Fish, Wildlife and Biodiversity Conservation FY22

Status: NIFA REVIEW

Project Director
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Organization Project Number
-

Accession Number
7002178

Start & End Date
10/01/2020

Organization
University of Massachusetts

To Project / Program
"Fish, Wildlife & Biodiversity Conservation"

Primary Critical Issue
Environmental Stewardship

Fiscal Year
2022

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

In addition to traditional resources such as water, fisheries, wildlife and forest products, natural ecosystems are valued for biodiversity, open space, aesthetics and recreational opportunities. Because we know so little about the myriad ecological connections that organize ecosystems into self-sustaining entities, maintaining and restoring the ecological integrity of ecosystems is an essential component of natural resource conservation. The window of opportunity for effective land conservation in southern New England may be only 10-20 years. After this time, the unprotected landscape is likely to be too fragmented to be of much value for supporting wildlife or sustaining forest-based businesses. Climate change, its impacts on natural resources and the role of natural ecosystems in buffering the impact of climate change on human communities has emerged as one of the most significant and challenging issues of our time. Despite an incomplete understanding of the how climate change will manifest at local and regional scales, land and resource managers will make decisions with the potential to either promote or compromise long-term integrity of natural ecosystems.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The Fish, Wildlife, and Biodiversity Conservation program represents the coordinated efforts of Extension faculty, professional staff, and external partners to identify and conserve critical natural resources of Massachusetts. The program focuses on important resources and services that ecosystems provide and pursues ecosystem and resource management strategies promoting the sustainable use of natural resources and maintenance of ecological integrity. We focus on research-based outreach strategies and key target audiences that can amplify our efforts and achieve our goals.

Target Audiences

- Landowners
- Community leaders
- Land managers
- Natural resource professionals
- Municipal officials
- Conservation organizations
- Regional Planning Agencies
- Agency personnel

The goal of the program is to facilitate ecological assessment and conservation priority setting to promote strategic land conservation, sustainable use of natural resources, and management to protect and enhance natural resources and ecological integrity

Objectives

- Use landscape-scale modeling and decision support tools to facilitate strategic land conservation and spatially explicit climate adaptation
- Identification and assessment of landscape fragmentation and development of strategies to conserve and restore aquatic and terrestrial connectivity

Approaches and Activities

- Use of the Conservation Assessment & Prioritization System (CAPS), Designing Sustainable Landscapes (DSL), and Critical Linkages to provide landscape-scale information to inform conservation decision-making
- Provide training and technical support to organization and agencies on the use of road-stream crossing assessments to identify opportunities to restore aquatic and terrestrial connectivity
- Work with conservation partners to use ecological assessments and conservation designs to guide land conservation and forest stewardship
- Conduct presentations and workshops on climate change adaptation, landscape connectivity, strategic land conservation, and data sources and tools for conservation
- Maintain the Massachusetts Ecosystem Climate Adaptation Network (Mass ECAN) and the associated MassECAN.org website, Climate Adaptation work groups, and online MA Wildlife Climate Action Tool

Briefly describe how your target audience benefited from your project's activities.

The Fish, Wildlife and Biodiversity Conservation program will provide the following benefits to target audiences.

- Updated ecological assessment data were generated and made available for the 13-state northeastern U.S.
- Landscape models were used to identify climate refugia and assess regional connectivity
- Road-stream crossing assessments were conducted and those data used in landscape-based connectivity modeling
- Integration of CAPS, DSL, and Critical Linkages data into Biomap (Massachusetts) and Nature's Network (USFWS) conservation designs, as well as other conservation plans in the Northeastern U.S.
- CAPS, DSL and Conservation Tools websites provide information about, and links to, data sources and tools to guide land conservation and forest stewardship
- Conservation organizations and agencies have access to datasets based on sophisticated landscape modeling and assistance in using those data to prioritize conservation action
- Municipal officials, landowners, land managers, and natural resource professionals will use spatially-explicit information to guide land management and forest stewardship decisions

Briefly describe how the broader public benefited from your project's activities.

The Fish, Wildlife and Biodiversity Conservation program uses state of the art landscape models to better understand how human development is impacting natural ecosystems that provide clean air and water, forest products and other natural resources, fish and wildlife, biodiversity that represents raw material for improving human welfare, and a buffer from the adverse impacts of climate change. Online resources such as websites and decision support tools, training programs, networking opportunities, and public education builds capacity at the local, state and regional levels to protect and restore the ecological integrity of natural ecosystems so that they can continue to provide ecosystems services to future generations of Massachusetts residents.

Comments (optional)

- Massachusetts Climate Adaptation Partnership (1) - 16 Participants - Serve as convener for the MA Climate Adaptation Partnership. This partnership includes the MA Office of Coastal Zone Management, MA Division of Ecological Restoration, MA Division of Fisheries and Wildlife, Harvard Forest, EcoAdapt, The Nature Conservancy, the DOI Northeast Climate Adaptation Science Center, and UMass Amherst. This is an action-oriented partnership to share and support best practices, conduct research, facilitate engagement, provide technical assistance, and implement projects across Massachusetts for climate change adaptation. This past year, the Partnership oversaw the work of five work groups, focusing on: salt marshes, Southern New England forests, rivers and streams ("slowing the flow"), climate change communication, and main-streaming nature-based solutions.
- MA Wildlife Climate Action Tool (1) - 51723 Participants From September 1, 2021 through August 31, 2022, the Massachusetts Wildlife Climate Action Tool (www.climateactiontool.org) recorded 51,723 visits with an avg visit time of 3:11. Of these, 11,548 visits were from MA users. Despite the inclusion of "Massachusetts" in the name of the site/tool, 77.7% of visits were from people outside of Massachusetts, suggesting broad interest in this new type of climate adaptation education tool.

- Workshops, presentations and technical assistance on climate change adaptation (9) - 365 Participants Over the course of the past year, I conducted nine workshops and presentations on the topic of climate change adaptation reaching 365 participants for a total of 372 contact hours (# participants x program length). A one-hour presentation I delivered on Climate Change Adaptation was recorded for Frontier Community Access Television, for use by teachers and students in the Frontier Regional School System.
- Continue Development of CAPS software and related tools (1) With funding from the U.S. Fish and Wildlife Service, through the Wildlife Management Institute, we have updated DSL data and rerun models for a 13-state region in the northeastern U.S.
- Development and Distribution of CAPS scenario testing software (1) Maintain the Aquatic Connectivity Scenario Analysis Tool
- Funding for graduate research (1) - Graduate student Joshua Ward was supported on our Salt Marsh UAS project.
- Interpret and apply CAPS results - (1) Over the past year, the Land Conservation Tools website received 1,305 unique pageviews.
- Revise and Enhance MassCAPS Web Site (1) - 7876 Participants
- Service on Graduate Research Committees (1)
- Salt Marsh UAS Project - In collaboration with Charlie Schweik, I continued an EPA-funded project to use Unoccupied Aerial Systems (UAS) to assess wetland condition in salt marshes. This fifth year of data collection involved the use of 40+ water loggers rotated among the study marshes to characterize tidal hydrology and allow us to determine when vegetation imaged by multi-spectral sensors is being inundated. Distinguishing between inundated and non-inundated vegetation will help improve the accuracy of our automated vegetation mapping approach.
- Workshops on the results and use of CAPS analyses (17) - 627 Participants
- Continue development and refinement of crossing standards, assessment protocols and training materials, and scoring algorithms - Scott Civjan (Civil and Environmental Engineering) and I continue to work on a project, funded by the MA Department of Environmental Protection, to help them create a guidance document on how to implement the MA River and Stream Crossing Standards during wetlands permitting. In Massachusetts, the requirement for new or replacement stream crossings is that they meet the Stream Crossing Standards “to the maximum extent practicable.” The guidance document that we are creating will help interpret that phrase for applicants and the local conservation commissions that are responsible for issuing permits under the MA Wetlands Protection Act.
- Coordinate and lead the North Atlantic Aquatic Connectivity Collaborative (NAACC) (1) - 651 participants
- NAACC training workshops (14) - 688 participants
- Maintain and expand content for the "streamcontinuity.org" web site (1) - 17944 Participants
- Manage and continue to improve and expand the NAACC Crossings Database for volunteer assessment of road-stream crossings (1) 651 participants
- Service on Graduate research Committees (2)
- Workshops, presentations and technical assistance on wetlands and wetlands protection regulation (6) 269 participants
- Maintain the MA Snakes web site - (1) - 103288 participants
- Update and maintain the MA Herp Atlas Web Site - (1) - 11830 participants
- Workshops, presentations and technical assistance on mitigating the impacts of transportation on fish, wildlife, and ecosystems - (26) - 1110 participants
- Workshops, presentations, and technical assistance on wildlife natural history and conservation - (13) - 683 participants Over the course of the past year, I conducted 13 workshops or presentations on the topic of fish, wildlife and biodiversity conservation reaching 683 participants for a total of 765 contact hours. There were 156 downloads from ScholarWorks and Bepress of my articles related to the effects of roads and highways on wildlife.