

# Introduction

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Cooperative Wetlands Center  
*Geography, Ecology, Conservation*



To improve the environment, one must interact positively with local and regional decision-makers who can use the knowledge and tools generated in academic institutions. The Penn State Cooperative Wetlands Center (CWC) is adept at producing scientifically-valid assessment tools for conservation and restoration of wetlands, wildlife, and aquatic resources. We typically design and implement interdisciplinary projects that extend across broad geographic boundaries, such as the Mid-Atlantic Region. Few institutions are willing to commit to the logistical and financial management required for such extensive projects.

We view wetlands as an important part, but only one part, of a much broader watershed palette, where understanding and protecting the linkages among wetlands, streams, riparian areas, and their surrounding landscapes, are essential. Research conducted by the CWC is directed at understanding how these integrated systems function and how they are perturbed by human activities. The CWC produces and distributes objective and technically rigorous information about wetlands and related ecosystems and the issues surrounding their regulation and management to institutions, agencies, and industries.



Photo by Robert P. Brooks

# Our Previous Work

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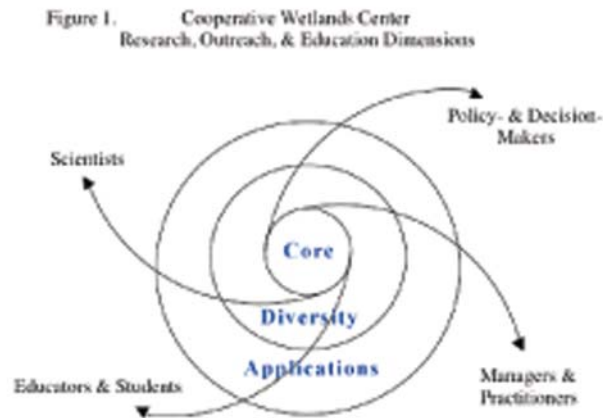


*The mission of the Cooperative Wetlands Center is to conduct, facilitate, and coordinate interdisciplinary research, monitoring, and training regarding wetlands and other aquatic resources, with an emphasis in the Mid-Atlantic and Northeastern states.*

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The CWC was founded in 1993 when Dr. Robert P. Brooks and a few graduate students began assessing the condition of a small number of reference wetlands. Since its founding, the Penn State Cooperative Wetlands Center (CWC) has been administered by the Penn State Institutes of the Environment (PSIE) where it continues to foster important interdisciplinary associations. The CWC became integrated into the Department of Geography of the College of Earth and Mineral Sciences in 2003, which serves as its academic home.

The CWC's strengths lie in the pursuit of three, fully integrated dimensions of research and outreach.



- **Core** – Long-term commitment to building on previous studies to extend our knowledge about the ecology of natural and built environments. Funding is most often provided through competitive grants and contracts.
- **Discovery** – Pursuing lines of inquiry which may prove useful for informing management through science. An amalgam of sources, including unfunded initiatives is usually required to complete discovery projects.
- **Applications** – Developing and implementing tools, courses, and programs to educate and train students and managers of all kinds to use science to inform policy decisions and management practices that can further the conservation of wetlands and aquatic resources.

To remain successful and competitive, the CWC must be opportunistic in securing funds to conduct its collective work, but we seek to focus about one third of our efforts in each dimension.

# Our Current Work

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At this time, the CWC is focused on four major areas of research, and associated outreach and education activities:

- **Wetlands and Watersheds:** Long-term studies of the ecology and management of wetlands, streams, and riparian areas on a watershed basis, with an emphasis on reference set of wetlands.
- **Ecological Indicators:** Development and testing of ecological indicators for wetlands, streams, and forests with an emphasis on assessments across spatial scales from site to landscape.
- **Conservation Science:** Applying the principles and practices of natural sciences and social sciences to foster the conservation of biodiversity and aquatic ecosystems, with an emphasis on wetland-dependent wildlife.
- **Ecological Restoration:** Development of design principles and monitoring protocols to create, restore, and build better wetlands based on a set of reference wetlands.

In addition to these areas of research, the CWC has initiated several lines of inquiry associated with tool development that are promising as basic research initiatives in the immediate future. These include:

- investigation of ecological thresholds,
- determination of wetland community characteristics on a statewide basis utilizing the reference database, and
- characterization of ecosystem responses to human disturbance.

Listings of our current projects and publications are available on our Web site:

***[www.wetlands.psu.edu](http://www.wetlands.psu.edu)***

# Our Future Work

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The CWC's leadership believes strongly in the spirit of a land grant institution, such as Penn State, where service to the community, broadly defined, is expected and encouraged. Our strategic goals for the future include the following activities:

- Establish (named) graduate fellowships and undergraduate scholarships for students to work on both research and outreach opportunities with the CWC.
- Maintain our extensive databases and biological collections in good working order using archival storage techniques for field data, site summaries, historic aerial photographs, and biological specimens. Make more information available to scientists, managers, and citizens through Web-based digital display and retrieval.
- Work with agencies and organizations to offer tailored training, courses, and seminars in wetlands, water resources, wildlife, and conservation.
- Work with agencies and organizations of the Mid-Atlantic Region to implement a suite of ecological and socioeconomic indicators for assessing the health of aquatic ecosystems.
- Continue long-term studies of reference wetlands to determine trends in condition and to continually improve mitigation design criteria for wetlands.
- Work toward implementing monitoring programs using ecological indicators (e.g., Indices of Biological Integrity (IBIs) for plants, macroinvertebrates, amphibians, and birds) and hydrogeomorphic (HGM) wetland functional assessment models across multiple ecoregions, with reporting of results to the public.
- Allow the CWC faculty and staff to continue to serve in leadership positions on agency advisory boards, professional society boards, land trust boards, planning commissions, and other capacities all of which help to use science to directly inform policy and planning decisions.