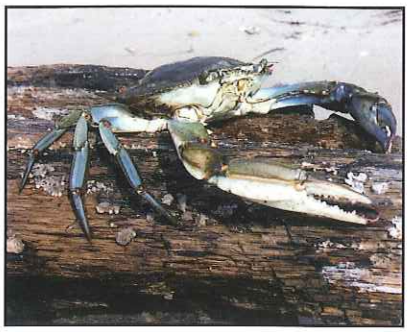
Merging Blue and Green Infrastructure in Maryland



Maryland coastal resource managers have expanded an existing statewide "green infrastructure" program to incorporate what they are calling "blue infrastructure," or aquatic priorities in the nearshore coastal zone, such as submerged aquatic vegetation, oyster bars, tidal wetlands, fish spawning and nursery areas, and shoreline buffers.

This information is not only helping state managers target lands for protection and restoration, it is also being shared with local managers through the state's Coastal Atlas.

"We are helping to ensure the protection of Maryland's critical ocean and estuarine resources, and the coastal economies that depend on them," says Catherine McCall, natural resource planner for the Maryland Chesapeake and Coastal Program. "The Coastal Atlas has been developed to provide direct access to available data needed for coastal and ocean planning efforts."

The new data will be used for everything from finding the best location for renewable energy projects, to locating sand resources needed for beach replenishment, to helping local communities identify areas vulnerable to sea level rise and erosion.

"The Coastal Atlas will assist users in identifying potential conflicts so that they can then be avoided early in the planning process," McCall says.

Adding Blue to Green

While green infrastructure can be used to refer to anything from a street-side rain garden to a statewide land conservation network, the term is commonly defined as an interconnected network of protected land and water that supports native species, maintains natural ecological processes, sustains air and water resources, and contributes to a community's health and quality of life.

Benefits of a holistically conceived green infrastructure program include improving stormwater and wastewater management, helping to mitigate impacts from natural hazards and adapt to climate change, and providing other ecological and recreational services.

"We have a very good handle on our green infrastructure program network in Maryland and are targeting land acquisition, but what has been missing is the nearshore information and what is happening in the water," McCall says.

Assessment

To get this information, McCall and a staff geographic information system (GIS) analyst worked to assess the state's blue infrastructure and used marine spatial planning tools to evaluate compatible coastal uses.

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> *Catherine McCall, Maryland Chesapeake and Coastal Program*

To do the analysis, they divided the shoreline into unique 1-kilometer segments that were easily reviewable. Working with resource managers from across the state, they looked at everything from oyster, clam, and mussel habitats, submerged aquatic vegetation beds, access structures, and fish spawning and nursery areas. They came up with a five-tier rating system that coded resources from low to high ecological integrity.

The completed Blue Infrastructure Near-shore Assessment identifies the priority coastal habitat, critical aquatic resources, and associated human uses in the tidal waters and nearshore area of Maryland's Chesapeake and coastal bays, tidal waters, and ocean.

Linking the blue infrastructure with the green infrastructure has "created a framework to identify coastal habitats and areas where conservation and restoration activities can be targeted to maintain and improve coastal resources," McCall says.

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Photo courtesy of Maryland Chesapeake and Coastal Program

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Sharing the Data

To get the information into the hands of local decision makers for coastal and ocean planning activities, the Maryland Chesapeake and Coastal Program incorporated the blue infrastructure assessment into the state's existing Coastal Atlas, which is an online mapping and planning tool that can be used to visually analyze and explore data.

"The Coastal Atlas now has three components," explains McCall. "The ocean atlas can be used to evaluate offshore wind energy, the shoreline component can be used to address shoreline stabilization issues, as well as sea level rise, and now we have a new estuaries component, where we have merged all the blue infrastructure assessment data."

Training for all county decision makers in the state on using the blue infrastructure data was set to begin in August.

"I feel good about it," McCall says. "I think we've taken a look at a very broad suite of information and on-the-ground experiences that different resource managers have had, and we've been able to take that data, information, and experiences and combine it into a package that helps us more clearly to convey what our conservation priorities and targets are, and why."

She adds, "Blue infrastructure has really helped us focus our efforts." ❖

To view Maryland's Coastal Atlas, go to http://dnr.maryland.gov/ccp/coastalatlas/index.asp. To view the new estuaries component, go to http://dnr.maryland.gov/ccp/coastalatlas/estuaries.asp. For more information on Maryland's Blue Infrastructure Near-Shore Assessment, contact Catherine McCall at (410) 260-8737, or cmccall@dnr.state.md.us.