

1st District, Representative John Olver (D)

The Nature Conservancy requests \$462,268 in the Transportation, Community and System Preservation program in FY2008 to create a spatially explicit statewide decision-support tool to help transportation agencies mitigate impacts of roads on the environment



Route 143 crossing the Dead Branch of the Westfield River © G.L. Sweetnam

AT A GLANCE:

Project description Assess effects of transportation infrastructure on connections among natural areas and wildlife habitats, design strategies to protect existing connections (including rivers, wetlands, and forests), and mitigate barriers to species movement

Total cost \$577,835

TCSP request \$462,268

Source of matching funds Private fundraising from The Nature Conservancy

Grant Recipient University of Massachusetts

Project Status

The University of Massachusetts (UMASS) and The Nature Conservancy will partner with state agencies to integrate data related to landscape connectivity and transportation infrastructure, and to develop a comprehensive analysis of areas where connections must be protected or restored to minimize conflicts between biodiversity conservation and transportation infrastructure. This study will build on the existing Conservation Assessment and Prioritization System (CAPS), a computer model developed by UMASS that uses biological and landuse data to develop an index of ecological integrity. The match requirement will be met through private funds raised by the Conservancy.

This study will result in the following outcomes:

- Identification of priority road segments, stream crossings and dams that obstruct aquatic and terrestrial wildlife movement, and definition of areas needing protection to maintain existing connectivity or restoration to increase connectivity.
- Evaluation of how proposed development or restoration influences connectivity among areas of high ecological integrity.
- Statewide maps depicting the network of important connections among protected areas and other areas of high ecological integrity in order to avoid future fragmentation by highway infrastructure.
- Decision-support system to analyze alternatives and minimize impacts as part of highway planning.
- A dedicated web page to maximize the use of this tool in decision making.

Federal Investments

Enhancements identified by this study will benefit the 61,000 acres of federally protected lands in Massachusetts, the two National Wild and Scenic Rivers (and one Wild and Scenic River candidate), and eight Scenic Byways.

Results of this study, when combined with the State Wildlife Action Plan funded through the federal State Wildlife Grant program, will allow integrated prioritization to inform transportation mitigation projects as well as mitigation of stream barriers such as culverts and dams. The U.S. Environmental Protection Agency (EPA) and Massachusetts Department of Environmental Protection (DEP) have jointly committed \$135,000 through 2008 to use CAPS to identify wetlands of regional importance. The state portion may count as match.

Nonfederal Investments

UMASS and a consortium of state agency and nonprofit partners have invested over \$535,000 since 1999 to develop CAPS. This study will enable identification of new priority areas for both off-site habitat mitigation and on-site design mitigation, such as wildlife crossings, that will leverage nonfederal public and private funds invested into similar efforts.

For example, the Massachusetts Highway Department (MassHighway) has already incorporated wildlife crossing design guidance in the 2006 Highway Design Manual. Wildlife crossings are in use in Amherst, Boxborough, Carver and Granville. In addition, significant investments in highway mitigation are needed for existing projects and planned highway development throughout the state. MassHighway manages nearly 10,000 miles of roadways, and has invested \$4.2 billion in road and bridge construction in the past seven years. An annual average of \$610 million is projected to be spent in the next five years.

Transportation, Community and Environmental Benefits

Integrated planning will reduce mitigation costs and environmental review time. This project will allow federal, state, and local transportation and planning agencies to determine where Massachusetts can improve habitat connectivity and enhance wildlife populations and biodiversity to reduce impacts from infrastructure projects. Plans resulting from the study will also help reduce transportation safety hazards associated with wildlife, such as roadway collisions.

Working with partners and state agencies such as the Division of Fisheries and Wildlife (DFW), MassHighway released a Highway Design Manual in 2006 that considers wildlife accommodation. One chapter in the Manual helps project designers provide wildlife passage. A flowchart of criteria includes areas of rare species habitat, of high wildlife mortality, and of importance to landscape-scale connectivity. The next step is to create a spatially explicit tool, including maps and scenario-testing software, which MassHighway and local highway departments can use to inform design of new roads and to mitigate impacts of existing roads. This project will provide a decision-support system that can be easily updated as new science becomes available.

This project will also serve as a model for assessments in other states. There is a growing movement nationally to manage and construct infrastructure that takes wildlife and ecosystems into consideration. In a 2006 document entitled, "Eco-logical: An Ecosystem Approach to Developing Infrastructure Projects," the Federal Highway Administration envisions integrating development and conservation to meet environmental and social objectives while fulfilling transportation needs. CAPS was highlighted in "Eco-logical" as an example of a decision-support tool for mitigation. This project enhances the applicability of this tool to address local and regional connectivity through terrestrial and aquatic systems restoration and proactive land and water protection. This will also provide an example for other states as they work to implement the provisions in Section 6001 of the 2005 federal Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA-LU), which require that state transportation agencies consult conservation plans and consider potential mitigation for road projects during development of long-range transportation plans.

Local and State Supporters

The proposed study has generated broad support from a variety of agencies and organizations, including the Massachusetts Executive Office of Environmental Affairs and its agencies (DEP and DFW), Massachusetts Executive Office of Transportation and MassHighway. This growing list of supporters and advocates for this application of CAPS testifies to the usefulness of CAPS and the credible science and technology upon which it is built



Improved habitat connectivity benefits wildlife such as moose and reduces vehicular collisions. © Ross Geredien

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