Science Strategy Plan 2022-2025

NECASC

Northeast Climate Adaptation Science Center

Science and partnerships to help fish, wildlife, water, land, and people adapt to a changing climate.

USGS science for a changing world

UMASS AMHERST

This work is supported by the Department of Interior Northeast Climate Adaptation Science Center, which is managed by the National Climate Adaptation Science Center.




OUR GOALS

Building an engaged community

We bring together scientists, managers, and conservation stewards of the region's natural resources by developing and supporting networks, communities of practice, and forums to share the latest science.

Developing the next generation

We support the next generation of climate scientists by excelling in graduate education, pipeline support, and workforce development with a special emphasis on the needs of populations historically underrepresented in climate science and adaptation.

Producing relevant, actionable science

We identify climate science needs with input from patners within the U.S. Department of the Interior, as well as Northeast regional Tribal and State Governments, to co-produce science and tools that directly inform on-the-ground solutions for management challenges.

Increasing accessibility of information

We make the wealth of existing data, knowledge and tools more accessible by emphasizing science delivery, science synthesis, visualization, and other approaches to maximize accessibility to climate information.

Supporting innovation

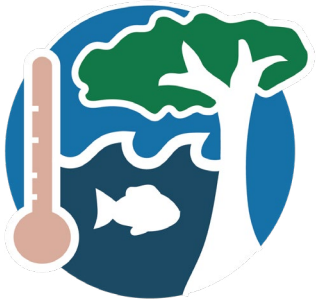
We develop and foster cutting edge science and novel solutions required to respond to the challenge of climate adaptation. We also support research at the interface of adaptation and mitigation.

Fostering equity and inclusion

We lead with best practices in diversity, equity, inclusion, and social justice in all our work, from supporting the next generation of scientists, to partnering with historically underrepresented communities and scientists in our research and abiding by the data sovereignty of Tribal Nations.

OUR SCIENCE PRIORITIES

Based on stakeholder sensing and input from our Advisory Committee, the NE CASC has identified the following four science priorities for 2022-2027. These priorities were developed through a series of stakeholder workshops, built on our past science priorities, and complement the expertise of partner research organizations such as the US Department of Agriculture Climate Hubs and the National Oceanographic and Atmospheric Administration Regional Integrated Sciences and Assessments Programs.



Climate impacts to, and vulnerability of fish, wildlife, and their habitats.

Effectiveness and transferability of adaptation actions and strategies.

Social, cultural, and economic considerations in vulnerability assessments and adaptation strategies.

Landscape-scale conservation strategies in a changing climate.

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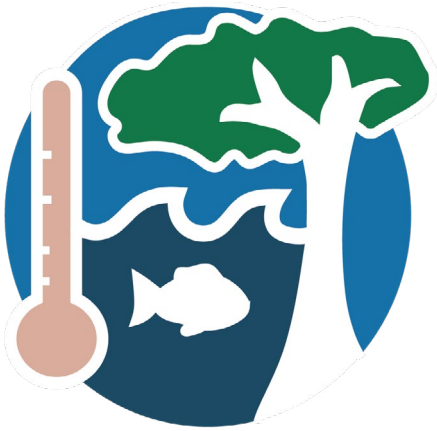


Addressing gaps in the understanding of climate impacts to key resources; increasing the understanding of the complex interactions between climate and other stressors; and translating this information into next generation vulnerability and risk assessments. Some specific information needs under this theme include:

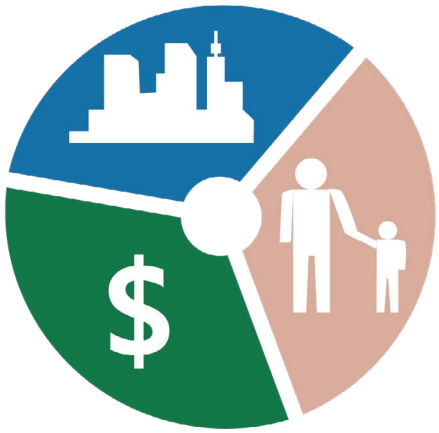
- Advancing knowledge of climate impacts to Regional Species of Greatest Conservation Need (RSGCN), listed species – including those under consideration for the Federal Endangered Species Act, Tribal Trust Resources, and other fish, wildlife, and habitats of economic or cultural importance
- Addressing understudied species, processes, and ecosystems – including wetland systems (inland, tidal river, estuarine and coastal), insects and pollinators, mussels, rare plants, and loss of hemlock
- Understanding the impacts of interactive, compounding effects of multiple stressors (e.g., climate change, invasive species, disease, sea level rise, coastal erosion and drowning, land use change, urbanization, nutrient loading, and pollution) including integrated ecosystem assessments and cumulative risk assessments
- Identifying ecological thresholds for when species or habitats cross tipping points towards non-linear declines as a result of climate change, as well as timelines and trigger points for management of at-risk species and habitats to inform managers when recovery goals and conservation plans need to be modified
- Addressing gaps in the existing network of climate change vulnerability assessments (CCVAs) e.g., supporting CCVAs for Tribal communities and resources, urban ecosystems, cultural resources)
- Incorporating new science, tools, and approaches into next-generation, finer scale, interactive CCVAs
- Understanding how monitoring programs could be adapted to better capture and track system level climate impacts and leverage data from existing monitoring programs to do the same

Effectiveness and transferability of adaptation actions and strategies.

Expanding knowledge around and usability of adaptation strategies, including evaluating the effectiveness and feasibility of existing and novel adaptation strategies and actions and translating this information into actionable guidance for managers. Some specific information needs under this theme include:

- Evaluating the effectiveness of existing, planned, and novel adaptation strategies
- Assessing how existing management strategies could be modified to better meet climate adaptation goals as well as the risks associated with adaptation actions
- Understanding the challenges of moving from local to regional (and regional to local) applications of adaptation strategies
- Modeling the impacts of individual and integrated adaptation practices
- Evaluating potential adaptation benefits of mitigation strategies (and vice versa)
- Evaluating the efficacy of broad climate adaptation strategies for data-deficient RSGCN and determining and balancing the needs for more targeted strategies
- Identifying and evaluating urban resilience actions and strategies (e.g., disaster recovery, nature-based solutions) with potential to incorporate co-benefits for fish and wildlife habitat

Social, cultural, and economic considerations in vulnerability assessments and adaptation strategies.



Increasing the inclusion of social, cultural, and economic variables in management decisions and priorities and evaluating how these variables influence efficiency, transferability and buy-in for climate adaptation strategies. Some specific information needs under this theme include:

- Partnering with Tribal nations and Tribal organizations, municipalities, States, NGOs, and other entities to assess the breadth of cultural resources in the Northeast threatened by climate change and to develop integrative adaptation strategies
- Developing technical support to build partners' capacity to implement climate adaptation strategies
- Understanding effects, values and perceptions around future ecosystem configurations that may occur under changing climate conditions and determining the social acceptability, cost effectiveness, trade-offs, and benefits of various management actions to address or adapt to these changes
- Incorporating predictions of human population, consumption, migration, distribution, and land use into assessments of ecosystems and ecosystem services in a changing climate
- Assessing the values, perceptions, and economic incentives that influence the application and effectiveness of adaptation strategies (e.g., incentives to engage private landowners)
- Evaluating the return on investment of different types of adaptation and implementation strategies
- Increasing the use of traditional knowledge and community-based participatory research methods to improve understanding of climate impacts and adaptation strategies

Landscape-scale conservation strategies in a changing climate.

Informing strategies that scale-up from local approaches to enact conservation at broader scales in the face of climate change. Some specific information needs under this theme include:

- Advancing the understanding of habitat quality, shoreline change, species migration, habitat corridors and connectivity, and climate refugia across the northeast to inform landscape scale conservation design
- Developing strategies to understand where conservation, restoration, and acquisition work best through multi-faceted modeling of land use change
- Evaluating the potential role of working lands and waters and urban and urbanizing habitat in contributing to regional conservation and adaptation strategies under future climate scenarios
- Supporting interdisciplinary activities at regional and larger scales which are aimed at integrating physical climate models with ecological, habitat, and population response models
- Advancing decision support tools and resources that help managers evaluate and compare landscape scale conservation and adaptation strategies
- Expanding the exchange of data and knowledge across institutional, administrative, jurisdictional, and political boundaries

Northeast Climate Science Center, 136 Morrill Science Center, 611 N. Pleasant Street, UMass Amherst, Amherst, MA 01003