



Nuclear Power Makes A Comeback

Are the Risks Worth the Rewards?

An Invited Comment by Len Ackland

When President Barack Obama committed the United States in April 2009 to “take concrete steps towards a world without nuclear weapons,” I was elated. The President noted in Prague that “the existence of thousands of nuclear weapons is the most dangerous legacy of the Cold War. No nuclear war was fought between the United States and the Soviet Union, but generations lived with the knowledge that their world could be erased in a single flash of light ... Today, the Cold War has disappeared but thousands of those weapons have not.”

As a journalist and educator who has researched and written about the danger of nuclear weapons for more than 30 years, I was relieved to finally hear this accurate perspective coming from the nation’s top elected official. The

use of nuclear weapons is still humanity’s fastest route to environmental catastrophe. The hazards exist and the risks are far too high, demonstrated by how close the world came to devastation during the 1962 Cuban Missile Crisis and given the anticipated consequences of a regional nuclear war or terrorist acquiring a bomb (Ackland 2007).

Then when President Obama endorsed nuclear power in his January 2010 State of the Union address, I was perplexed. Placed first in his list of tasks needed to promote clean energy, Mr. Obama said the United States must build “a new generation of safe, clean nuclear power plants in this country.” Later in his speech he ignored the direct

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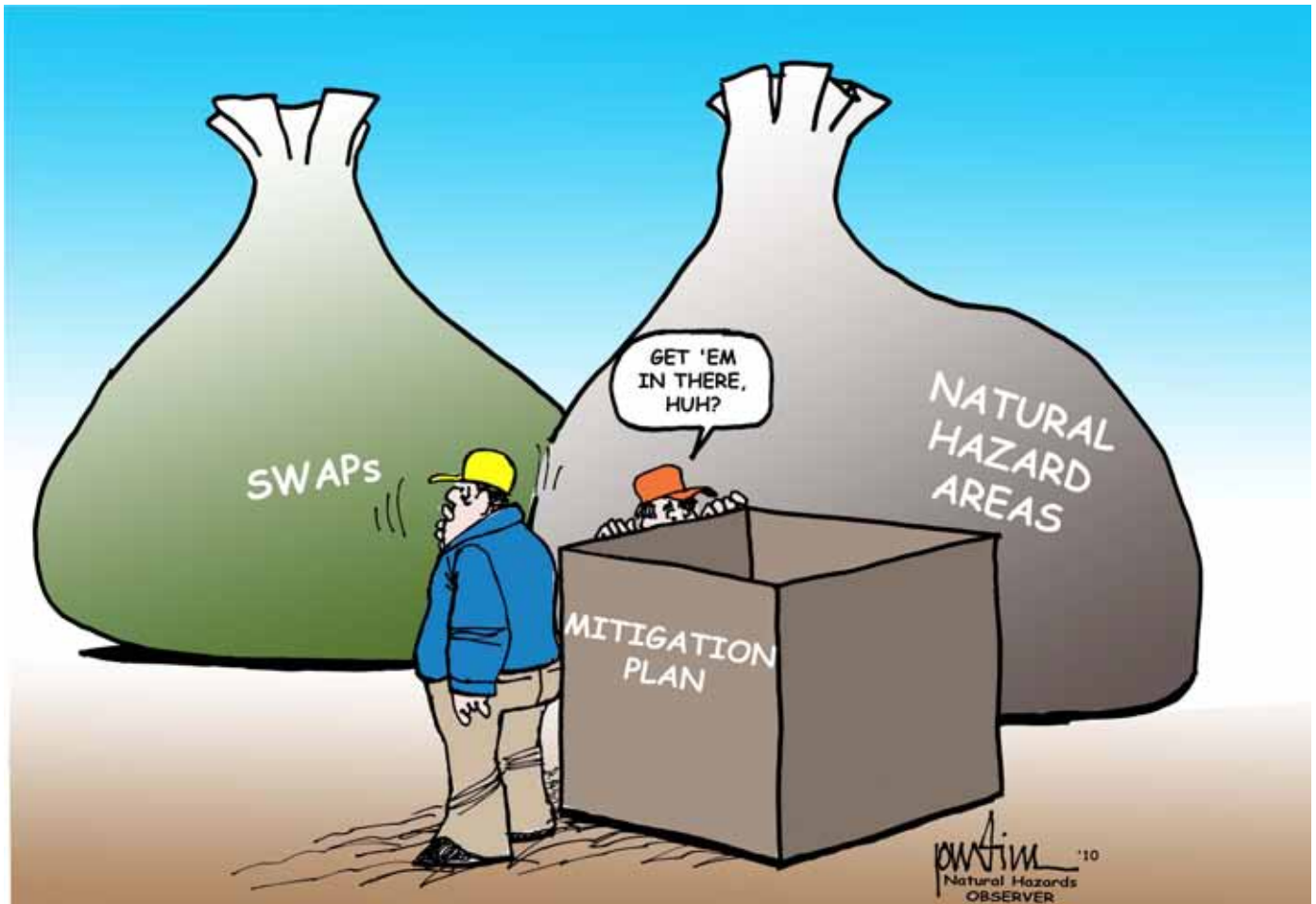
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Collaboration Between Emergency Management and Wildlife Conservation



An Invited Comment by David Salvesen, Rebecca Kihlsinger, Peter Zambito, Ryan Winterberg-Lipp, and Tessa Lee

THE CONNECTION BETWEEN ENVIRONMENTAL PROTECTION and hazards is real, but not always clear. Emergency managers and wildlife conservationists typically operate in separate universes, yet there are reasons why they should collaborate. A recent study conducted by the University of North Carolina and the Environmental Law Institute identified opportunities for wildlife conservation in areas where people and property are at risk from natural hazards. The study considered places where priority habitats—as identified in state wildlife action plans (SWAPs)—overlap with natural hazard zones and highlighted potential points of collaboration among land use planners, hazard mitigation planners, and wildlife habitat managers.

The study is relevant to hazard mitigation planners because it identifies many potential conservation resources that aren't often used in disaster risk mitigation. We found that, while opportunities exist to coordinate planning and leverage funding, numerous obstacles must be overcome, including the hazard planning community's lack of awareness about SWAPs and other conservation

plans. Most local planners interviewed had never heard of these wildlife plans. A central conclusion of the study is that SWAPs offer a useful tool for coordinating habitat conservation and hazard mitigation efforts in ways that increase the successful outcomes of both.

More broadly, the study considered how compensatory mitigation funding and other incentive-based programs could enhance efforts of emergency management officials and local planners, as well as conservationists.

State Wildlife Action Plans: A Brief Review

IN 2000, CONGRESS ENACTED the State Wildlife Grants Program, funding state conservation planning to prevent wildlife species from becoming endangered. To be eligible for the program, every state and territory was required to develop a state wildlife action plan. The plans provide a strategic framework for wildlife and habitat conservation. Although states have flexibility in developing their plans, they are required to address eight elements, including the distribution and abundance of species; extent and condition



Figure 1.

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 and Indian tribes; and public participation (Association of Fish and Wildlife Agencies 2010).

All 50 states submitted their SWAPs to the U.S. Fish and Wildlife Service by October 1, 2005. Of these, 32 states set clear priorities for habitat conservation. Moreover, at least 31 states developed spatially explicit maps identifying the location of priority habitats (Wilkinson 2009). As our study showed, these priority habitat zones frequently overlap with high-risk disaster zones. Thus, the existing data and maps contained in the SWAPs can be used to target hazard mitigation efforts to areas that also benefit wildlife.

Implementation of state wildlife action plans occurs within a broad institutional framework of federal, state, and local planning for biodiversity, land use, natural hazards, and coastal management. For example, in addition to SWAPs, many states have adopted plans for hazard mitigation, special area management, forestry management, waterfowl and fish management, conservation and open space, and—in coastal states—coastal zone management. These plans can guide conservation-minded hazard mitigation decisions. For our analysis, we chose to focus on SWAPs because they have been adopted by all 50 states and provide information in a form that is relatively comparable across states.

The Study

THE STUDY CONTAINED FIVE MAIN PARTS: (1) identifying where priority habitats overlap with natural hazards; (2) interviewing state and local land use planners and hazard

mitigation planners; (3) analyzing state and local policies and plans for land use and hazard mitigation; (4) analyzing federal mitigation funding opportunities to protect wildlife habitat; and (5) evaluating federal programs that govern floodplain and coastal management to determine if they address climate change. Recommendations were provided for improving implementation of the state wildlife action plans.

We selected three states—Florida, Washington, and Wisconsin—for our analysis. We were looking for states that had: (1) a large-scale ecosystem restoration effort already under

way; (2) high-quality, recently updated hazard maps in GIS format; (3) detailed SWAP priority habitat maps in GIS format; and (4) statewide land use plans or goals. In each of the three states, we selected one site (encompassing two counties) to conduct our analysis of local plans and policies and to examine the level of coordination among local planners. The three sites (see Figure 1) included King and Snohomish counties in Washington, Jefferson and Waukesha counties in Wisconsin, and Osceola and Polk counties in Florida. The three sites offer a range of geographic habitats and a diversity of natural hazards.

Identifying Overlaps

WE USED GIS TO PREPARE MAPS that identified areas where priority habitat overlapped with natural hazard areas. This analysis found considerable overlap between priority habitats and hazard zones at all three of our selected sites, representing places where state and local planning departments, wildlife agencies, and emergency management officials could collaborate to protect wildlife habitat while also reducing the impact of natural hazards on people and property.

For example, Figure 2 shows where priority habitat overlaps with wildfire prone areas in Florida's Osceola and Polk counties, just south of Orlando. Collectively, the two counties span over 3,500 square miles with over 800,000 people. The Southern Wildfire Risk Assessment rates the area as having one of the largest concentrations of elevated fire susceptibility in the entire South. These counties also contain one of the highest concentrations of priority wildlife habitat in the state, where there is considerable overlap with fire risk. In light of spatial overlap, the Florida Fish and Wildlife Commission's Upland Ecosystem

Restoration Project is already managing both habitat restoration and fire mitigation efforts in Osceola County.

Our study found that, in general, such agencies tends to operate in isolation, often failing to capitalize on opportunities to stretch their dollars by planning and funding of projects jointly—acquiring fire-prone land that also serves as prime wildlife habitat, for instance.

Evidence from Interviews

WE 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 politics of SWAPs among hazard planners and to identify opportunities for collaboration with wildlife managers. A total of 27 interviews were conducted with 17 local land use planners and 10 hazard mitigation planners.

When asked whether preserving wildlife habitat or biodiversity was part of their agency's mission, only five of those interviewed said yes (Table 1). Only three of the land use planners and none of the hazard mitigation planners had ever heard of SWAPs (Table 2). Some respondents stated that they considered 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 said the presence of wildlife is often viewed a hindrance because it can prevent or delay a project. Only eight of the 27 interviewees said they coordinated with the agency that implements the SWAP.

These interviews clearly show that preserving wildlife habitat is not a high priority among land use and hazard mitigation planners, at least at these three study sites. They also suggest 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.

Evidence from Plan and Policy Analysis

WE ASSESSED WHETHER state and local land use and hazard mitigation plans for the study sites supported or undermined the habitat conservation goals of SWAPs. 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 preparing land use or hazard mitigation plans. Although SWAPs were not mentioned specifically, all 24 local land use plans examined contained policies to discourage development in floodplains, wetlands, or other natural hazard areas. They included specific implementation mechanisms, such as land acquisition or zoning regulations.

Only two of the eight hazard mitigation plans examined included policies to protect wildlife habitat. Yet most—five of eight—included policies to discourage development in natural hazard risk 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.

The existence of such policies in land use and emergency management plans along with the data contained in the SWAPs shows that the groundwork is already in place for conservationists and hazard mitigation planners to work together to identify where their interests overlap and where they could achieve greater outcomes by coordinating their efforts. Local land use and hazard mitigation plans already include mechanisms to discourage development in priority habitat areas, but the connection between mitigating natural hazards and protecting wildlife habitat is not explicit.

The Role of Mitigation Funding

A MAJORITY OF THE STATE AND LOCAL LAND USE POLICIES assessed included options for conserving natural resources,

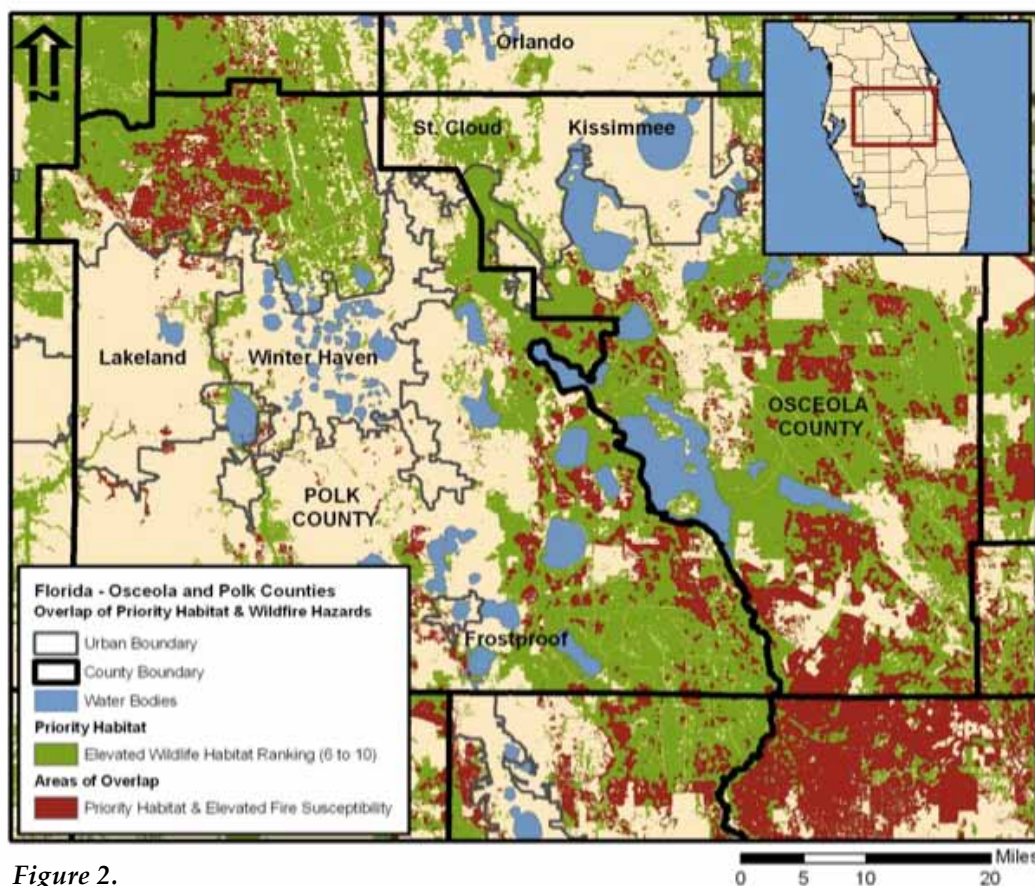


Figure 2.

Table 1: Agency Mission to Preserve Wildlife

Is preserving wildlife habitat or biodiversity part of your agency or office's mission?			
	Land Use Planners	Hazard Mitigation Planners	Total
Yes	5	0	5
Per Laws / Regulations	9	2	11
Indirectly	3	5	8
No	0	3	3
Total	17	10	27

wildlife, and habitats. In addition, of the 11 federal compensatory mitigation and incentive-based programs our study analyzed, all could support efforts that provide disaster reduction as well as confer habitat conservation benefits. Several also contain guidelines or regulations that explicitly include wildlife conservation as a goal or required outcome of program activities (e.g., wetland compensation under the Clean Water Act).

Coordinating disaster risk reduction with conservation goals is not a difficult option. It doesn't require much deviation from current hazard management strategies. These already include acquiring or discouraging development in hazard-prone lands such as wetlands and floodplains. These lands serve as valuable wildlife habitat, demonstrating how conscientiously constructed land use plans and disaster mitigation policies could confer environmental benefits. 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 can become greenways and habitat corridors along rivers.

Climate Change

THE FINAL PART OF OUR STUDY analyzed whether federal programs that govern floodplain and coastal management, as well as state-level hazard mitigation plans, address climate change. Despite evidence that climate change will likely increase the frequency and severity of disasters (Solomon et al. 2007), the five federal programs we assessed have not, in general, sufficiently incorporated climate change into their mapping, planning, or risk assessment efforts. The same was true for a large majority of the 48 state hazard mitigation plans we evaluated. Failure to integrate climate change into today's planning frameworks leaves municipalities inadequately prepared for disaster response. Current prediction models likely underestimate the risk of disaster, thus undervaluing disaster management services provided by undeveloped, healthy ecosystems.

Wetlands provide an example of the benefits greater collaboration can have in high-risk areas, where properly executed disaster plans could have a substantial impact on habitat preservation. Wetlands were identified as key habitat in 47 of the 50 SWAPs, and 37 SWAPs include

wetland habitat maps. Furthermore, 40 SWAPs identify acquisition of wetlands and 46 identify restoration of wetlands as a method for achieving wildlife conservation goals (Environmental Law Institute 2007).

Wetlands play a crucial role in hazard mitigation, creating natural flood barriers, preventing erosion, and providing storm water storage, flood conveyance, and water purification. Wetlands can reduce the peak stream flow in major flood events, converting sharp storm peaks to slower discharges over a longer period of time (Mitsch 2007). On the coasts, wetlands help shelter coastal development from damage due to ocean storms by decreasing surges and maintaining shallow water depths.

Development in wetlands not only carries with it a high risk of damage from hazards, it degrades the ecosystem and its ability to shield surrounding areas from future hazards. For example, the loss of wetlands in the Midwest and on the Gulf Coast 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 (Mitsch 2007).

Economically, the value of wetlands is frequently overlooked. A recent United Nations report found that the "ecosystem services" provided by a certain coastal wetland left undeveloped was nearly thirteen times its value in extractable resources (United Nations Environmental Program 2010). In the United States, wetland services are worth \$743 billion a year in natural flood and storm surge attenuation zones (Natural Hazards Observer 2010).

Hazard mitigation planners interested in reducing flood risk and the costs of damages could collaborate with wildlife agencies to achieve jointly what would be difficult to achieve working alone, coordinating funding to yield greater bang for the buck. Numerous funding mechanisms exist for wetlands preservation and restoration, which hazards planners could access in their pursuit of disaster mitigation. There is a need for heightened awareness in both the hazard mitigation and wildlife management communities of the rationale for and opportunities provided by working together.

In Washington and Wisconsin, activities already underway illustrate how certain mitigation and incentive programs can be used to fund the restoration of priority wetland habitats in floodplains and coastal areas while effectively reducing hazard risk. For example, the Wisconsin Department of Natural Resources recently

Table 2: Awareness of State Wildlife Action

Are you familiar with your state's SWAP?			
	Land Use Planners	Hazard Mitigation Planners	Total
Yes	3	0	3
No	14	10	24
Total	17	10	27

developed a map of potentially restorable wetlands in the Rock River Basin to improve the basin to implement wetland management at the watershed scale. Many of these wetlands—which were tiled and drained decades ago for agriculture—are found in areas prone to severe flooding and overlap with priority habitats. Wetland restoration in the area has been funded by a variety of sources, including the Emergency Watershed Protection Program, the Floodplain Easement Program, and the Wetland Reserve Program.

Recommendations

OUR RECOMMENDATIONS INCLUDE increasing awareness of state wildlife action plans, particularly among members of the hazards community; facilitating greater cooperation among wildlife and hazard mitigation professionals; revamping aspects of existing planning frameworks at the federal, state, and local level; and identifying innovative new funding sources as well as current federal programs to support the conservation of disaster-prone areas that provide high-quality wildlife habitat. Specifically:

- At the local level, land use and hazard mitigation planners should reach out to conservationists during their planning, preparation, and implementation processes. Hazard mitigation planners can work with wildlife managers to identify win-win opportunities for collaboration and coordination. This will require some rethinking of roles since many hazard mitigation planners do not currently perceive habitat conservation as part of their mandate. Changing this perception could make the hazard planner's job easier. In our study, local land use and hazard mitigation planners reported that they supported the goal of wildlife protection, but needed ready-to-use language (goals, objectives, and policies) that they could simply cut-and-paste into local plans. The disaster community can take the initiative in reaching out to conservation groups to make them aware of this need.
- At the state level, hazard mitigation planners should open a dialogue with the agencies responsible for SWAP administration to make sure they are aware of the influence disaster mitigation planning has on large-scale ecosystem restoration efforts. States could increase the effectiveness of their SWAPs by making them more user-friendly and requiring they be integrated into local land use and hazard mitigation plans. State wildlife agencies on the whole need to become more involved in the preparation of 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.

Those responsible for protecting wildlife habitat should 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. Through such joint planning, the parties could achieve together more than they could by working on their own. State wildlife action plans are a useful but currently underutilized tool for maximizing the effectiveness of such partnerships. The hazards community should work internally to change the perception about the efficacy of protecting wildlife habitat and to raise an awareness of the need for collaboration with conservationists. Keeping people and property out of high hazard areas such as floodplains or wildfire-prone areas serves the dual goal of reducing damages from disasters while preserving priority habitats. Hazard mitigation professionals have a reservoir of untapped potential policy mechanisms, funding, and human allies in the habitat conservation field.

David Salvesen is the deputy director of the Center for Sustainable Community Design within the Institute for the Environment at the University of North Carolina. Rebecca Kihlslinger is a science and policy analyst for the Environmental Law Institute in Washington, D.C. Peter Zambito is a research associate at the Institute for the Environment. Ryan Winterberg-Lipp, formerly with the Institute for the Environment, is a planner with the City of Pensacola, Florida. Tessa Lee is a research associate at the Institute for the Environment.

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