ARE CRABS KILLING THE NATION'S SALT MARSHES?

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Study Description

The National Estuarine Research Reserve System provides an ideal platform for evaluating the relative importance of different threats to US salt marshes, because vegetation is sampled across all marsh elevations and across many regions. Our recent investigation at 15 reserves revealed that at a local scale, near tidal creeks in 4/15 of the reserves, crabs appear to have a strong negative effect on plants. However, at a broader scale, elevation has a stronger effect on marshes, suggesting that sea level rise poses a greater threat than crab herbivory or burrowing, although the two threats interact: Crab effects are likely to increase as waters rise.

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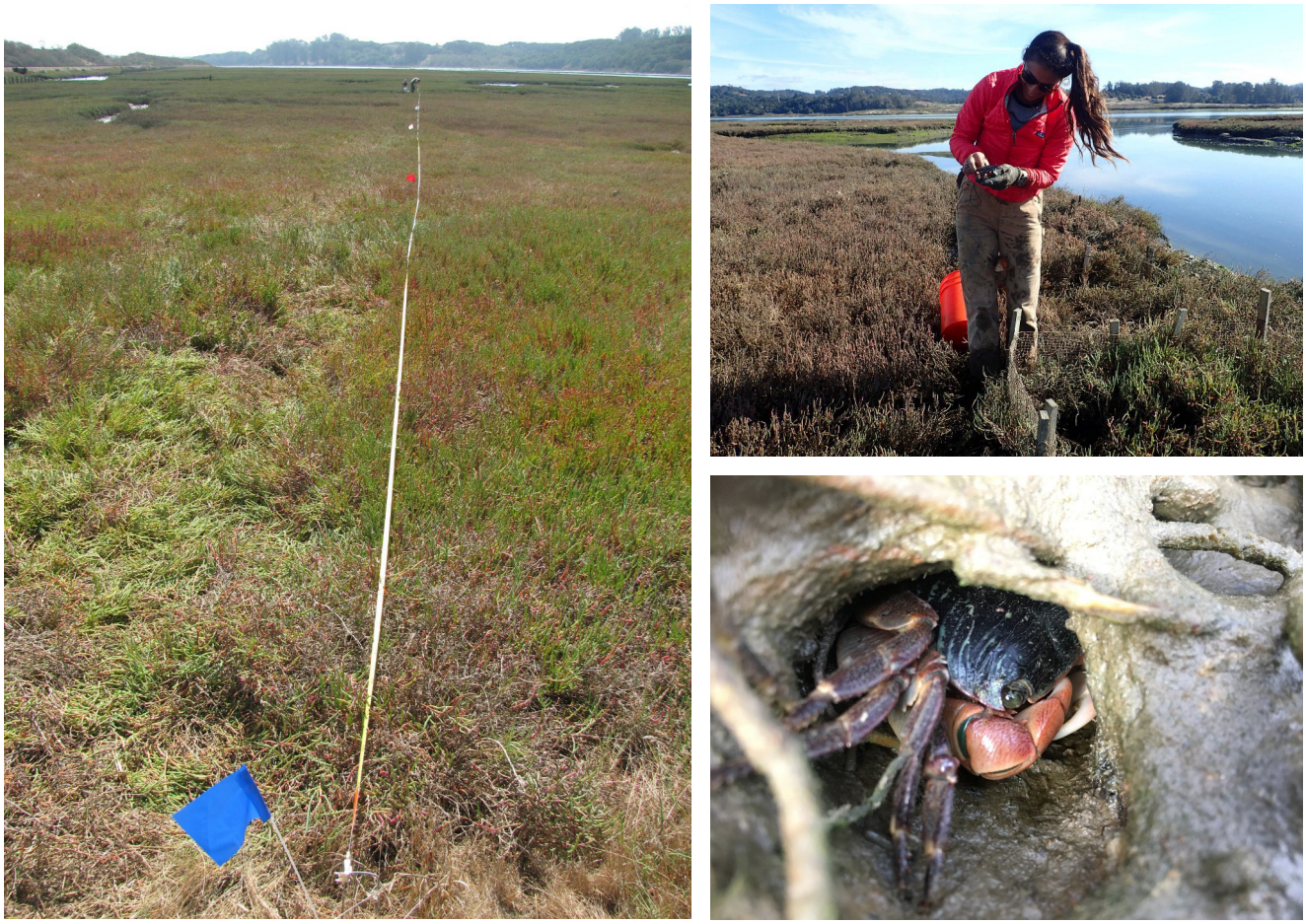

Fig. 1. Marsh and crab monitoring at Elkhorn Slough National Estuarine Research Reserve, California. Left: transect seen from landward edge, extending seaward; at this scale, no effects of crabs are evident. Photo credit: Kerstin Wasson. Right top: A study co-author measures a crab caught near the creek edge. Photo credit: Lindsay Cullen. Right bottom: a shore crab at a creek edge. Photo credit: Kathryn Beheshti.

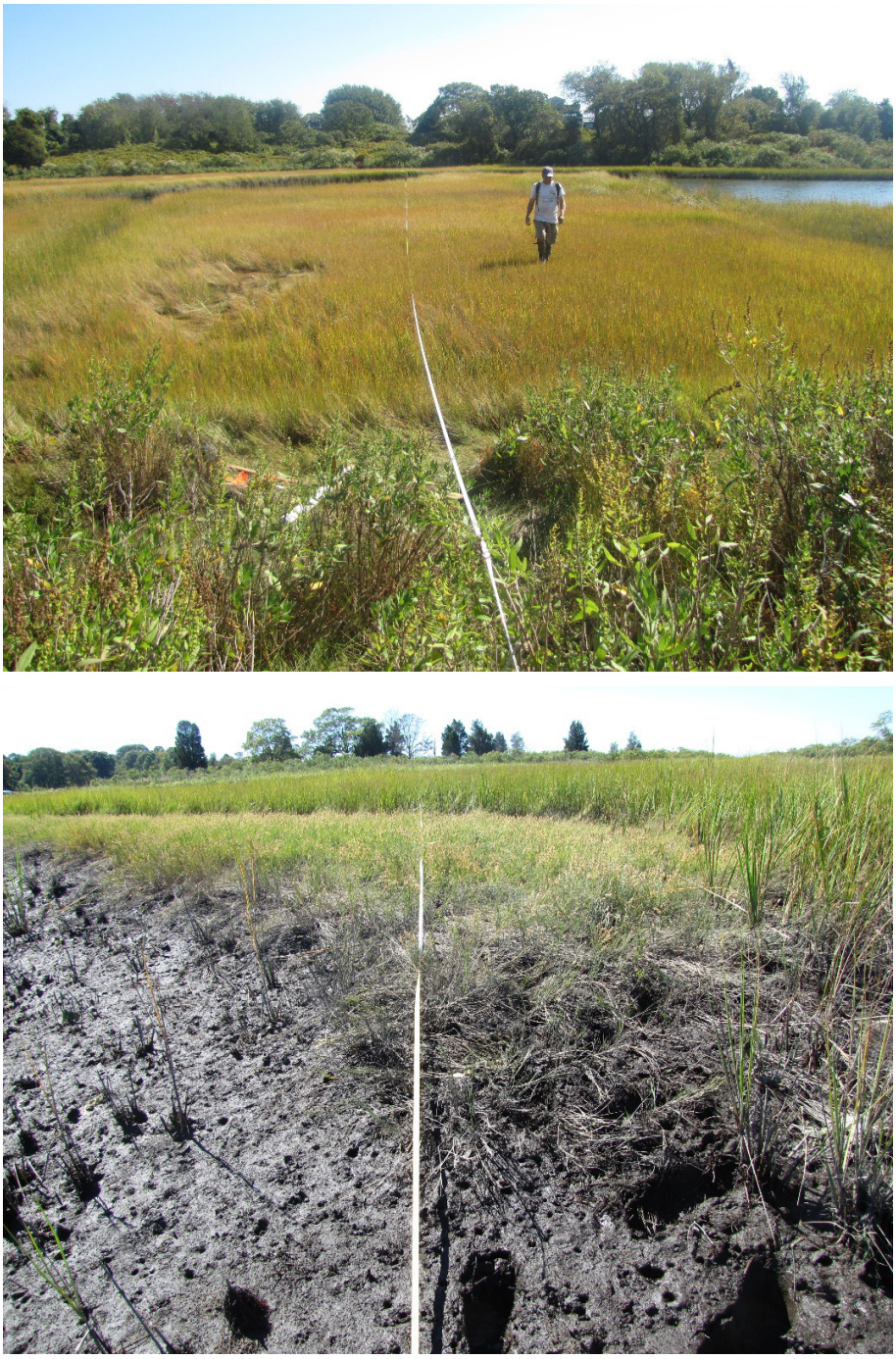

Fig. 2. Marsh and crab monitoring at Narragansett Bay National Estuarine Research Reserve, Rhode Island. Top: transect seen from landward edge; no effects of crabs are evident from this perspective. Bottom: transect seen from seaward edge; crab burrows and negative effects on vegetation are clearly visible. Photo credit: Kenny Raposa.

Fig. 3. Sampling marshes and crabs across diverse geographies. Left: students assisting with vegetation sampling at North Carolina National Estuarine Research Reserve, in a low-elevation portion of the transect where crab burrows are evident. Photo credit: Brandon Puckett. Right: a field assistant retrieving a pitfall trap used to capture crabs in a marsh transect at Guana Tolomato Matanzas National Estuarine Research Reserve. Photo credit: Pamela Marcum.

These photographs illustrate the article "Pattern and scale: evaluating generalities in crab distributions and marsh dynamics from small plots to a national scale" by Kerstin Wasson, Kenneth Raposa, Monica Almeida, Kathryn Beheshti, Jeffrey A. Crooks, Anna Deck, Nikki Dix, Caitlin Garvey, Jason Goldstein, David Samuel Johnson, Scott Lerberg, Pamela Marcum, Christopher Peter, Brandon Puckett, Jenni Schmitt, Erik Smith, Kari St. Laurent, Katie Swanson, Megan Tyrrell, and Rachel Guy published in *Ecology*. https://doi.org/10.1002/ecy.2813