



Nature-Based Solutions Practices and Benefits

The following common nature-based solutions can be used to lessen coastal hazards and climate change impacts. Practices range in scale and context and provide multiple benefits.

<p>LAND PRESERVATION</p> <p><i>Scale:</i> landscape, watershed, community, shoreline <i>Context:</i> coastal and upland, rural to urban</p> <p><i>Practices:</i> natural land and open space acquisition, conservation easements, establishing parks and greenways</p>	
<p>FORESTRY</p> <p><i>Scale:</i> landscape, watershed, community <i>Context:</i> coastal and upland, rural to urban</p> <p><i>Practices:</i> urban forestry, street trees, yard trees</p>	
<p>GREEN STREETS</p> <p><i>Scale:</i> community <i>Context:</i> coastal and upland, suburban to urban</p> <p><i>Practices:</i> a combination of practices that could include narrower streets, bioswales, rain gardens, permeable pavements, stormwater planters, street trees</p>	

<p>BIORETENTION</p> <p><i>Scale:</i> community, site</p> <p><i>Context:</i> coastal and upland, rural to urban</p> <p><i>Practices:</i> rain gardens, bioswales, stormwater planters</p>	
<p>GREEN AND BLUE ROOFS</p> <p><i>Scale:</i> community, site</p> <p><i>Context:</i> coastal and upland, suburban to urban</p> <p><i>Practices:</i> intensive or extensive green roofs, cisterns, roof drain disconnection</p>	
<p>PERMEABLE PAVEMENTS</p> <p><i>Scale:</i> community, site</p> <p><i>Context:</i> coastal and upland, suburban to urban</p> <p><i>Practices:</i> permeable concrete and asphalt, paver blocks, gravel and grass pave systems</p>	
<p>DUNES AND BEACHES</p> <p><i>Scale:</i> shoreline</p> <p><i>Context:</i> coastal, rural to suburban</p> <p><i>Practices:</i> beach nourishment, dune creation, dune revegetation</p>	
<p>SALT MARSH AND COASTAL WETLANDS</p> <p><i>Scale:</i> shoreline</p> <p><i>Context:</i> coastal, rural to urban</p> <p><i>Practices:</i> salt marsh and coastal wetland preservation and restoration, submerged aquatic vegetation preservation</p>	

<p>OYSTER AND CORAL REEFS</p> <p>Scale: shoreline</p> <p>Context: coastal, rural to urban</p> <p>Practices: protection of existing reefs, establishment of oyster reefs</p>	
<p>HYBRID SHORELINES</p> <p>Scale: shoreline</p> <p>Context: coastal, rural to urban</p> <p>Practices: coupling hard infrastructure with natural systems such as a rock sill or breakwater with marsh grasses behind, particularly useful in higher energy environments</p>	

ECOSYSTEM SERVICES AND GREEN INFRASTRUCTURE

PRACTICE TYPE \ ECOSYSTEM SERVICES	HAZARD REDUCTION BENEFITS													CO-BENEFITS							
	Riverine Flood Control	Water Filtration	Water Infiltration	Stormwater Retention	Evapotranspiration	Groundwater Recharge	Coastal Buffering	Wave Attenuation	Coastal Flood Control	Sediment Transport	Erosion Control	Slope Stabilization	Urban Heat Island Reduction	Increased Property Values	Air Purification	Carbon Storage	Noise Reduction	Aesthetics	Recreation	Habitat	
Land Preservation	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Forestry	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Green Streets	●	●	●	●	●	●			●	●	●		●	●	●	●	●	●	●	●	●
Bioretention	●	●	●	●	●	●			●	●	●		●	●	●	●	●	●	●	●	●
Green or Blue Roofs	●			●	●				●		●		●	●	●	●	●	●	●	●	●
Permeable Pavements		●	●	●		●			●		●		●	●	●		●				
Dunes and Beaches							●	●	●	●	●			●			●	●	●	●	●
Salt Marsh and Coastal Wetlands		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Oyster and Coral Reefs		●					●	●	●		●							●	●	●	●
Hybrid Shorelines	●	●			●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

- YES
- MAYBE

Table modified from "The Value of Green Infrastructure: A Guide to Recognizing its Economic, Environmental, and Social Benefits," Center for Neighborhood Technology and American Rivers, 2010.