

## Evolution of a Rapidly Invading Marine Species

Tracking adaptation an invasive seaweed along the Atlantic coast for future management

Connon Thomas, a student from the SUNY College of Environmental Science and Forestry is part of the National Science Foundation's Research Experiences for Undergraduates (REU) summer program at the College of Charleston. His research project is based on understanding the differences in growth patterns of an invasive red seaweed called *Gracilaria vermiculophylla* exposed to different levels of salinity.

The seaweed, originating from Japan, has spread to European and North American coasts over the last 40 years, traveling in the ballasts of boats and on oysters. Able to withstand enormous ranges of salinity, temperature, and light, it has the ability to inundate habitats and swamp out native seaweed and benthic species. This can cause a variety of other problems such as clogging shrimping and fishing nets.

Before 2003, there was no evidence of the seaweed in South Carolina or Georgia, and today it covers between 80-100 percent of some mudflats, drastically shifting ecosystems by filling a previously unexploited niche.



Photo courtesy of  
Erik Sotka

"The most remarkable thing about this seaweed is that there is no temperate estuary in the northern hemisphere that hasn't been touched by it" says Dr. Erik Sotka, lead researcher in the lab Thomas is working in, "and it is one of the most successful marine invasions ever."

Under investigation are seaweed populations in Virginia, Maryland, and South Carolina. Thomas' research will help determine the importance of adaptation to the differing environments it has colonized in over the past few decades. Salinity could be a major factor and Thomas is testing growth rate of the seaweed at different salinity levels along with other genetics-based experiments.

This research is the first time the evolution of the seaweed has been investigated in depth. With the information accrued from the study, researchers may be able to predict where it may invade in the future and develop management and remediation policies not only for this species, but also for other invasive marine species.

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<http://reu.cofc.edu/>

<http://sotkae.people.cofc.edu/Home.html>

<https://www.youtube.com/watch?v=9silEToQ5yY>

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