

# Combining Habitat Conservation and Natural Hazards

## *Issues and Opportunities*

*Priority wetland habitat sites often overlap with hazard-prone floodplains. A recent study highlighted a disconnect between disaster mitigation planning frameworks and wetland conservation goals, and suggested ways to capitalize on the potential of these intersecting interests.*

BY REBECCA KIHSLINGER, DAVID SALVESEN, AND TESSA LEE

Wetlands play a crucial role in hazard mitigation—creating natural flood barriers, preventing erosion, and providing stormwater storage. Wetlands can reduce the peak stream flow in major flood events, converting sharp storm peaks to slower discharges over a longer period of time.<sup>1</sup> On the coasts, wetlands help to shelter coastal development from damage due to ocean storms by decreasing surges and waves and maintaining shallow water depths.

Development in wetlands not only carries with it a high risk of severe hazard damage, it degrades the ecosystem and its ability to shield surrounding areas from hazards. For example, the loss of wetlands in the Midwest and Gulf Coast of the United States has left these regions more susceptible to flooding and storm damage. Wetlands along the Mississippi River once stored up to 60 days of river discharge. Now, the remaining wetlands store only 12 days.<sup>2</sup> Since the beginning of the 20th century, wetlands in Louisiana have been lost, due to both human and natural effects, at a rate of 65 kilometers (km)<sup>2</sup> per year.<sup>3</sup> Since the 1930s alone, over 4,800 km<sup>2</sup> of coastal Louisiana marsh have been lost.

At the state and local level, hazard mitigation planners and emergency managers are responsible for addressing the threats posed by natural hazards, such as flooding and coastal storms. Under the federal Disaster Mitigation Act of 2000 (Pub. L. No. 106-390), state and lo-

cal governments are required to prepare hazard mitigation plans as a condition of receiving federal disaster assistance. The plans must include an assessment of the risks posed by natural hazards and a strategy to reduce the risks. Strategies may include acquiring or discouraging development in hazard-prone lands, such as wetlands and floodplains. Wetland and habitat conservation or restoration in these areas can help further the goals of hazard mitigation plans, and reduce a community's vulnerability to flooding while also protecting wildlife habitat. This provides an opportunity for wetland and wildlife managers and hazard mitigation planners to work together to identify where their interests overlap and where they could achieve greater outcomes by coordinating their efforts. Yet, such collaboration is rare.

A recent study conducted jointly by the University of North Carolina and the Environmental Law Institute identified opportunities and obstacles for wildlife conservation and habitat restoration in areas where people and property are at risk from natural hazards. Our study identified areas where priority habitats, as identified in State Wildlife Action Plans (SWAPs), overlap with natural hazard areas, and highlighted opportunities to capitalize on existing synergies of purpose and promote collaboration among land use planners, hazard mitigation planners, and wetland and wildlife managers.

Our research showed that local land use planners and hazard mitigation specialists overwhelmingly lack knowledge of SWAPs at best, and at worst viewed habitat conservation as antithetical to their objectives. Moreover, the study found a general lack of coordination among local land use and hazard mitigation planners and wildlife agencies. The study highlights opportunities for increased coordination between wetland and wildlife managers and their counterparts in hazard mitigation and local land use planning.

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### State Wildlife Action Plans: A Brief Review

In 2000, the U.S. Congress enacted the State Wildlife Grants Program to provide funding to states for conservation projects and planning aimed at preventing wildlife species from becoming endangered. To be eligible for funding under the program, Congress required every state and territory to develop a SWAP. The plans are designed to provide a strategic framework for wildlife and habitat conservation in the states. Although states were given flexibility in developing their plans, each plan must address eight required elements, including the distribution and abundance of species, extent and condition of habitats, problems that may affect species or their habitats, conservation actions to protect certain species, plans to monitor species and their habitats, periodic review of the SWAP, coordination among federal, state, and local agencies, as well as Indian tribes, and public participation.<sup>4</sup>

All 50 states and six territories submitted their plans to the U.S. Fish and Wildlife Service by October 1, 2005. At least 31 states have developed spatially explicit maps identifying the location of conservation opportunity areas or priority habitats for conservation.<sup>5</sup> Wetlands are identified as key habitats in 47 of the 50 SWAPs, and 37 plans include maps that identify wetland habitat. Further, 40 of the 50 state plans identify acquisition of wetlands, and 46 plans identify restoration of wetlands as approaches to achieving wildlife conservation goals.<sup>6</sup>

In many states, the SWAP is one of several state-based habitat conservation plans. Many states have developed coastal zone management plans and special area management plans, state forestry plans, waterfowl and fish management plans, and state conservation and open-space plans. All of these plans can help guide conservation decisions in the state.

### The Study

The purpose of this study was to identify opportunities for wildlife conservation in areas where priority habitat overlaps with natural hazard areas and to examine whether the habitat conservation goals of the SWAPs are supported by the plans, programs, and policies that govern development and fund restoration in such areas.

We selected three states—Florida, Washington, and Wisconsin—for our analysis. We sought states that had (1) a large-scale ecosystem restoration effort already underway, (2) high-quality, recently updated hazard maps in geographic information systems (GIS) format, (3) detailed SWAP priority habitat maps in GIS format, and (4) statewide land use plans or goals. Within each of the three states, we selected one site (encompassing two counties) in which to conduct our analysis of local plans and policies and to examine the level of coordination among local planners. The three sites included the Snohomish River Basin (King and Snohomish counties) in Washington, Rock River Basin (Jefferson and Waukesha counties) in Wisconsin, and Osceola and Polk counties in Florida. Taken together, the three sites offer a range of geographic habitats and a diversity of natural hazards.

As a first step in our analysis, we prepared maps using GIS to identify areas where priority habitat overlapped with natural hazard areas. We then conducted interviews with key informants at each of the three study sites to assess the level of awareness of, and commitment to, the goals and policies of SWAPs, and to identify opportunities for collaboration among hazard planners and wetland and wildlife managers. Key informants included state and local land use and hazard mitiga-

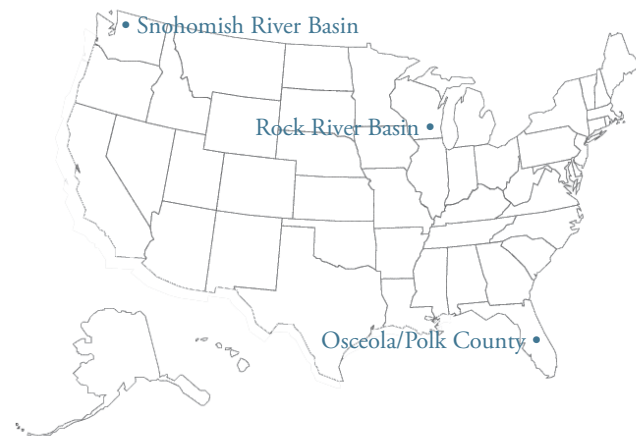


Figure 1: Study Sites

tion planners, as well as representatives from state wildlife agencies and nonprofit organizations. A total of 27 interviews were conducted with 17 local land use planners and 10 hazard mitigation planners. We also assessed whether state and local land use and hazard mitigation plans supported or undermined the goals of SWAPs. For example, do local hazard mitigation plans include goals, objectives, and policies that support habitat conservation?

Finally, we identified and analyzed 11 federal mitigation and incentive-based programs that could be directed to large-scale restoration in hazard-prone areas. The mitigation programs we evaluated include: wetland mitigation under §404 of the Clean Water Act (CWA); mitigation for impacts from U.S. Army Corps of Engineers water resources development projects; habitat mitigation/conservation banking under the Endangered Species Act; natural resource damage assessments; and floodplain management permits under the National Flood Insurance Program. We also included an analysis of two market-based programs: water quality trading and carbon offsets. Finally, we evaluated four types of incentive programs, including the Conservation Reserve Program, Wetlands Reserve Program, Emergency Watershed Program Floodplain Easements, and Hazard Mitigation Grants.

### Identifying Areas Where Priority Habitat Overlaps With Natural Hazards

The mapping analysis found considerable overlap between priority habitat and hazard zones. For example, Figure 2 shows where priority habitat overlaps with natural hazard areas in the Snohomish River Basin, which spans some 1,856 square miles in King and Snohomish counties. The dominant natural hazards within the basin are riverine flooding and liquefaction from earthquakes. Priority habitat is clustered throughout the basin, with areas of overlap with natural hazards occurring primarily along river corridors.

### Evidence From Plans, Policies, and Interviews

When asked whether preserving wildlife habitat or biodiversity was part of their agency's mission, only five of the 27 hazard and land use planners interviewed said yes (Table 1). Only three of the local land use planners and none of the hazard mitigation planners had ever heard of SWAPs

(Table 2). Some respondents stated that they consider wildlife habitat in their work only if triggered by state or federal law, such as a permit to fill wetlands. Others reported that wildlife concerns were addressed indirectly, e.g., through policies to protect floodplains from development. In general, hazard mitigation planners viewed their primary responsibilities as preventing loss of life and property from disasters, not protecting wildlife habitat. A hazard mitigation planning consultant from Wisconsin stated that the presence of wildlife is often viewed as a hindrance because it can prevent or delay a project from being completed. Lastly, only eight of the 27 interviewees stated that they coordinated directly with the SWAP implementing agency on a regular basis.

These interviews show clearly that preserving wildlife habitat is not a high priority among local land use and hazard mitigation planners, at least in our three study sites. They also suggest that coordination between wildlife professionals and local planners is almost nonexistent. In the future, it would be useful to interview wildlife professionals to see if they were familiar with hazard mitigation plans or viewed mitigation of natural hazards as part of their mission.

The results of the plan analysis followed those of the interviews. Of the 24 local land use plans examined, none specifically mention SWAPs, though nearly all of the local plans were adopted or amended after the SWAP adoption date. This reflects a lack of awareness of SWAPs, as well as a lack of involvement on the part of wildlife agencies in the preparation of land use or hazard mitigation plans.

Although SWAPs were not mentioned specifically, all of the land use plans examined contained policies to discourage development in floodplains, wetlands, or other natural hazard areas and included specific implementation actions or mechanisms, such as land acquisition or zoning regulations. Policies to protect wildlife habitat were found in only two of the hazard mitigation plans examined. However, most (5 of 8) of these plans also included policies to discourage development in natural hazard areas. Furthermore, analysis of statewide land use policies in the three states selected showed that each state either requires or encourages local jurisdictions to steer growth away from natural areas, such as wetlands, forests, and floodplains. Essentially, local land use and hazard mitigation plans already include mechanisms to discourage development in these areas, yet the connection between mitigating natural hazards and protecting wildlife habitat is not being made explicitly by the drafters of these plans.

### Opportunities to Leverage Existing Funding to Meet Multiple Goals

Federal mitigation and incentive-based programs may offer opportunities to fund wildlife conservation and habitat restoration efforts in hazard-prone areas. All 11 federal mitigation and incentive-based programs we analyzed could contribute to restoration efforts that provide both natural flood damage reduction and habitat conservation benefits. Several of the programs contain guidelines or regulations that explicitly include wildlife conservation as a goal or required outcome of program activities (e.g., wetland compensation under the CWA, Wetland Reserve Program, and the Conservation Reserve

Program). Others provide indirect benefits for habitat and wildlife conservation, but do not contain program guidelines that specifically include restoration or conservation goals. For example, the Emergency Watershed Program's Floodplain Easement Program allows the Natural Resources Conservation Service to purchase and restore floodplains in areas that have experienced recent or frequent floods. The goals of the program are to restore, protect, manage, and maintain floodplain functions, conserve natural values, reduce long-term disaster assistance, and protect people and property from floods.<sup>7</sup>

However, there are no requirements for maximizing wildlife benefits in the criteria for eligible lands, and there is no requirement that the easement be managed for wildlife benefits. Adding wildlife conservation criteria could help wildlife managers and hazard planners leverage this funding source to achieve multiple benefits.

In Washington and Wisconsin, activities already underway illustrate how certain mitigation and incentive programs can be used successfully to fund the restoration of priority wetland habitats in floodplains and coastal areas. For example, the Wisconsin Department of Natural Resources recently developed a map of potentially restorable wetlands in the Rock River Basin to improve the capacity of the agencies to implement wetland management at the watershed scale. Many of these potentially restorable wetlands—which were tiled and drained for agriculture—are found in areas prone to severe flooding and overlap priority habitats for conservation. Wetland restoration in the area has been funded by a variety of incentive and mitigation sources, including Farm Bill programs, such as the Wetland Reserve Program and the Emergency Watershed Protection Program Floodplain Easement Program, and several wetland mitigation banks.

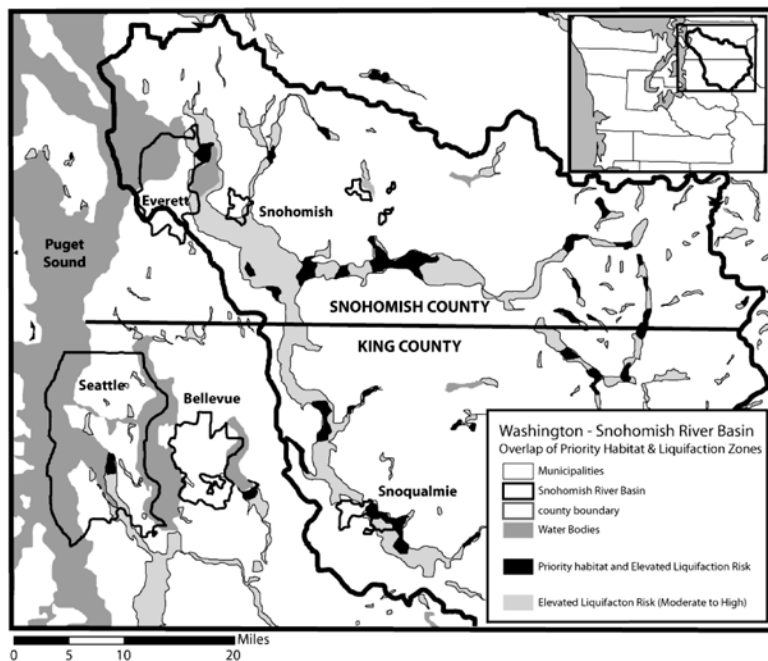


Figure 2: Overlap of Priority Habitat and Liquefaction Zones in the Snohomish River Basin.

Table 1: Is preserving wildlife habitat or biodiversity part of your agency's or office's mission?

Responses	Land Use Planners	Hazard Mitigation Planners	Total
Yes	5	0	5
Per Law / Regulations	9	2	11
Indirectly	3	5	8
No	0	3	3
Totals	17	10	27

Table 2: Are you familiar with your state's SWAP?

Yes	3	0	3
No	14	10	24
Total	17	10	27

These experiences show that wildlife agencies, along with land use and hazard mitigation planners, could collaborate to achieve jointly what would be difficult to achieve working alone. That is, joint planning and coordinated funding could yield greater bang for the buck in the form of wildlife conservation and hazard mitigation. The first step is to raise awareness in both the hazard mitigation and wetland and wildlife management communities of the rationale and opportunities to meet multiple goals by working together. The second step is to identify potential sources of state and federal funding that could be used to mitigate natural hazards and preserve wildlife habitat.

### Recommendations

Our study identified both opportunities and obstacles for coordinating hazard mitigation and wildlife conservation in areas at risk for natural hazards. We found that priority habitats, as identified in the SWAPs, often overlap with areas at high risk of hazard damage, but that departments and agencies responsible for hazard planning and wetland and wildlife conservation tend to operate in isolation and, for a variety of reasons, often fail to capitalize on opportunities to stretch their dollars further through joint planning and funding of projects. These opportunities have become even more important, as state and local governments across the country have been forced to cut their spending.

We offer several recommendations for increasing collaboration among the hazard and conservation communities to achieve multiple benefits.

- At the local level, those seeking to preserve wetlands must become more involved in the process of preparing and implementing land use and hazard mitigation plans, and they must reach out to hazard mitigation planners to identify oppor-

tunities for collaboration and coordination. This will require some rethinking of agency or department missions and roles. Local land use planners interviewed reported that they support wildlife protection, but they need ready-to-use language (goals, objectives, and policies) that they could simply cut-and-paste into the local plan.

- At the state level, agencies responsible for wetland programs and SWAP administration could reach out to hazard mitigation planners to raise their awareness of priority habitat areas and the potential gains to be had from large-scale ecosystem restoration. Statewide land use policies or goals often include elements that support the goals of SWAPs, such as conservation of natural resources, wildlife, forests, and critical natural areas. States could increase the effectiveness of their SWAPs by making them more user-friendly and then requiring their integration into local land use and hazard mitigation plans.

- At the federal level, agencies responsible for wildlife conservation and hazard mitigation could coordinate their planning and investments to prevent development in natural hazard areas while simultaneously preserving or restoring critical wildlife habitat. For example, federal buyout projects, administered by the Federal Emergency Management Agency, have been used to remove flood-damaged homes from floodplains and to keep people and property from harm's way. Once the homes are removed, the buyout areas serve as permanent greenways and habitat corridors along rivers. Local governments would also benefit from more guidance on how to manage these new greenways, so that they can provide both flood protection and wildlife conservation benefits.

If those responsible for protecting wildlife habitat could coordinate with those responsible for mitigating natural hazards to apply for federal funding, leverage local resources, match grants, and partner on projects of mutual benefit, the effects of their efforts would be multiplied. What is needed is a change of perception about the efficacy of protecting wildlife habitat. Professionals and activists concerned with wetlands preservation have a reservoir of untapped potential policy mechanisms, funding, and human allies in the land use planning and hazard mitigation field, particularly at the municipal level. Keeping people and property out of natural hazard areas such as floodplains serves the dual goal of reducing damages from disasters while preserving priority wetland habitats. ■

### Resources

The full report can be downloaded at [http://www.elistore.org/reports\\_detail.asp?ID=11392](http://www.elistore.org/reports_detail.asp?ID=11392).

### Acknowledgements

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 VIEWPOINTS
 

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nation is demonstration of public knowledge of and support for the nomination. Typically, this support is demonstrated through official letters of support from community groups and organizations that are submitted with the nomination. The process of approaching these groups provides an opportunity for the nominating committees to communicate the conservation importance of the site as well as the benefits that the site affords the community (particularly increased eco-tourism and funding opportunities), whether watershed groups, local birding clubs, or town boards.

Second, obtaining designation as a *Wetland of International Importance* is a big deal that merits a big celebration. These celebrations are typically high-profile public events and often draw well-known elected officials and celebrities. These celebrations contribute to public awareness of the importance of wetlands in general and of the designated wetland in particular, and build community pride in the designated wetland.

Third, designation as a *Wetland of International Importance* is an attractive media hook. It provides an opportunity for conservationists invested in the designated site to talk generally about the importance of wetlands and specifically about issues of importance to that site, e.g., protection or management challenges, threats, and significant species or communities, and promote the site's significance to the public. Events held to celebrate a site's designation also provide an important media opportunity.

Finally, the fact that priority sites were selected for nomination by a statewide committee through a strategic process, rather than just through site-level interest, lends more credibility to the nomination and offers communications opportunities even before the nomination gets underway (envison the headline in a local paper: "*Local wetland selected by statewide group as top priority for international recognition.*").

Numerous benefits beyond recognition come with designation as a Ramsar site, including increased funding opportunities, support for protection of the site and surrounding areas, increased interest from the scientific community, and increased tourism (see the *National Wetlands Newsletter* March-April 2007 issue for a summary of a survey that documented these benefits). The Wisconsin Wetlands Association is excited about the power of this approach and would be happy to share our experience with others seeking to develop a similar approach.

The United States has the wetland resources that qualify for designation as *Wetlands of International Importance*. These resources deserve recognition. And a little bit of effort to be strategic in prioritizing sites for nomination will ensure that this prestigious honor comes to the most deserving sites. And all of these designations can bring big communications benefits for wetlands across the nation. ■

-Katie Beilfuss, *Outreach Programs Director,*  
*Wisconsin Wetlands Association*

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## ENDNOTES

1. Compensatory Mitigation for Losses of Aquatic Resources, 73 Fed. Reg. 19594 (Apr. 10, 2008) (codified at 33 C.F.R. pts. 325 and 332 and 40 C.F.R. pt. 230).
2. Meg Gaffney-Smith, *Clean Water Act \$404 Regulatory Program Highlights*, 31 NAT'L WETLANDS NEWSL. (Sept.-Oct.) 12 (2009).
3. GIS is a technology for storing, displaying, and analyzing geographic and other types of information. For example, a GIS might include property parcels drawn as polygons. For each property, an attached spreadsheet would show the owner's name, the date the property was last sold, the zoning on the property, and perhaps the size of the property. Maps can then be created that color the polygons by size or show zoning across the community. GIS supports sophisticated resource analysis and is an ideal tool for resource biologists, regulators, and planners.
4. See [www.greenhighways.org](http://www.greenhighways.org).
5. Exec. Order No. 13508, 74 Fed. Reg. 23099 (May 15, 2009), available at <http://edocket.access.gpo.gov/2009/pdf/E9-11547.pdf>.
6. John T. Carmichael et al., *Fish Sampling in Eight Chesapeake Bay Tributaries*, Maryland Department of Natural Resources, CBRM HI-92-2 (1992).
7. Additional datasets include: the National Wetlands Inventory; Wetlands and MDNR wetlands layer; §303(d) Listed Streams; Tier II High Quality Streams/Watersheds; Maryland's Stronghold Watersheds and Wetlands of Special State Concern; Sensitive Species Project Review Areas (Endangered Species Act); Flood Plains (Federal Emergency Management Agency); Green Infrastructure; Areas of Potential Forest Interior Dwelling Species; Maryland's Critical Areas (CBCAC); Steep Slopes; Conservation Lands (Greenprint); Rural legacy areas; land use/land cover; lands already protected through conservation easement or ownership; Stream Use Classifications; National Hydrologic Dataset; and others.
8. For more information, see <http://www.fhwa.dot.gov/safetealu/>.
9. For more information, see <http://www.fws.gov/partners/>.

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## ENDNOTES

1. WILLIAM J. MITSCH & JAMES G. GOSSELINK, *WETLANDS* (John Wiley & Sons, Inc. 2007).
2. *Id.*
3. *Id.*
4. Teaming With Wildlife, Association of Fish and Wildlife Agencies, *State Wildlife Action Plans: Eight Required Elements*, at [http://www.wildlifeactionplan.org/pdfs/eight\\_elements\\_handout.pdf](http://www.wildlifeactionplan.org/pdfs/eight_elements_handout.pdf). The paper lists the eight elements required by the Congress for SWAPs.
5. JESSICA B. WILKINSON ET AL., ENVIRONMENTAL LAW INSTITUTE AND THE NATURE CONSERVANCY, *THE NEXT GENERATION OF MITIGATION: LINKING CURRENT AND FUTURE MITIGATION PROGRAMS WITH STATE WILDLIFE ACTION PLANS AND OTHER STATE AND REGIONAL PLANS* (2009), available at [http://www.elistore.org/reports\\_detail.asp?ID=11359](http://www.elistore.org/reports_detail.asp?ID=11359).
6. Environmental Law Institute, *Workshop to Explore Opportunities to Integrate the State Wildlife Action Plans Into Improved Wetland Conservation and Restoration* (2007), at [http://www.eli.org/pdf/joint\\_meeting/ELI%20Workshop%20Final%20Report.pdf](http://www.eli.org/pdf/joint_meeting/ELI%20Workshop%20Final%20Report.pdf).
7. *Emergency Watershed Protection*, Natural Resources Conservation Service's website, at <http://www.nrcs.usda.gov/programs/ewp/floodplain/index.html>.