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Loss of Eelgrass (*Zostera marina* L.) Associated With European Green Crabs in Casco Bay, Maine

The Challenge: Eelgrass provides essential functions to the ecology and economy of Maine's coastal zone. In the summer of 2013, sudden disappearance of over half of the eelgrass in Casco Bay was discovered. Loss of eelgrass coincided with a population explosion of the invasive European green crab (*Carcinus maenas*) in many regions of the coast. Green crabs are the leading cause of eelgrass loss in Nova Scotia, leading to hypotheses that green crabs also contributed to devastation of this habitat in Maine.

The Science: In September 2013, I established eelgrass transplant plots inside and outside of replicate crab exclosures in a formerly vegetated area of Casco Bay. Plant survival and growth rates inside and outside the exclosures implicated green crab bioturbation as the leading cause of eelgrass loss from this system. Given recent abatement of green crab populations, current tests focus on determining best eelgrass management and restoration practices.

The Future: Not all eelgrass beds in Maine with seemingly high densities of green crabs were destroyed. Therefore, identifying the factors affecting resiliency of eelgrass beds relative to green crab damage is paramount to maximizing habitat persistence in this region. Results of this work will be used by natural resource managers to prioritize eelgrass beds for protection and to select sites and planting methods for restoration efforts.

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