



# NE CASC

Northeast Climate Adaptation Science Center

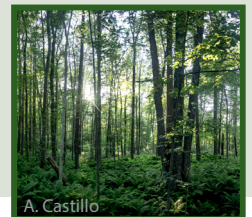
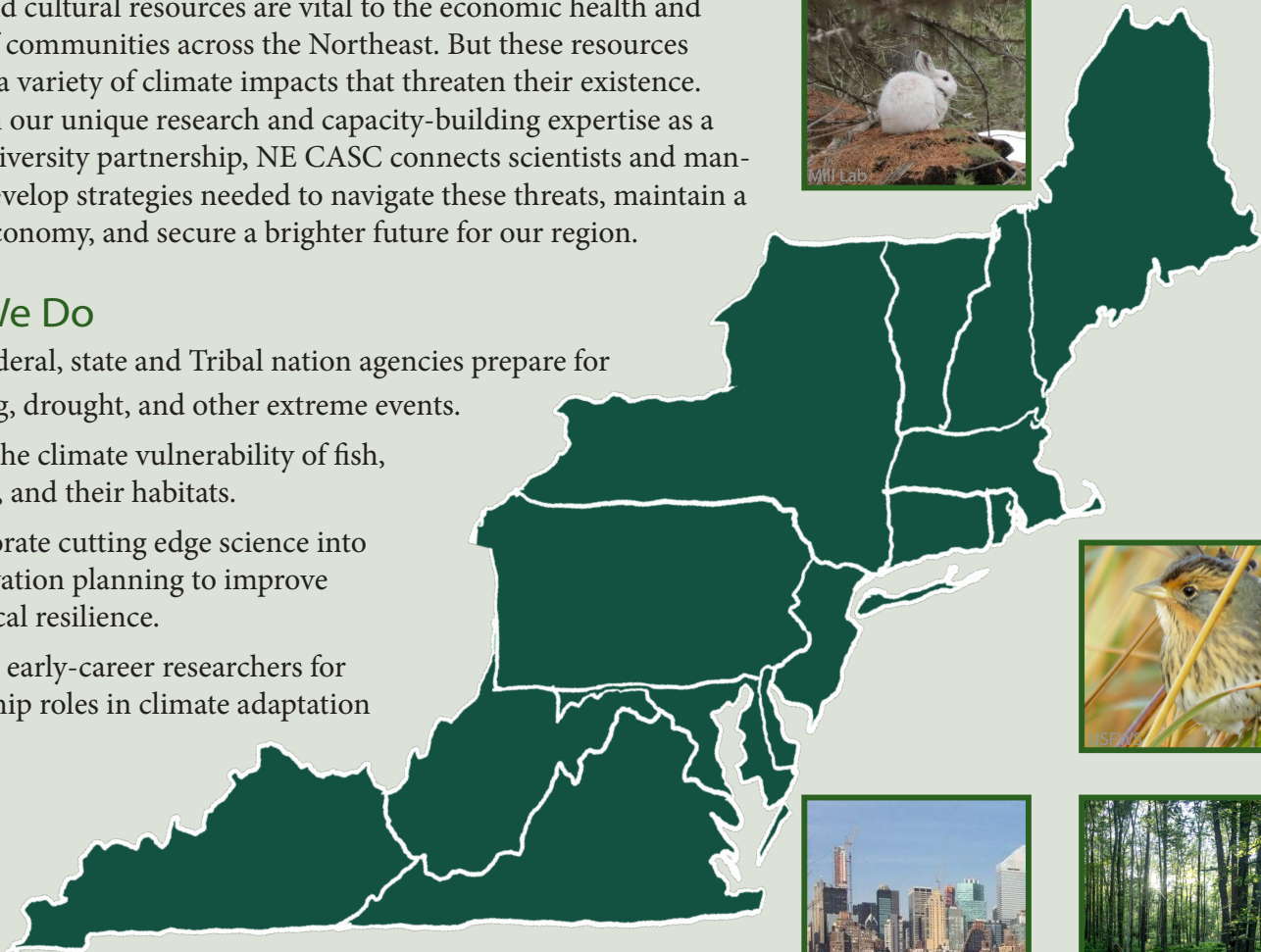


## Protecting Our Resources for a Brighter Future

Natural and cultural resources are vital to the economic health and stability of communities across the Northeast. But these resources are facing a variety of climate impacts that threaten their existence. Relying on our unique research and capacity-building expertise as a federal-university partnership, NE CASC connects scientists and managers to develop strategies needed to navigate these threats, maintain a thriving economy, and secure a brighter future for our region.

## What We Do

- Help federal, state and Tribal nation agencies prepare for flooding, drought, and other extreme events.
- Assess the climate vulnerability of fish, wildlife, and their habitats.
- Incorporate cutting edge science into conservation planning to improve ecological resilience.
- Prepare early-career researchers for leadership roles in climate adaptation science.



## Climate Threats in the Northeast

NE CASC research shows how climate impacts threaten our natural and cultural resources. We are helping managers address the challenges listed below in addition to many others:

- Invasive species are shifting their ranges northward with dire consequences for forests, lakes, and rivers as well as coastal and marine ecosystems.
- Rising sea level is increasing the frequency and intensity of flooding from coastal storms—and damaging infrastructure as a result.
- More frequent extreme heat events, summer droughts, intense storms, and flash flooding undermine the health of fish and wildlife.
- Shifting seasons are disrupting agriculture as well as the breeding and migration patterns of some key fish and wildlife species.

## Who We Are

NE CASC is part of a network of nine regional climate adaptation science centers managed by the U.S. Geological Survey National Climate Adaptation Science Center and is hosted by the University of Massachusetts Amherst. Our affiliated partners include Columbia University, Cornell University, University of Vermont, Woodwell Climate Research Center, United South and Eastern Tribes, Inc., and the USFS Northern Research Station.



University of  
Massachusetts  
Amherst

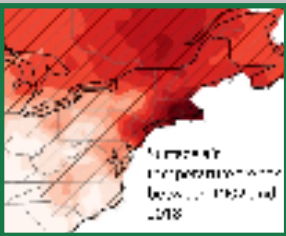
NE CASC has launched over 150 climate adaptation research projects since 2012 to mitigate climate impacts and secure natural and cultural resources for the future.

## Challenges



**Invasive species are expanding their ranges and impacts on ecosystems and economies.** Better coordination among

invasion researchers, climate modelers, and managers is essential for developing targeted solutions.



Karmalkar and Horton Nature  
Climate Change 2021

**Wildlife managers** depend on accurate climate projections to maintain species and habitats.

But to be useful, these projections must be developed at temporal and geographic scales that align with target species.

**Hydropower, water supply, and freshwater fisheries** are threatened by

the growing frequency of intense rain and snow storms as well as recurring drought.



Rick Bennett/USFWS



USFWS

**Salt marshes are drowning** due to inundation from sea level rise, destroying essential fish and wildlife habitat. Loss of salt

marshes threatens coastal communities and economies in the Northeast.

## Solutions

**The Northeast RISCC (Regional Invasive Species & Climate Change) Network** brings together researchers and resource



NAISMA RISCC Workshop (2019)

managers to identify and address knowledge gaps through actionable science. Recent work includes a comprehensive prioritization of range-shifting invasive plants across the Northeast. RISCC's coordinated approach to combating invasive species has been emulated across the U.S. and Canada.

**NE CASC scientists** are collaborating with regional **State Wildlife Action Plan (SWAP) committees** to produce usable climate

change projections for 13 states. This work will inform management decisions, protect key species, and ensure the continuing health of outdoor recreation and tourism industries across the Northeast.



Ryan Hagerty



Heather Siart

**NE CASC researchers** are studying strategies such as reconnecting floodplains and restoring green space along riverways to **reduce flooding risk and increase the resilience** of wildlife habitats and built environments to flooding.



**NE CASC is identifying cost-effective projects that can reduce flood peaks while significantly lessening the negative impacts on people and property located downstream.**

**A NE CASC team** is testing a management strategy called **runneling**, which uses micro-channels to restore tidal drainage and prevent marshes from drowning. **This research will identify marshes and high-priority habitat best suited for restoration to support hazard mitigation.**



Lauren Owens Lambert

Learn more at: [necasc.umass.edu](http://necasc.umass.edu)

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