Successes in Stewardship

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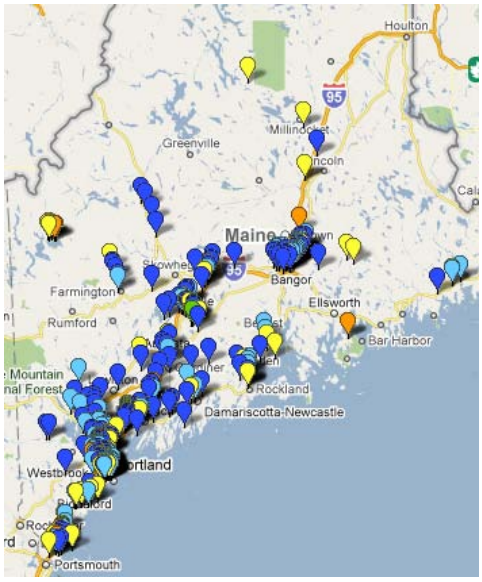
Innovative Habitat Connectivity Data Programs Inform Transportation and Land-Use Decisions in Maine

Two innovative wildlife programs, Beginning with Habitat (BwH) and Wildlife Road Watch, are helping the State of Maine to address the increasing habitat fragmentation caused by development and roadways. The survival of many wildlife species depends on their ability to move across broad landscapes. Compared with more urbanized eastern States, Maine enjoys an intact landscape composed of the large areas of open space needed to support its native wildlife. However, in recent years, the State's development patterns have led to habitat fragmentation, which occurs when roads and other infrastructure separate large tracts of land. Both of the programs engage environmental and transportation agencies and the public in data collection.

Habitat fragmentation impacts species' ability to travel, feed, and reproduce. Roadways that bisect habitat increase the likelihood of wildlife-vehicle collisions, which threaten the safety of both wildlife and the traveling public. In Maine, habitat fragmentation and animal road mortality are impacting populations of many native species, including moose, bobcats, the endangered Blanding's turtle, and the threatened spotted turtle.

Public and nonprofit agencies throughout Maine are collaborating in an effort to improve and maintain Maine's wildlife habitats and minimize wildlife-vehicle collisions. These agencies have instituted BwH and Wildlife Road Watch to provide land-use and transportation planners with information to support conservation of the State's native plant and animal species.



Wildlife Road Watch online map, depicting the locations of roadside and road-kill observations across the State of Maine. (Courtesy of Maine Audubon)

Collaborative Data Collection Through the BwH Program

The BwH program began in 2000 as a collaborative effort among Federal and State environmental and transportation agencies, regional and local governments, and nongovernmental organizations. BwH staff from the Maine Department of Inland Fisheries and Wildlife compile data on plants, natural communities, and wildlife habitat from BwH partnering agencies and integrate it into a geographic information systems (GIS) database. They use the GIS data to create maps that depict natural areas of statewide ecological significance, known as BwH Focus Areas. Preserving the quality of these areas is integral to maintaining the long-term viability of the State's significant plants, animals, and natural communities.

BwH Partner Agencies and Organizations

- Maine Audubon
- Maine Coast Heritage Trust
- Maine Department of Conservation
- Maine Department of Inland Fisheries and Wildlife
- Maine Department of Transportation
- Maine State Planning Office
- The Nature Conservancy
- U.S. Fish and Wildlife Service

In order to further prioritize conservation efforts, several BwH partner agencies recently developed a predictive modeling tool that identifies specific lands needed to maintain or restore functional connections among blocks of undeveloped habitats. The modeling tool analyzes the corridor needs of ten focal species that represent the diversity of habitat requirements and movement characteristics of the State's native animals. It combines GIS data with knowledge from wildlife experts to identify pathways where the focal species are most likely to travel. The results form a data layer that displays pathways used by individual species as well as those shared by multiple species. This new data layer provides land-use and transportation planners with more detailed information about where to focus their conservation efforts. In the face of continued development and climate change, the preservation of such an intact landscape is critical to the continued health of Maine's native wildlife.

Related Effort:

Massachusetts' Critical Linkages Program

With funding support from the Federal Highway Administration (FHWA), the University of Massachusetts and The Nature Conservancy (TNC) are developing a decision-support tool to help State and regional transportation agencies mitigate the impacts of roads on the natural environment and inform the design of new roads.

The Critical Linkages program combines digital maps, land-use data, aerial photographs, and field observations with computer models to prioritize locations that offer the greatest opportunity for protection or restoration of local and regional habitat connectivity. The model also includes a scenario-testing component that enables users to see the varying levels of benefits achieved from improving connections at different sites.

The Massachusetts Department of Transportation and regional planning agencies use Critical Linkages data to support their evaluations of transportation projects. By providing information on which road segments are the most important to habitat connectivity, Critical Linkages helps transportation agencies to prioritize where to invest in infrastructure such as culverts and amphibian tunnels.

For more information on the development and use of the Critical Linkages model, see the TNC website.

Data Collection Through Citizen Scientists

The Maine Audubon Wildlife Road Watch program provides additional field-collected data on wildlife movement characteristics that will help to validate the results of BwH's predictive model. The program, launched in the spring of 2010, is a web-based map and database that allows the public to record observations of road-killed wildlife and live animals along the roadside. The collected data will help planners to better understand what types of wildlife are attempting to cross roads and to identify the habitats and type of roads where wildlife-vehicle collisions are most frequent.

By relying on citizen scientists to document observations as part of the program, Maine Audubon is able to collect data points from a broader area of the State. Through active public involvement, the program helps citizens to better understand how the road system affects wildlife. The program already has over 240 registered observers and over 1,000 recorded observations. In the future, citizen scientists will have the opportunity to adopt one of the priority connectors identified by BwH's predictive habitat connector model. Following a protocol designed by Maine Audubon, the volunteers will regularly survey the connector and will document roadside and road-killed wildlife. The results from these targeted surveys will be combined with general recorded observations to assess whether the habitat connectors identified by BwH's priority connectors actually represent wildlife crossing locations.

Data-Based Transportation and Land-Use Decisions

The BwH and Wildlife Road Watch programs enable State and local land-use and transportation agencies to make better planning and design decisions. Although BwH was originally developed to support local governments in their comprehensive planning efforts, the Maine Department of Transportation (MaineDOT) has become one of the program's most dedicated users. MaineDOT recognizes the need to balance the preservation and restoration of wildlife habitat and aquatic connectivity with the delivery of effective transportation systems for the State. Transportation planners use BwH maps and data to screen projects for opportunities to avoid habitat fragmentation. In addition, the priority connectors identified by the BwH model and the supporting data derived from the Wildlife Road Watch program will help MaineDOT to determine where animal crossings and culverts may be most effective on current and future roadways.

Key Components of Success

Active public involvement is essential to the success of the Wildlife Road Watch program's data collection effort. Through ongoing public outreach, the number of citizen scientists contributing to the program continues to increase, enabling valuable data collection from all over the State. Similarly, the interagency nature of the BwH program has been integral to its successful application in both State and local decisions regarding land use and transportation in Maine. Through BwH, the multiple agencies involved have worked together toward a common goal, combining data and expertise. The resulting shared sense of ownership encourages the continued use of BwH's tools and data to maintain the integrity of the State's natural resources for future generations.

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Look What's New!

- The Transportation Research Board (TRB) 90th Annual Meeting will be held January 23 through 27, 2011, in Washington D.C. The Annual Meeting attracts more than 10,000 transportation professionals and covers an array of transportation modal, policy, and technology topics. For more information and to register, link to the TRB website.
- The Council on Environmental Quality issued a final guidance document on the use of categorical exclusions (CEs) under the National Environmental Policy Act (NEPA). CEs are categories of activities that agencies have determined do not normally have significant environmental effects and for which detailed environmental analyses are therefore unnecessary. The guidance document clarifies rules for agencies to use in establishing or revising CEs, documenting the use of CEs, applying established CEs, and conducting periodic reviews of existing CEs. For more information, link to CEQ's webpage on NEPA Guidance for Categorical Exclusions.
- The ARC International Wildlife Crossing Infrastructure Design Competition announced five finalists for the design of a wildlife crossing structure at West Vail Pass on the I-70 corridor in Colorado. The competition jury will select a winning design for a safe, cost-effective, ecologically responsive wildlife crossing to serve as a model for the next generation of crossings. The winning design team will be announced at the TRB Annual Meeting in Washington, DC, on January 23, 2011.

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