

**Proposal #:** 20GAR033-024

**Project Title:** Expanding a New England green crab pilot fishery by providing a molt detection assay and identifying seasonal aggregations for harvest

**Applicant:** Wells Nat'l Estuarine Research Reserve Management Authority

**Priority Addressed** Priority #2 – Science or Technology that Promotes Sustainable U.S. Seafood Production and Harvesting

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**Abstract:** Fishers and shellfish harvesters have significant concerns over the negative impacts the invasive green crab (*Carcinus maenas*) is having on their fisheries and ecosystems due to predation on economically important species and reduction of biodiversity. The impacts from green crabs have re-invigorated mitigation efforts through crab removal programs and pilot fisheries in some areas. In New England, a green crab fishery would meet several economic and ecological needs including: 1) high value seafood product(s), 2) an alternative income source for fishers, 3) reduction of green crab populations, and 4) more stabilized coastal and estuarine ecosystems. The success of such an initiative depends on fisher participation, interest, and evidence of financial benefit. Two challenges in expanding these activities are identifying pre-molt crabs (for soft-shell crab production) and a lack of knowledge on spatio-temporal aggregations of pre-molt crabs to maximize fishing efficiency. To fill these knowledge gaps, we propose to develop a molt stage assay and characterize green crab distribution and movements in a New England estuary. We will use complementary approaches, including determination of molt stage and timing, traditional trapping, and acoustic telemetry to evaluate their use of estuaries and coastal systems within the context of their molting cycle.

**Summary of potential commercial benefits to the fishing community of the research results:** This project will leverage the potential to access an underutilized species and allow coastal managers to prioritize mitigation and restoration efforts based on the spatial and temporal use of habitats by green crabs. This project will expand the current knowledge base that is integral to developing a financially viable future green crab fishery in southern Maine and Seacoast New Hampshire. Harvesters would gain the capacity to optimally target pre-molt crabs in space and time. Collectively, this project will provide a seafood product, help inform management, and aid the mitigation of this invasive species that threatens vulnerable estuarine ecosystems.

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