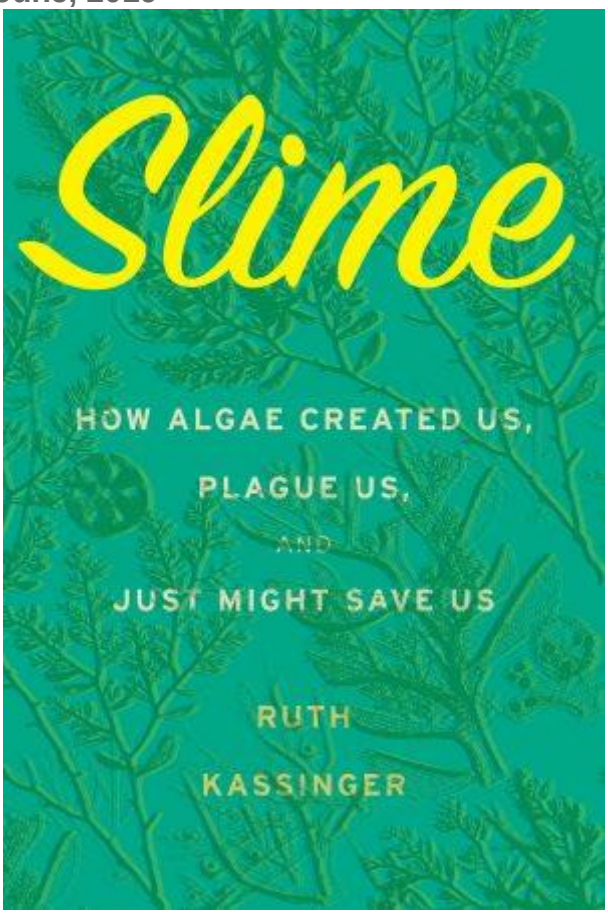
BOOK

Slime

By Maren Preuss 3 June, 2019



Slime: How Algae Created Us, Plague Us, and Just Might Save Us
Ruth Kassinger
Houghton Mifflin Harcourt
2019
318 pp.
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Ruth Kassinger's *Slime* illustrates the important role algae have played in the world over time and begins with the story of cyanobacteria, describing how these prokaryotic organisms shaped early life on Earth by producing an oxygenated atmosphere. To the present day, cyanobacteria symbiotically living in the aquatic fern *Azolla* still play important roles for organic rice cultivation methods in Japan.

Kassinger recounts stories from her travels around the world, from an excursion to a nori farm and processing plant in South Korea to a coral restoration project in Bonaire. Algae, she reveals, are extremely versatile and can be used not only as a

human and animal food source but also to produce glass, explosives, fertilizer, shoes, and “designer” oils.

The production of algal-based bioplastics, Kassinger argues, might be the solution to our plastic pollution problem. *Slime* explores ongoing research on different algal usages, such as bioplastic production, including the work of Daniel Ducat, Taylor Weiss, and Eric C. Young at Michigan State University’s Plant Research Laboratory. Because bacteria-producing plastics require sugar to synthesize polymers, most bioplastics are too expensive to compete with petroleum-based plastics. The Michigan State team has genetically modified cyanobacteria to constantly leak sugars produced by photosynthesis. Adding these algae to the same containers as plastic-producing bacteria provides all the sugars needed to produce plastic polymers.

Kassinger also discusses ocean warming because of climate change and increasing nutrient pollution as a result of agricultural fertilizer and sewage. Both ocean warming and water pollution destroy coral reefs and increase algal blooms, which can have devastating effects on local communities and ecosystem functions. “People focus on the gross algal blooms and blame the algae,” she writes, “but the cause is entirely human.”

Kassinger mentions throughout *Slime* the importance of brown algae and the associated kelp forests. Brown algae have high biomass, are major contributors to oxygen production, and provide habitat for many marine organisms. She misses an opportunity, however, to highlight how ocean warming and water pollution are threatening these highly productive kelp forests. Kelp forests on Tasmania’s east coast have declined by more than 95%, for example, and were listed as the first threatened marine community by the Australian government in 2012.

Overall, *Slime* gives a distinct view into these underappreciated organisms and demonstrates our intertwined history with algae. Hopefully, it will help readers see algae in a different light.