# MARYLAND COASTAL RESILIENCY ASSESSMENT

## Natural Habitats, Natural Defenses

Although small in size, Maryland has over 7,000 miles of shoreline, found mostly along the Chesapeake Bay, its network of tidal rivers, and the Atlantic coast. This extensive shoreline makes the state particularly susceptible to flooding and erosion brought on by tides, storms, and increasingly, sea level rise.

Fortunately, the presence of adjacent natural habitats, such as marshes and coastal forest, can reduce the impact of coastal hazards by dampening waves, stabilizing sediment, and absorbing water. In doing so, these natural features are giving communities more time to select and implement other adaptation strategies while also providing a host of additional benefits, such as improved water quality, wildlife habitat, fisheries, and recreation. The Maryland Department of Natural Resources (DNR) recognizes the great value of these habitats and has partnered with The Nature Conservancy (TNC) to determine where coastal habitats are providing the greatest coastal protection.

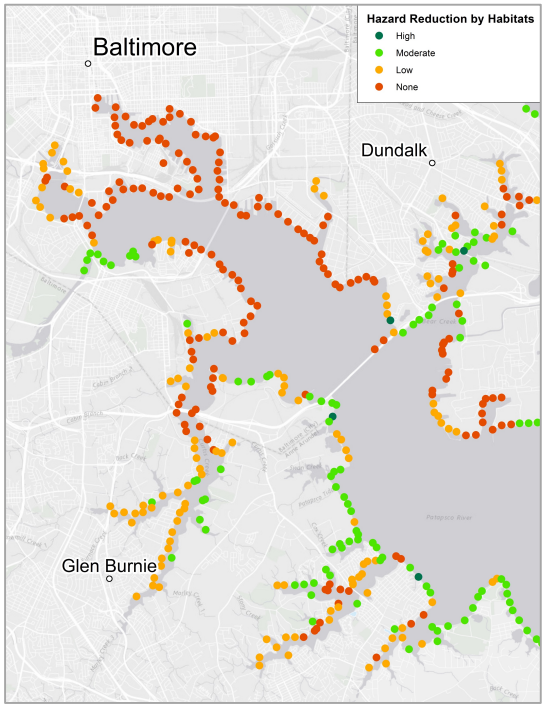
A Statewide **Coastal Resiliency Assessment** was completed to inform coastal conservation and restoration decisions. The assessment results include a Natural Features Analysis, Community Flood Risk Analysis, Marsh Protection Potential Index, and the identification of Priority Shoreline Areas for conservation or restoration actions. More simply, the assessment examines where the habitats, hazards, and people are located along MD's coastlines, and how they intersect. It examines where nature can help Maryland communities become more resilient, healthier, and happier places to live.

## Natural Features Analysis

Knowing where habitats can best defend against coastal hazards first requires knowledge of what the shoreline actually looks like and where the potential hazards are most severe.

The assessment ranked how vulnerable different stretches of shoreline are to hazards by examining six factors: geomorphology (shoreline type e.g., sand, mud, or manmade structure), elevation, sea level rise, wave power, storm surge height, erosion rate, and the presence or absence of beneficial natural habitats. Shoreline that is situated next to marshes, coastal forests, dunes, underwater grasses, or oyster reefs is more resilient than shoreline that isn't.

Due to shoreline structures, roads, and development along the coasts, **some areas in Maryland have lost their risk-reducing natural habitats, which is especially evident in urban areas like Baltimore and Annapolis**.



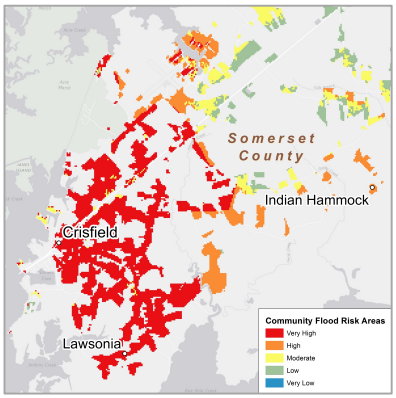

Like many urban, coastal cities, Baltimore lacks protective natural habitats along much of its coastline.

# Community Flood Risk Assessment

In addition to understanding the state's natural defenses, we must also identify where people and communities are more susceptible to coastal hazards.

The assessment mapped flood-prone areas, land use and population density, and social factors that determine how well-equipped communities are to respond to flooding. Demographics such as age, income, and language proficiency can indicate the ability of a community to prepare for or react to a coastal hazard event. The result is a more detailed picture of Maryland coastal communities at-risk to coastal flooding.

The assessment found that some of **the most at-risk areas are in Dorchester, Somerset, and Worcester counties.**




Significant parts of Somerset County are at "very high" risk for coastal flooding.

# Priority Shoreline Areas

By analyzing the location of Maryland's hazards, habitat, and people, we can demonstrate where natural habitats are the most effective at reducing risk from coastal hazards, and where shoreline is the most vulnerable. This information can help DNR and other agencies better direct their resources.

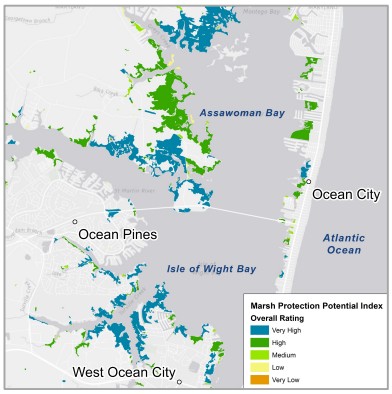
Based on the assessment, it is estimated that **coastal habitats play a significant role in risk reduction along 22% of Maryland's Shoreline**, with coastal forests and tidal marshes providing the most risk-reduction.

Many natural habitats around the coast of Talbot County provide protective benefits.

# Marsh Index

The assessment took many natural habitats into account, but marshes are some of the most effective buffers against wave damage, storm surge, and other types of coastal hazards. Some marshes are better equipped or situated, however, to perform these functions. To better document the benefits of existing marshes, the assessment analyzed and ranked individual stretches of marsh according to their size, proximity to hazards, proximity to people, proximity to other protective habitats, and how a marsh is expected to persist over changing conditions in the future.

**Marshes play a particularly important role in risk-reduction along the Tangier Sound shoreline of Somerset County, and the Assawoman Bay & Isle of Wight Bay shorelines of Worcester County.**




The Assawoman and Isle of Wight Bays contain many protective marshes.

The Maryland Coastal Resilience Assessment aims to empower state agencies and decision-makers with the best possible science and data to address the major challenges posed by coastal hazards moving forward. Investments in natural features will prepare and position Maryland's communities, economies and ecosystems for a prosperous future.

To download and read the full report, please visit http://dnr2.maryland.gov/ccs/Pages/CoastalResiliencyAssessment.aspx

Additional resources provided by The Army Corp of Engineers, Natural Capital Project, and additional federal, state and local partners.