Fish, Wildlife, and Biodiversity Conservation - FY23 Annual Report

Status: NIFA REVIEW

Project Director
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Organization Project Number

Accession Number
7002178

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10/01/2020

Organization
University of Massachusetts

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

Primary Critical Issue
Environmental Stewardship

Fiscal Year
2023

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

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

- Promote land use practices that minimize the impact of development on natural resources and ecosystems

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 provided 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 assess regional connectivity for various terrestrial and wetland ecosystems
- Road-stream crossing assessments were conducted and those data used in landscape-based connectivity modeling.
- Provided conservation organizations and agencies with 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 used spatially explicit information to guide land management and forest stewardship decisions
- 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
- Provided information and methodologies for assessing wetland condition and vulnerability to climate change
- Informal partnerships to focus on ecosystem-based climate adaptation: 1) ecosystem or issue-based work groups intended to identify research and information needs, and opportunities to collaborate on adaptation-based conservation action, and 2) a community of practice called the Massachusetts Ecosystem Climate Adaptation Network (Mass ECAN) to create a network of climate adaptation practitioners to promote collaboration and share information, ideas, and success stories.

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)

Designing Sustainable Landscapes (DSL) and the Conservation Assessment and Prioritization System (CAPS)

- Continue Development of CAPS software, DSL models, and related tools for a 13-state region in the northeastern U.S. This past year the focus has been on creating metrics for regional connectivity that are ecosystem-based and core independent.
- The MA Division of Ecological Restoration's Culvert Replacement Municipal Assistance Grant Program RFR directed applicants to use the results of CAPS and Critical Linkages analyses to determine their proposed culvert's priority for replacement.
- The UMass CAPS website was visited by 2,795 users, with 150 downloads of GIS data and 1,089 downloaded PDF maps.
- Our new Land Conservation Tools website (https://ag.umass.edu/resources/land-conservation-tools) serves as a portal to help people engaged in land conservation find the tools most suitable for their needs. Over the past year, the Land Conservation Tools website was

accessed by 230 users for 1,161 sessions.
- In FY23, 10 workshops and presentations on DSL/CAPS and related applications reached 160 participants.
- Brad W. Compton and Scott D. Jackson. 2023. Ecosystem-based Regional Connectivity to Inform Conservation Networks at Multiple Scales. Poster presented at the 2023 International Conference on Ecology and Transportation (ICOET). Burlington VT.

River and Stream Continuity Project

- Coordinate and lead the North Atlantic Aquatic Connectivity Collaborative (NAACC); manage and continue to improve and expand the NAACC Crossings Database for volunteer assessment of road-stream crossings - 651 participants. The value of the NAACC is best illustrated by other organizations that are using it as a model for road-stream crossing assessments in their geographies. The Southeast Aquatic Resources Partnership (SARP) has been using the NAACC's non-tidal assessment protocol and scoring system to assess road-stream crossings in 14 states in the southeastern U.S. and is introducing this assessment protocol into the mid-west and intermountain-west regions of the country. In Canada, the Canadian Wildlife Federation is developing a nationwide collaborative to assess the barrier effects of road-stream crossings modeled on the NAACC and using NAACC protocols as a basis for their own crossing assessments.
- Over the past year, 7,382 non-tidal aquatic crossing assessments were conducted, and data entered into the NAACC database. The NAACC's non-tidal aquatic connectivity module now includes 130 local and regional coordinators and 566 certified lead observers. The database received 156 new records collected using the terrestrial wildlife assessment module and 12 records assessing aquatic passability for crossings on tidal streams. Since the start of the NAACC, the database has received and currently houses over 75,000 crossing assessments from 13 states.
- Work continued on 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 Stream Crossing Standards "to the maximum extent practicable." The guidance document will help interpret that phrase for applicants and the local conservation commissions that are responsible for issuing permits under the MA Wetlands Protection Act.
- In fiscal year 2023, 21 presentations and workshops on landscape connectivity reached 449 participants and the NAACC web site was visited by 9,616 users for a total of 13,982 sessions.

Wetlands Assessment, Protection, and Education

- Work continued on an EPA-funded project to use Unoccupied Aerial Systems (UAS) to assess wetland condition in salt marshes.
- Following up on last year's release of the "Massachusetts Handbook for Delineation of Bordering Vegetated Wetlands, Second Edition", a series of workshops and presentations were conducted on the recommended approach for wetland delineation in Massachusetts. This included:
    - 3 webinar workshops, two for the MA Association of Conservation Commissions and one for the Association of Massachusetts Wetland Scientists and Northeast Chapter of the Society of Wetland Scientists;
    - One half day train the trainer workshop for MassDEP staff and other professional wetland scientists; and
    - Five, full-day wetland delineation workshops across the state for environmental consultants and municipal conservation commissions. Over 500 people participated in workshops and presentations.
- Technical assistance was provided to Communities in Support of Agriculture (CISA) on the agricultural exemption to the MA Wetlands Protection Act.

Climate Change Adaptation

- The Massachusetts Ecosystem Climate Action Network (Mass ECAN), a community of practice for people working on ecosystem-base climate adaptation, now includes 540 members.
- Six work groups focusing on: cold-water streams, salt marshes, Southern New England forests, rivers and streams ("slowing the flow"), climate change communication, and main-streaming nature-based solutions, shared best practices, conducted research, facilitated engagement, provided technical assistance, and implemented projects across Massachusetts for climate change adaptation.
- The Massachusetts Wildlife Climate Action Tool was visited by 37,905 users for a total of 40,277 session. Of these, 26,788 users (70.7 percent) were from Massachusetts. Despite the inclusion of "Massachusetts" in the name of the site/tool, nearly 30 percent of users were outside of Massachusetts, suggesting broad interest in this new type of climate adaptation education tool.
- We conducted 13 workshops and presentations in FY23 on the topic of climate change adaptation reaching 299 participants.
- The MA Division of Ecological Restoration referenced the Climate Action Tool in their Culvert Replacement Municipal Assistance Grant Program RFR. The following language was included in the RFR. "Culverts identified by the Massachusetts Wildlife Climate Action Tool as priorities for replacement will be given preference."

Fish & Wildlife Conservation

- For the period September 1, 2022 through August 31, 2023, the Massachusetts Snakes web site (http://www.masnakes.org/) was visited by 40,500 users for a total of 40,719 sessions. Forty-three percent of users (17,494) were from Massachusetts (the target audience for this site).
- For the period September 1, 2022 through August 31, 2023, the Massachusetts Herp Atlas web site (http://www.massherpatlas.org/) was visited by 2,742 users for a total of 2,999 sessions. Massachusetts users (the target audience for this site) accounted for 44.3 percent of visits. The MA Herp Atlas web site received 42 new records with confirmed IDs, 12 of which documented occurrences of state-listed species.
- Over the course of the past year, 35 workshops and presentations were conducted on the topic of fish, wildlife, and biodiversity conservation reaching 886 participants. The majority of those workshops and presentations were on the subject of road and highway impacts on fish and wildlife (22 workshops, 538 participants). Many of the other programs were related to DSL work and the new regional connectivity metrics.
- There were 212 downloads from ScholarWorks and Bepress of articles related to the effects of roads and highways on wildlife.