

*Jeanne Christie photos*



## Mapping Wetlands Together: Identifying Partners for Coalitions

by Leah Stetson, ASWM

Once organizations start to team up and collaborate for wetland mapping projects, more can be achieved. Several members notified us of new developments in wetland mapping after reading the mapping article in ASWM's August 2008 newsletter. It was clear that much of the mapping work undertaken in states was collaborative. In some states, there is a lot of opportunity for agencies and organizations to work together in acquiring imagery and/or mapping wetland resources. So ASWM queried wetland staff and GIS specialists from around the country to identify potential, and sometimes surprising, partners in building a wetland mapping coalition.

There are two purposes behind forming partnerships or coalitions.

- 1) To acquire imagery
- 2) To map wetland resources

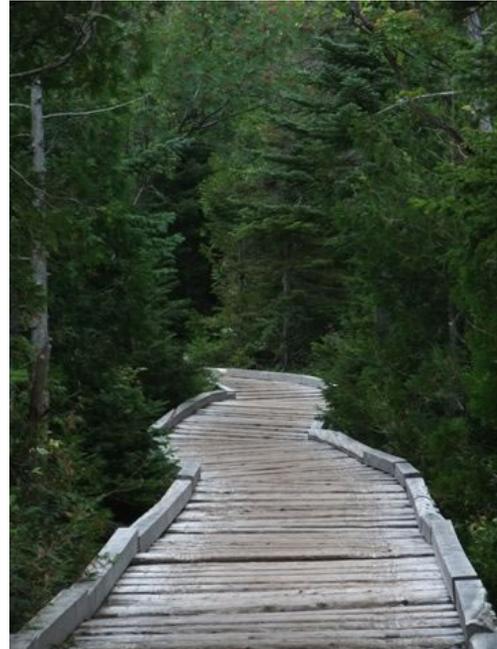
Some partners may participate in one or both activities. A successful partnership requires partners to want the same kind or better quality data. For example, a local watershed organization may need a map showing wetlands. To acquire the imagery, the group could collaborate with some unlikely partners—utility companies, a local college, a highway department, a civil engineering firm—which might need the imagery to map something completely different such as impervious surfaces for stormwater management. Then the local watershed organization may need to work with another group to do the wetland mapping; this may entail identifying wetlands on the imagery, digitizing polygons (wetlands), field visits to verify accuracy, and preparing the data to add/forward to the U.S. Fish & Wildlife Service's National Wetlands Inventory (NWI). Often there is another organization in the same state or region—a natural heritage program, a nonprofit organization such as Ducks Unlimited, The Nature Conservancy, or a land trust, that is also working on creating or updating wetland maps.

While some groups are working to create wetland maps, other collaborations are improving the quality of the wetland data. In Missouri, for instance, private organizations and state agencies are working with LiDAR (Light Detection and Ranging <http://www.csc.noaa.gov/products/sccoasts/html/tutlid.htm>) and elevation data. Frank Nelson works with the Open Rivers/Wetlands Field Station, Missouri Department of Conservation. Nelson summarized the wetland mapping activities in Missouri for ASWM. Notably, the Missouri Geographic Information Systems Advisory Committee (MGISAC) has put together a white paper on LiDAR to help interested parties decide whether or not this technology will meet

their needs, Nelson says. The organization maintains a status map of LiDAR coverage in Missouri, which is helpful for those looking to use elevation data and to identify where there are opportunities to partner and fill in data gaps. Missouri has also developed digital elevation models and mapped potential waterbird foraging habitat. For more information about Missouri's use of LiDAR, the white paper and habitat mapping project, go to:

[http://www.aswm.org/member/august\\_09/missouri\\_wetland\\_mapping\\_nelson\\_0809.pdf](http://www.aswm.org/member/august_09/missouri_wetland_mapping_nelson_0809.pdf)

James Robb in Indiana, formerly with the Department of Environmental Protection, tells ASWM that “a great deal of the mapping action is happening at the local level. Not just for wetlands, though wetlands often end up being a part of it.” Phase II stormwater regulations and homeland security are also drivers. Due to the stormwater phase II NPDES regulations many local units of government are now very interested in the amount of impervious surfaces in their jurisdictions as well as mapping drainage features. This leads to the demand for high resolution aerial photography. Homeland security needs have also led to a greater demand for high resolution aerial photography so that local governments can map infrastructure / assets. At the same time the price of multispectral aerial photography has really come down in recent years. These were the driving forces that led to the acquisition of good high resolution color infrared aerial photography in Indiana. Getting the aerial photography is the really expensive part of developing maps so once that's in place, it is not too difficult to start generating other important products such as land use/land cover mapping and wetland mapping. Robb recommends for anyone moving forward with a wetland mapping program “to first concentrate on building a coalition to acquire aerial photography and a key element of this coalition should be local (city and county) governments.” For more information about Indiana's wetland resources and mapping, go to: <http://www.ai.org/idem/4406.htm>



### **Successful Coalition-Building Tips**

What makes a good coalition? ASWM has identified some successful coalition-building strategies. First up: a strong coalition must have good collaboration between partners. Good collaboration requires the following things: 1) reliability –can partners work to produce the desired outcome? 2) accountability – are the partners accountable, and to whom? 3) adaptability – can the partners adapt to changes such as problem domain or service area? 4) legitimacy – do the collaborators view themselves as “players” in the field? Do others view them as legitimate? 5) efficiency – is the work performed efficiently? Is it cost-effective? 6) sustainability – do the partners plan to work together in the future? Do they need to?<sup>1</sup>

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<sup>1</sup> Griffith, G. *Report to Planning Committee on Study of Three Collaborations*. Eugene, OR June 2001.



## Identifying Partners for a Wetland Mapping Coalition

In fall 2008, ASWM partnered with several other organizations and individuals to form the Wetland Mapping Consortium (WMC). According to its guiding principles, “the WMC is an interdisciplinary group of wetland scientists and managers interested in mapping and monitoring wetlands with remotely sensed images and/or using the resultant products to best manage wetland resources.”<sup>2</sup> The WMC is somewhat different from the coalitions described above because the purpose of the consortium is to share and explore innovations in wetland mapping and collaborate in delivering services to mapping efficiently by combining expertise. The consortium is open to all interested professionals engaged in wetland mapping activities. For more information about the WMC, go to:

[http://aswm.org/swp/mapping/wetland\\_mapping\\_consortium\\_010509.pdf](http://aswm.org/swp/mapping/wetland_mapping_consortium_010509.pdf)

Updates will be posted at ASWM’s wetland mapping webpage at:

<http://www.aswm.org/swp/mapping/index.htm>

### Agency Partners within a State

Charlie Costello with Massachusetts DEP says that the state has “had success working with public utilities, the state’s Department of Public Health, USGS and the state’s highway department in developing a cost-share program.” The highway department has been an extremely willing partner in the process of updating state wetland maps. “They’ve been a happy collaborator because it has saved them money,” Costello explained. “If you have the wetlands identified on a map, the planners eliminate (avoid) the wet areas.” It cuts down on permitting times.

Massachusetts has several different agencies that contribute to the first three bands (layers) and the wetland division gets the fourth band geo-referenced. The Department of Public Health, for example, has helped to establish the base map. Then other agencies assist in making the infrared, digital color ortho bands/layers. See example of a map, Massachusetts Department of Protection Wetlands Mapping Program

[http://www.aswm.org/member/wetlandnews/august\\_09/route\\_44\\_plymouth\\_county.pdf](http://www.aswm.org/member/wetlandnews/august_09/route_44_plymouth_county.pdf)



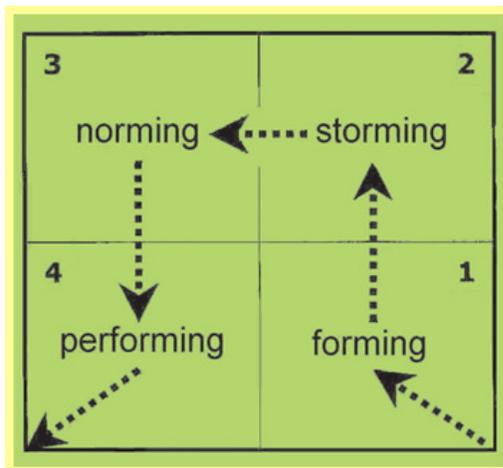
<sup>2</sup> Awl, Jane and Megan Lang, et. al. Wetland Mapping Consortium, Guiding Principles, Fall 2008.

## Land Trusts, State & Federal Partnerships

In the state of Maine, there are over 90 active land trusts and at least one state-wide land trust, Maine Coast Heritage Trust (MCHT). In 1978, MCHT began listing “assistance to local land trusts” among its services, and created the Maine Land Trust Network. It co-founded the Washington, DC-based Land Trust Alliance in 1981. MCHT then started the idea of encouraging local and regional land trusts to collaborate with other land trusts and conservation-minded partners, to build coalitions to share mapping technology and conduct discussions for the purposes of “whole-place” planning.<sup>3</sup> Nowadays land trusts in many states collaborate with local conservation commissions, local governments, state environmental and conservation agencies, universities and colleges, surveyors and landowners, as well as other nonprofit organizations, to complete maps of conservation projects, plans and easement properties. And since numerous land trusts also seek to protect local wetlands as part of their mission, land trusts can make good partners in a wetland mapping coalition. For a list of local land trusts that protect wetlands, go to: [http://aswm.org/lwp/land\\_trusts/index.htm](http://aswm.org/lwp/land_trusts/index.htm) If there is a land trust missing from ASWM’s list, please let us know and we will add it.

Christina Epperson and Martie Crone are GIS specialists at MCHT. Epperson and Crone explained how MCHT completes in-house maps showing wetlands and other lands that are part of conservation easement plans. Epperson and Crone use mapping data from the Maine Office of GIS, FWS, as well as the Maine-based Beginning with Habitat (BWH), a collaborative program of federal, state and local agencies and non-governmental organizations. BWH is a habitat-based approach to conserving wildlife and plant habitat on a landscape scale.

<http://www.beginningwithhabitat.org/> It’s a partnership between the Maine Department of Inland Fisheries & Wildlife, Maine Department of Conservation, the state’s planning office, Maine Audubon, FWS, Maine Department of Transportation, The Nature Conservancy and MCHT. Beginning with Habitat produces several kinds of maps; among them, water resources & riparian habitats.



[http://www.beginningwithhabitat.org/the\\_maps/index.html](http://www.beginningwithhabitat.org/the_maps/index.html) MCHT also provides feedback for other land trusts on maps that show wetlands on conserved lands for various land conservation easement projects. In addition, land trusts make maps of preserves, some of which are open to the public. A map of an MCHT preserve on Vinalhaven Island shows wetlands. [http://mcht.org/preserves/images/Huber\\_Preserve.pdf](http://mcht.org/preserves/images/Huber_Preserve.pdf)

Debra Baker of the Kansas Water Office summarized a wetland mapping coalition and its activities. Several land trusts in Kansas operate Corps of Engineers (COE) approved in-lieu fee programs. In-lieu fee programs provide a means for an entity that is required to do wetland mitigation due to unavoidable impacts to wetlands as a result of an activity needing a COE 404 permit to pay a fee to have a land trust provide turn-key mitigation projects. Land trust personnel

<sup>3</sup> Stetson, Leah. *Maine Land Conservation: A Study of Land Trust Collaboration*. College of the Atlantic. 2005.

work in partnership with Watershed Restoration and Protection Strategy (WRAPS) groups to match entities needing to do mitigation (developers, transportation departments ) with private landowners who desire to establish, protect or restore wetlands and riparian areas.



WRAPS groups have been established throughout the state and are a primary delivery system for implementing management practices on private lands that will result in pollutant load reductions and achievement of Total Maximum Daily Loads (TMDLs). To strengthen this partnership and make it more effective, it is desirable to have wetland maps available that identify and prioritize wetland and riparian conditions and functions in the watershed. In this way, when a mitigation project is required in a particular watershed, the trust and the WRAPS group can work together to determine what site or sites would provide the most benefit through the mitigation project. In addition, Baker says, landowners benefit from having a valuable resource enhanced, protected or restored on their property, usually at minimal cost.

WRAPS groups are funded with a combination of EPA Section 319 grant funds and State Water Plan funds. Through a four step process – develop, assess, plan, implement - each locally led group develops a plan meeting EPA’s 9-elements for watershed management plans. Once the plan is completed, groups are better able to leverage available funding from various federal and state sources to complete on the ground projects that will lead to improvement in watershed condition and function and cleaner water. For information about the Section 319 program (EPA nonpoint source pollution), visit: <http://epa.gov/nps/cwact.html>

Wetlands and riparian areas are important in maintaining properly functioning watersheds. But no statewide map of wetlands exists for Kansas, Baker adds. Through an EPA Wetland Program Development Grant (WPDG), the state is developing a remote sensing GIS based wetland assessment methodology that will assist WRAPS groups in assessing the watersheds in which they work. Application of the assessment methodology will eventually result in a statewide wetland map, developed according to federal mapping standards. These maps can assist WRAPS groups in partnering with land trusts to ensure in-lieu fee based mitigation projects occur in places where the most benefit will be accrued to the watershed.

For a field summary of the work completed for the Kansas Wetland Mapping Project written by Frank Norman, Norman Ecological Consulting, go to:

[http://www.aswm.org/member/wetlandnews/august\\_09/kaw\\_wetland\\_mapping\\_norman\\_0809.pdf](http://www.aswm.org/member/wetlandnews/august_09/kaw_wetland_mapping_norman_0809.pdf)

### **Local Government: Towns, Counties, Planning Commissions, Conservation Commissions**

In Minnesota, the Metropolitan Mosquito Control District partners with the state in wetland mapping work. “The Twin Cities Metro Mosquito Control District, has provided technical expertise and resources as well as a small amount of funding,” says Doug Norris, Minnesota DNR. The Metro Mosquito Control District maintains a website with an interactive wetland map showing the mosquito breeding sites. Although these are not formal wetland

delineations, these layers are beneficial for developing a more complete state wetland map. <http://www.mmcd.org/neighborhoods.html>

Soil and Conservation Districts are another potential partner in wetland mapping. The Dakota County Soil and Conservation District in Minnesota, for example, has mapped the Vermillion River Watershed. They share water quality monitoring data with the state's Pollution Control Agency and have completed a number of maps of wetlands and water resources in the district. See <http://www.dakotaswcd.org/maps.html> and visit: [http://www.dakotaswcd.org/wshd\\_vrwjpo.html](http://www.dakotaswcd.org/wshd_vrwjpo.html)

In Wisconsin, a coalition has formed between coastal counties, the Natural Resources Conservation Service (NRCS), Wisconsin DNR, FWS, Wisconsin Coastal Management Program and GeoBotany Systems, to develop a GIS database to inventory, assess and monitor wetlands restored over the past 25 years. According to Jill Hapner with GeoBotany Systems, "this GIS inventory eliminates multiple reporting, yielding absolute wetland restoration acreage and location. These methods can continue to be used to accurately map thousands of small wetland restorations." For a complete summary of this collaborative project, go to:



[http://www.aswm.org/member/wetlandnews/august\\_09/wisconsin\\_coastal\\_counties\\_hapner\\_0809.pdf](http://www.aswm.org/member/wetlandnews/august_09/wisconsin_coastal_counties_hapner_0809.pdf)

## **Nonprofit Partners**

Nonprofit organizations such as The Nature Conservancy and Ducks Unlimited have played a significant role in wetland mapping work in the Great Lakes. Ducks Unlimited (DU) has been working with FWS on updating the national wetlands layer for the National Wetlands Inventory (NWI) <http://www.ducks.org/Conservation/GLARO/3752/GISNWIUpdate.html> In addition to DU's GIS staff and biologists, volunteers assist in collecting field data. States have provided aerial photos. As of summer 2008, four states were updated. Now they have just completed Ohio and Indiana; they are half way through updates for Illinois, and just received additional funding to complete the Lower Peninsula of Michigan, according to DU's Robb MacLeod. The newest contributor, USFWS Great Lakes Coastal Program and the USFWS Great Lakes Fish and Wildlife Restoration Act grant supplied the funding to finish the updates in Michigan. To see a map showing the updated areas of these Great Lakes states, visit: <http://www.ducks.org/Conservation/GLARO/3697/GreatLakesAtlanticRegionalOfficeHome.html>

## **Colleges and Universities, GIS Labs**

Colleges and universities with GIS labs are also a potential partner for wetland mapping coalitions. In Maine, College of the Atlantic's GIS lab produces maps for local conservation commissions, land trusts, towns and counties, as well as state and federal agencies. Gordon Longworth is the GIS instructor at COA, a small college of human ecology on Mount Desert Island. Longworth often assigns student projects that assist an organization in the larger community (off campus). For example, a graduate student mapped development patterns in the

Northeast Creek Watershed as a small contribution to a three-year USGS aquifer study. It was a collaborative project between the USGS, the Bar Harbor Conservation Commission and the college. Martha Nielsen was the USGS hydrologist and principal investigator on the project. For a link to the 2002 USGS report with maps of the watershed, go to:

<http://pubs.usgs.gov/wri/wri024000/pdf/wri02-4000.pdf> For more information about COA's GIS lab and maps, go to: <http://www.coa.edu/html/facilgislab.htm>

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