

## Continuing Education of Practitioners

Provide continuing education and cross training to support a coordinated response to changes in coastal wetlands

The importance of continuing education is well-established for many fields of practice, particularly for relatively new and emerging natural resource management fields. The style and content of continuing education and training varies depending on the goals and target audience. In general, organizations with capacity-building mandates (e.g., Sea Grant programs, agricultural or forestry extension) identify needs through formal (e.g., surveys) or informal (e.g., conversations with practitioners) means and develop programs to address those needs. Options range from presentations to standardized trainings to tailored, in-depth trainings for particular groups or projects.

Trainings, including modules and tutorials related to natural resource management, and wetlands in particular, should be periodically amended to reflect the latest best practices for wetland management related to climate adaptation, such as those practices included in this toolkit, especially the project level best practices (see pages 26 to 55). These education and training initiatives should target natural resource managers, municipal planning and zoning officials and staff, local government consultants, and watershed and other environmental non-profit organizations. Such efforts should consider including diverse practitioners (e.g., climate, engineering, wetland management, etc.) as both speakers and participants to support the multidisciplinary exchange of ideas and information that can maximize the integration of different areas of focus. Participation from multiple disciplines helps ensure that the training and education efforts can improve the chances of informed decisionmaking under uncertainty. Additionally, continuing education should be incorporated into planning processes so that those processes that engage practitioners and stakeholders can be leveraged to also provide educational opportunities.

Curriculum developers should not just create slides, worksheets or other curricular material, but should also design trainings for interactive engagement of practitioners to “solve” real world climate challenges. If trainings or workshops are likely to be offered more than once, guidance for future trainers should be developed that can be readily modified to reflect new audiences or information.

### Case Example | NOAA Climate-Ready Great Lakes

The National Atmospheric and Oceanic Administration has set up eight regional teams to support capacity-building and coordination, including the Great Lakes Regional Collaboration Team (GLRCT), established in 2004. Through this team, the Great Lakes Sea Grant Network and other NOAA entities, NOAA has supported significant adaptation capacity-building in the Great Lakes region. One such effort is *Climate-Ready Great Lakes*, a set of three training modules, a support notebook, and a variety of supporting documents.

GLRCT and Sea Grant, working with other partners, established 10 working groups including students and professionals from NOAA. Three working groups, including a literature review team, a needs assessment team and a tools inventory team, focused on gathering necessary information. Three other working groups focused on developing specific modules for use in the training. The remaining working groups focused on piloting the training, evaluation, marketing and budget. The training was piloted via a train-the-trainer workshop with Sea Grant agents from Michigan, Wisconsin, Minnesota, Pennsylvania and New York. In 2014, the

three *Climate-Ready Great Lakes* training modules are being reassessed in cooperation with the Great Lakes and St. Lawrence Cities Initiative (GLSLCI) and revised to incorporate feedback they are receiving from the GLSLCI member cities from across the binational Great Lakes region.

The training modules address impacts (“What Am I Adapting To?”), adaptation planning (“Developing a Climate Adaptation Plan”) and resources (“Climate Change Adaptation Tools”). Each module includes both slides and presentation notes, and there is a training manual, annotated bibliography, a table of relevant federal laws and executive orders, and a list of potential federal funding sources. Modules are designed for flexibility; they can be used either in their entirety or easily adapted for specific needs.



## Challenges and Benefits

An obvious benefit to continuing education is that it helps to create more confident, capable, and informed stakeholders and practitioners. It can also provide a forum for interaction between scientific and management experts, “boundary organizations” (organizations whose role is to bridge science and decisionmaking), wetland managers and other practitioners. A key value is that continuing education provides a forum for those with different experience or expertise to learn from one another as well as from the formal instructor or instruction materials. Depending on the continuing education program, practitioners may be able to get continuing education credits or certificates of completion.

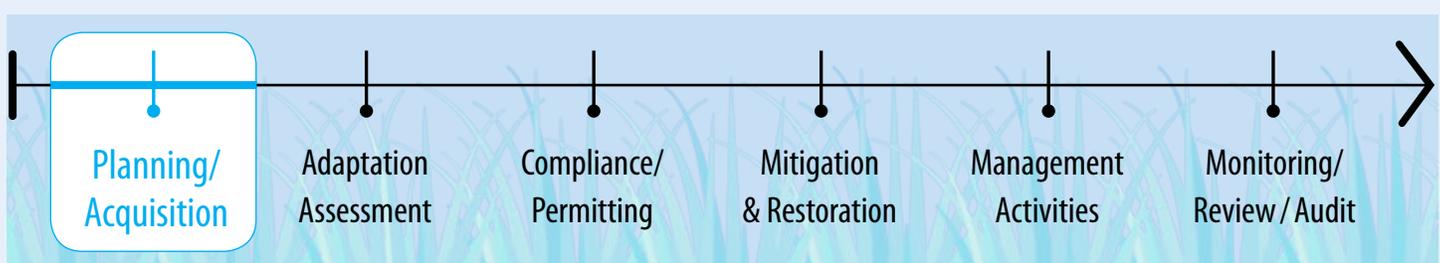
A challenge for continuing education efforts is that funding is required for development, updating the curriculum and offering the trainings. People in the target audience may have limited time or funding to devote to continuing education. Furthermore, an individual or organization carrying out the training needs to take responsibility for ensuring that training materials remain relevant and accurate.

## Who should implement the practice?

Any number of groups with the necessary expertise in professional education in natural resource management or a related field may develop and offer continuing education for wetland adaptation. This includes agencies or organizations charged with continuing education generally (e.g., natural resource extension agencies), boundary organizations charged with linking science and practice or policy, environmental non-profit organizations, and institutions of higher learning. Agencies or organizations that have or need staff with wetland adaptation expertise (e.g., land use planning groups or consultants targeting wetland conservation and restoration) could be part of the training or continuing education effort, either as students or teachers.

## When should this practice happen?

By definition, continuing education should occur regularly, particularly in rapidly growing fields, such as wetland adaptation. Ideally, practitioners engaged in coastal wetland management or associated policy or administration should participate in continuing education prior to any decisionmaking, and annually thereafter.



## Tools and Resources

**Association of Natural Resource Extension Professionals (ANREP)** | An association of professionals whose goal is to provide different approaches to help educate stakeholders. | [www.anrep.org](http://www.anrep.org)

**ANREP Climate Science Initiative** | Provides a place where educators communicate, collaborate and share resources related to climate change science and managing natural resources in a changing climate. | [sites.google.com/site/anrepclimate](https://sites.google.com/site/anrepclimate)

**U.S. Fish & Wildlife Service – National Conservation Training Center** | Provides a large variety of training resources. | [training.fws.gov](http://training.fws.gov)

**National Oceanic and Atmospheric Administration – Climate-Ready Great Lakes** | Provides modules designed to give stakeholders information about climate change in the Great Lakes region and what needs to be done to reduce vulnerability to these impacts. | [www.regions.noaa.gov/great-lakes/index.php/resources/climate-ready-great-lakes](http://www.regions.noaa.gov/great-lakes/index.php/resources/climate-ready-great-lakes)

**National Oceanic and Atmospheric Administration – National Estuarine Research Reserve System** | In partnership with Washington Sea Grant, the NERR System's Coastal Training Program developed a one-day "Planning for Climate Impacts" workshop that was later adapted for the Great Lakes. Workshops have been held in Cleveland, OH; Green Bay, WI; and Duluth, MN | [nerrs.noaa.gov/CTPIndex.aspx?ID=663](http://nerrs.noaa.gov/CTPIndex.aspx?ID=663)

**Lake Superior Reserve - Needs Assessment** | This needs assessment helps to help guide its coastal training program, and climate change impacts on natural systems was a priority topic. | [lsnerr.uwex.edu/CTP/Docs/LSNERRCTPStrategicplan.pdf](http://lsnerr.uwex.edu/CTP/Docs/LSNERRCTPStrategicplan.pdf)

