

# Grasshoppers an unexpectedly important player in salt marsh ecosystem

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URI senior Becky Gumbrewicz swings a net to collect insects at a salt marsh during her summer research. Credit: Becky Gumbrewicz

As efforts are being undertaken to protect salt marshes – and the threatened salt marsh sparrow – from the rising seas, scientists may be ignoring an unexpectedly important player in this environmental drama: grasshoppers.

According to Becky Gumbrewicz, a University of Rhode Island senior who studied insects at three salt [marshes](#) in the Ocean State this summer, grasshoppers and their close relatives constitute the greatest insect biomass per individual on salt marshes in the region, and they are probably an important food source for the sparrows. But as dredged sand and mud are deposited on some marshes to raise their elevation to combat [sea level](#) rise, the grasshoppers may get lost in the mix.

"We're curious about how adding that layer of dredged material to the marsh is going to affect the insect populations, like the grasshoppers, that could possibly be buried," said Gumbrewicz, a resident of Oxford, Conn., who is majoring in environmental science and management.

"We're trying to get an idea of how to balance combating sea level rise to preserve the salt marshes and benefit the sparrow but also figure out how the insects are impacted and may need to be supported."

Working in collaboration with URI Professor Steven Alm and the Rhode Island Natural History Survey, she collected insects at three salt marshes – one inland undisturbed site on the Narrow River, one undisturbed coastal marsh on Ninigret Pond, and a disturbed site on Ninigret Pond that is undergoing restoration by adding a layer of dredged material to raise its elevation. Among the mass of flies, crickets, spiders, moths and beetles she collected were large numbers of grasshoppers.

"We found most of the grasshoppers near the upland woody vegetation, which is where we think they might be laying their eggs," Gumbrewicz said. "So if we were to suggest a way to improve salt marsh restoration efforts, it would be to plant more [woody vegetation](#)."

In addition to her field studies, she also kept [grasshoppers](#) in a cage with [salt](#) marsh grasses and other upland vegetation to see where the insects lay their eggs.

"We're still going over our data and finalizing our numbers, but hopefully with what we've collected so far we can make a strong suggestion for further research to be done and possibly revise some of the strategies used in marsh restoration," she said.

Gumbrewicz's research was funded by the Rhode Island Coastal Resources Management Council through a contract with the Natural History Survey. It was also supported by the URI Coastal Fellows program, a unique initiative designed to involve undergraduate students in addressing current environmental problems. Now in its 22nd year, it is based at URI's College of the Environment and Life Sciences. Students are paired with a mentor and research staff to help them gain skills relevant to their academic major and future occupations.

The URI student said that the best part of her research was the hands-on learning involved.

"When we were out in the marsh collecting insects, there was never a time when it was boring or when I wasn't learning something," she said. "I met people from Save the Bay and learned about what they were planting on the marsh, and I learned about all sorts of insects that flew by. There was never a dull moment.

"There hasn't been a lot of research about how raising [salt marshes](#) affects insects; it's usually been about plants or larger organisms," Gumbrewicz added. "So the project has opened my mind to lots of new ideas."

A resident academic mentor to freshmen students on campus,

Gumbrewicz is looking forward to enrolling in graduate school next year to continue her education in wildlife conservation and ecology.

"I'd like to incorporate my knowledge of insects with other larger organisms," she said. "I'm also interested in climate change and its effects on wildlife and how wildlife may interact differently now than they did 50 years ago. At least that's what I'm thinking about studying now. That's subject to change."

Provided by University of Rhode Island

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