



# RESPONDING TO CLIMATE CHANGE



Natural resources in the Delaware Estuary are certain to be affected by climate change, and the Partnership for the Delaware Estuary (PDE) is working to meet the adverse effects head on. The PDE has partnered with the U.S. EPA to begin developing a climate adaptation strategy as one of six national pilots taking part in the Climate Ready Estuaries Initiative. PDE plans to work with collaborators in the watershed to start evaluating the vulnerability of example resources that are likely to be most at risk.

The climate adaptation strategy will also furnish recommendations about how to prioritize what can and should be done to monitor and protect the most valuable and vulnerable features. The goal is to provide new guidance on monitoring and management actions and policies that may help sustain maximum “natural capital” for life-sustaining natural resources in the Delaware Estuary.

## THE NATIONAL ESTUARY PROGRAM IN ACTION

## Partnership for the Delaware Estuary

PDE’s first step in its climate adaptation project is to work with partners to assess the vulnerability and adaptation needs for up to three critical “case study” resources in the Estuary: tidal wetlands, drinking water, and bivalve shellfish. Each case study will include specific activities such as inventorying potential climate impacts to the case study resources, performing data gap analyses and risk assessment for case study resources, prioritizing concerns relative to the degree of potential risk, outlining an “early detection” monitoring framework to watch for warning



signs of key response variables and thresholds, and identifying management actions to help mitigate for potential climate impacts.

These natural resources were selected because they are important for the vitality of both people and the environment and because current scientific judgment suggests that they may be particularly at risk from climate changes because of threats imposed by increased salinity and sea levels. Extensive tidal marshes line much of the Delaware Estuary where they play

a pivotal role in preserving water quality, preventing flooding, and supporting fish and wildlife species. Currently, the health of these tidal marshes appears to be compromised over much of the region.

Tidal marsh extent and condition are affected by sea level, salinity, temperature, freshwater inputs, sediment supply, tidal flooding, and the physical characteristics of the landscape. Climate change is expected to lead to increased storm energy, increased rates of sea level and salinity rise, decreased sediment supply, and increased erosion. Freshwater and estuarine bivalves are excellent indicators of ecosystem conditions. Where they are still abundant they also furnish important ecosystem services by forming complex habitats, stabilizing the bottom, and filtering water. A few species are

commercially important, such as oysters, which still support a multimillion-dollar industry despite being depleted in numbers. Understandably, bivalve shellfish are living resources having high natural capital value in the Delaware Estuary. The geographic scope of the climate adaptation project will include the Delaware Estuary and its watershed.

PDE is creating a Climate Change Workgroup in association with its Science and Technical Advisory Committee and plans to release a Climate Adaptation Report on the vulnerability, monitoring needs, and potential actions that can be taken to sustain the “natural capital” associated with the three case studies.

Visit [www.delawareestuary.org](http://www.delawareestuary.org) to learn more about this and other Partnership efforts.

*EPA's National Estuary Program (NEP) is a unique and successful coastal watershed-based program established in 1987 under the Clean Water Act Amendments. The NEP involves the public and collaborates with partners to protect, restore, and maintain the water quality and ecological integrity of 28 estuaries of national significance located in 18 coastal states and Puerto Rico.*

*For more information about the NEP go to [www.epa.gov/owow/estuaries](http://www.epa.gov/owow/estuaries).*