, mussel populations have declined due to the dredging of rivers for boat traffic; the introduction of invasive species such as zebra mussels, which attach themselves to native freshwater mussels and compete for the same food; the extensive damming of rivers, where the decline in downstream flows leaves mussels to shrivel up and die; and the contamination of water with pharmaceuticals and other toxins such as pesticides, fertilizer, manure runoff, and manufacturing chemicals.

Landis is hopeful, though. She expects that as scientists learn more about these elusive creatures, they'll be better able to raise them in captivity for eventual release into the wild. But reproduction is only half of the equation—habitat conservation is equally important. With the public becoming more aware of the importance of river conservation, this could be just what freshwater mussels need.

Immersion is accessible and fascinating, opening up an entirely new world of mussel science and clearly detailing the linkages between river health and mussel health. This is a recommended read for anyone interested in the health of our rivers and the fate of freshwater mussels. WC

Sarah Boon is a science communications expert and founding member of Science Borealis.