

Applied Ecology & Sustainability



Ecological sciences are central to the work performed at Woods Hole Group. The Applied Ecology & Sustainability (AES) Team applies ecological principles to ecological risk and vulnerability assessment, sustainability planning, and wetland assessment. The Team adds value to projects in the coastal zone, such as beach nourishment, seawall design, climate vulnerability assessment and dredging, that require environmental assessments and permitting.

Capabilities

Ecological Risk Assessment

- Spatially explicit wildlife exposure assessment
- Screening and baseline ecological risk assessments
- Human health risk assessment
- Marine, freshwater and terrestrial biology & toxicology
- Ecological risk assessment guidance development
- Peer review and technical and strategic advising
- Natural resource damage assessments/habitat equivalency analyses
- Environmental impact statements (EIS/EIR)
- Strategic planning & risk management

Sediment Evaluation & Management

- Sediment/tissue chemistry & quality assurance
- Contaminant nature & extent delineations
- Transport & fate modeling
- Forensic analysis & fingerprinting
- Remediation alternatives analyses
- Dredged material disposal management and planning

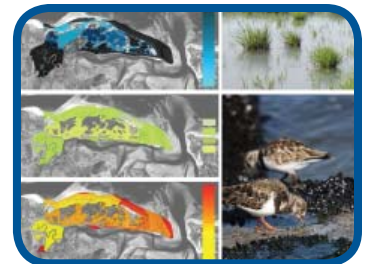


Causal Analysis & Stressor Identification

- Customized causal framework development
- Evidence compilation and scoring
- Method and conclusion communication to diverse audiences
- Stressor management
- Field program design to support analysis

Sustainability Assessment & Strategic Planning

- Carbon footprint calculations and reporting
- Sustainability plan development and management
- Climate vulnerability modeling (storm surge)
- Adaptation planning
- Impact analysis
- Ecoservice tracking and assessment



- *Coastal Sciences, Engineering & Planning*
- *Oceanography & Measurement Systems*
- *Applied Ecology & Sustainability*



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Wetlands Characterization & Design

- Freshwater and coastal wetland delineation
- Functional assessment
- Habitat characterization
- Restoration design and implementation
- Navigating the Conservation Commission process
- Wetlands permitting
- Develop projections of wetland change due to sea level rise and climate change



Field Program Design

- Biological & chemical baseline surveys
- Sediment sampling & coring
- Construction, remediation & post-project compliance surveys
- Wetlands delineation
- Habitat characterization
- Industrial discharge/water quality sampling



Geographic Information System (GIS)

- Spatial data presentation
- Spatial statistics
- Climate change model results analysis

Featured Projects

Living Shorelines - State of the Science in New England Report - The Nature Conservancy

The Nature Conservancy (TNC) contracted Woods Hole Group to generate a “Living Shorelines - State of the Science” Report to be used by regulators, practitioners, planners and academics in New England to develop and advance practices and policies related to nature-based and restorative approaches and infrastructure to address coastal erosion and inundation. Mr. Wickwire is leading a team of coastal scientists and ecologists that are combining interview data with existing living shoreline design and application resources to provide a summary of the current practice in cold climates. The team from Woods Hole Group is designing a 2-page profile for each living shoreline type summarizing design features, siting considerations, permitting opportunities and challenges by state and design, cost ranges, and case studies. Additionally, our team has designed an Excel-based applicability index tool that will provide users with the opportunity to identify living shoreline types that are best suited for their specific site conditions.

Newtown Creek CERCLA Site, New York City, New York

The Woods Hole Group Team is providing ecological risk assessment support to the City of New York, Department of Environmental protection. This work addresses the potential ecological impact associated with coastal discharges and in-place sediment contamination in Newtown Creek, New York. The program includes the interpretation of biological and chemical data, identification of potential impacts to sediment-dwelling invertebrates and to higher trophic level marine organisms through the food chain exposure pathway, and evaluation of sediment toxicity through direct contact with marine invertebrates.

Trustees of Reservations, Massachusetts

The team at Woods Hole Group is assessing vulnerability to climate influences storm inundation to a group of 30+ coastal properties in Massachusetts. The project uses probabilistic model outputs developed by our Coastal Modelers in combination with asset scoring that includes consideration of natural resource values to estimate a Coastal Vulnerability Index (CVI) for each asset on each property. Assets include infrastructure, habitats, endangered species, natural resource recreational areas, and historical and cultural resources. The result of the project will be a prioritized list of assets requiring adaptation or resilience measures to protect against future inundation.