

Incorporation of Climate Change in Land Protection Decisions

Use acquisition, conservation easements and other tools to preserve/conservate wetland habitat as lake levels fluctuate

Because of the ecological, cultural and social importance of wetlands as well as their loss over the years to agriculture, urbanization and other changes, acquisition and conservation easements are commonly used to conserve wetlands and associated habitat in perpetuity. Land protection is typically used to protect high priority areas for wildlife diversity by state, federal and/or private organizations, but these practices should also be considered in efforts to accommodate the effects of lake level changes in light of climate change.

Fluctuating water levels are important in maintaining the dynamics of coastal wetlands, including shifts in wetland type and composition with different water levels. Depending on the presence of coastal infrastructure, wetland extent may not change dramatically when water levels fluctuate however, in more natural systems, wetlands may migrate inland or shrink toward coastal edges seasonally, annually or in response to storm events. While earlier models suggested that Great Lakes levels were most likely to drop with climate change, more recent work suggests that water levels will continue to fluctuate both above and below long-term averages. Given that future lake levels will continue to rise and fall, it is important that managers consider options that are robust to these potential changes.

In areas where significant lake level change is expected, especially shallower bays, protections can be expanded to include submerged lands, so that wetlands can move along with lake levels. The regulatory framework for this varies across jurisdictions. In Michigan, as in many other states, a complex regulatory scheme at the land-water interface governs how and when easements might be used.

In Michigan, some coastal wetlands are designated Environmental Areas under Part 323, Shorelands Protection and Management of the Natural Resources and Environmental Protection Act, to protect habitat necessary for fish and wildlife. Within most of these Environmental Areas, the lakeward boundary of the protected area remains undefined. However, Part 323 provides for the designation of Environmental Areas up to 1,000 feet landward of the ordinary high water mark of a Great Lake or 1,000 feet landward of the ordinary high water mark of lands adjacent to waters affected by levels of the Great Lakes.

Similarly, resource managers may consider expanding the boundaries of their management area landward to increase the ability of wetlands to shift with lake levels and to maintain wetland function.



“A rolling easement is a legally enforceable expectation that the shore or human access along the shore can migrate inland instead of being squeezed between an advancing sea and a fixed property line or physical structure. The term refers to a broad collection of legal options, many of which do not involve easements. Usually, a rolling easement would be either a) a law that prohibits shore protection; or b) a property right to ensure that wetlands, beaches, barrier islands or access along the shore moves inland with the natural retreat of the shore.”

Rolling Easements, James G. Titus, Climate Ready Estuaries Program, U.S. Environmental Protection Agency, June 2010

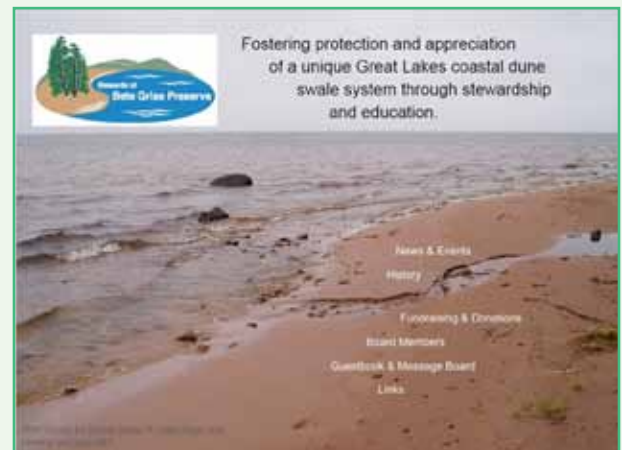
Rolling easements are a related option for land protection under variable conditions such as climate change.

Rolling easements provide the assurance that the shore or public access along the shore can migrate (inland) instead of being squeezed between an advancing lake or sea and a fixed property line or physical structure.

Because land uses and actions throughout a watershed affect the health of coastal wetlands, land protection geared toward maintaining or improving coastal wetland health does not necessarily need to be immediately adjacent to the wetland. In Washington State, counties have the option (and in some cases the requirement) to establish shellfish protection districts (a.k.a. clean water districts) that give the county increased financial and regulatory options for limiting nonpoint sources of pollution in watersheds draining into important shellfish areas.

Case Example | Protecting Wetlands in Michigan’s Upper Peninsula

The Bete Grise wetlands are an 8,000+ acre coastal wetland complex on the Keweenaw Peninsula in Lake Superior that contain a wide variety of habitats, including wetlands and high quality dune and swale habitats that are among the few remaining examples in the upper Great Lakes. Years ago, this area was targeted for residential development; however, project partners, recognizing the ecological significance of the area, rallied funding to protect part of the area as the Bete Grise Preserve. The initial conservation easements and land acquisition protected more than 1,800 acres of what has been described by the Michigan Natural Features Inventory as the single most important coastal plain marsh remaining in the upper Great Lakes region. Funding from the Great Lakes Restoration Initiative (GLRI), the NOAA Coastal and Estuarine Land Conservation Program (CELCP) Initiative and other partners enabled the Houghton Keweenaw Conservation District to purchase nearly 1,500 acres of wetlands adjacent to the existing preserve in 2012, and an additional 181 acres in 2013. Though the acquisitions were not explicitly carried out as an adaptation measure, project partners recognize that the overall effort should provide benefits to a changing climate by preventing development on those lands, which could alter natural resiliency of the adjacent coastal habitats.



Case Example | **The Southwest Lake Erie Land Protection Strategy**

Ducks Unlimited, Inc. (DU) has implemented the Southwest Lake Erie Land Protection Strategy to protect land surrounding the coastal marshes of western Lake Erie. The program focuses on the protection of existing private wetlands and adjacent agricultural property within the coastal zone of Lake Erie in Ohio and Michigan. Lands near large conservation areas, such as the Ottawa National Wildlife Refuge (NWR) and state wildlife areas will be targeted.

Utilizing funds from the GLRI and in partnership with the Great Lakes Fish and Wildlife Restoration Act, Michigan Department of Natural Resources, Ohio Division of Wildlife, USFWS Detroit River International Wildlife Refuge, USFWS Ottawa NWR, and Black Swamp Conservancy, DU will protect more than 670 acres of wetlands or restorable wetlands to increase connectivity and address urban sprawl and industrial development, which threaten remaining natural wetlands and rural agricultural areas. Though not explicitly undertaken for climate adaptation reasons, this project addresses the principles of climate adaptation by helping to ensure existing wetlands are adequately buffered from the upland edge. In 2012, a forested parcel along the western edge of the Ottawa NWR was protected with a conservation easement and will provide additional upland protection to the wetlands in the marsh.

Challenges and Benefits

The ecological benefits of allowing coastal wetlands to migrate and adapt naturally with changing climate can be significant. Even absent climate change, it is important that appropriate legal and regulatory structures be in place to protect coastal wetland areas. Another benefit is that this practice is not restricted to public agencies; land trust and other environmental organizations or even stewardship-minded landowners can purchase land and easements. Further, land protection adjacent to existing coastal wetlands provides ecological connectivity benefiting wildlife and ecological conditions.

Key among the challenges to land protection is that desirable lands may not be readily available for purchase, so “pre-emptive” protection is not always possible, especially for acquisition. Another challenge is that buying coastal land or acquiring conservation easements is costly. Public agencies face budget challenges restricting new acquisitions and occasionally face public scrutiny if the public benefit is not well-articulated. Further, public agencies must address the long-term challenges of expanded land management, and resources (i.e., funding, staff) are not always available to manage and maintain the land or easement over the long term. Even private land trusts that are in the business of buying land and easements for conservation purposes can face funding hurdles both during the acquisition process and in the enforcement of the conservation easement in perpetuity.

Who should implement the practice?

This practice can be employed by governmental agencies that own or manage coastal wetlands, state legislatures writing wetland laws, agencies that regulate use of submerged lands, land trusts and nonprofits engaged in wetland acquisition or easements. Mandates or incentives for naturalized shorelines can be put in place by local governments in coastal areas which have shoreline use jurisdiction. In some cases complementary zoning ordinances (see Best Practice #6) may need to be developed that can enable wetland acquisition and easements to take place more easily.

When should this practice happen?



Tools and Resources

National Oceanic and Atmospheric Administration – Coastal Change Analysis Program | Provides a nationally standardized database of land cover and land change information for the coastal regions of the United States. | www.csc.noaa.gov/digitalcoast/data/ccaregional

Rolling Easements (2011) | U.S. EPA's Climate-Ready Estuaries program comprehensive guide to rolling easements. | papers.risingsea.net/rolling-easements.html

Michigan Environmental Area Program | Describes the Michigan Environmental Area Program. | www.michigan.gov/deq/0,4561,7-135-3313_3677_3700-10863--,00.html

NOAA Coastal and Estuarine Land Conservation Program, Great Lakes Restoration Initiative | List and brief summary of selected GLRI projects in coastal areas. | www.glerl.noaa.gov/pubs/brochures/GLRI_CELCP.pdf

Michigan Office of the Great Lakes, Coastal Zone Management Program, Pristine Lands Protected at Bete Grise Preserve | Describes recent acquisition efforts at Bete Grise Preserve. | www.michigan.gov/deq/0,4561,7-135-3313_3677_3696-311958--,00.html

Ducks Unlimited Conservation Report (2011) | Summarizes various DU restoration projects planned, underway or completed in the Great Lakes region including the one cited in the case study. | www.ducks.org/media/Conservation/GLARO/_documents/_library/_conservation/_states/2011/Ohio_Report2011.pdf

