

Great Bay National Estuarine Research Reserve



Research Priorities

December 2020

Sustainable Fisheries and Aquaculture

- Assess the vulnerability of shellfish in Great Bay to ocean acidification
- What are the ecosystem services associated with oyster aquaculture (habitat, filtration, N reduction, bay recruitment) and how do they differ from natural reefs?
- Assess interactions between aquaculture activity and natural habitat function
- Identifying potential impacts to our fisheries from local and global anthropogenic-driven changes
- Assess socio-political and competing use issues related to aquaculture and restoration siting.



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Healthy Coastal Ecosystem

- New Hampshire needs additional information on how direct and indirect impacts of climate change (e.g. sea-level-rise, ocean acidification, rising temperatures) are affecting our critical habitats, keystone species, and ecosystem function in coastal New Hampshire, including research that links driving forces of climate change and better ways to track these impacts (e.g., eDNA, phenology, sentinel organisms etc.).
- Managers would benefit from enhanced understanding of how anthropogenic stressors (land use changes, emerging contaminants, excess nutrients, hydrological change, sedimentation), are impacting our water quality and critical habitats in Great Bay, which link findings to potential management actions.
- Innovative techniques for monitoring coastal ecosystems and coastal ecosystem health
- Monitoring invasive species and their associated/predicted impacts to ecosystem function

Resilient Communities and Economies

- Explore how estuarine organisms can enhance resiliency to eutrophication (e.g., nitrogen removal, burial, and retention) and ocean acidification (e.g., CO₂ absorption, shell dissolution).
- New Hampshire needs a better understanding of experimental approaches to facilitate habitat transition and migration due to climate change impacts, and practical tools to support the use of these approaches in New Hampshire.
- Current and past efforts on restoring subtidal and intertidal species and habitats (e.g., tidal marshes, seagrasses, oyster reefs) have had variable success. Locally based research aimed at furthering our understanding of stressors, identifying suitable sites and effective techniques, or other management options for improving success within these habitats are needed
 - Oyster reefs - Identifying ways to improve survival and recruitment at natural, restored and farmed reefs
 - Seagrasses – identifying stressors limiting health and survival and testing experimental techniques aimed at mitigating these stressors
 - Tidal marshes - evaluating newer techniques (ditch remediation, runneling, living shorelines, sediment augmentation, etc) aimed at increasing resiliency

Sustainable Environmental Literacy and Workforce Development

- Advance behavior-change science to understand the influences on municipal and landowner decisions and the use of socio-economic data in coastal decision making.
- Advance social science fields that assess the efficacy of environmental education and volunteerism on personal decision making.

For questions relating to the above research priorities, please contact
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