



ENVIRONMENTAL STEWARDSHIP

Mitigating the Impacts of Climate Variability on the Environment

Temperature extremes, severe storms and changes in precipitation patterns have begun to stress ecological systems. Climate variability not only threatens crops, but also increases catastrophic wildfires and harms fish and wildlife. Researchers and Extension educators at land-grant universities across the country are producing better predictions of the environmental impacts of climate variability and identifying strategies to mitigate negative outcomes.

SUCCESSFUL EXAMPLES INCLUDE:

- Researchers at land-grant universities across the U.S. are using new and improved methods to measure the economic value of ecosystem goods and services, such as fresh air, clean water, biodiversity, open space and recreation. With accurate valuations, government agencies, nonprofit organizations, land managers and private landowners are able to estimate potential losses under certain climate scenarios and weigh the costs and benefits of different management and mitigation options so they can make cost-effective decisions.
- For the first time, researchers applied a model to **New England** watersheds that simultaneously accounts for the whole suite of factors related to climate change and its impacts. The model predicts a significant increase in snow days and extremely hot summer days, as well as a drastic decline in aquatic habitat suitable for cold-water fish species. Predictions from a reliable model will help guide efforts to adapt to or mitigate these changes.
- Climate scientists predict an increase in severe storms, which impair the ability of streams and rivers to naturally clean up pollution coming from urban areas and farmland. To improve understanding of how streams and rivers clean up pollution and how to improve watershed management in the face of more strong storms, University of **New Hampshire** scientists are using innovative, high-tech sensors to measure nitrate concentrations under different flow conditions in area streams and rivers.
- Students in the Climate Corps, a program developed by University of Connecticut Extension, are helping **Connecticut** towns adapt to and mitigate the impacts of change in weather patterns. During a fall semester class, students reviewed local coastal hazards and restoration

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projects and learned about local decision-making processes and relevant federal and state legal frameworks. In the spring, students worked face-to-face with town officials and community members to help them develop effective adaptation strategies, communicate with the public and marshal resources.

CLIMATE SHIFTS CHANGE WHERE ANIMALS CAN SURVIVE AND THRIVE

In the **Great Lakes Region**, snowshoe hares use their coloring—white in winter and brown in summer—as camou-

flage from predators, including small, carnivorous mammals called fishers. Researchers found that the recent local extinction of snowshoe hares is directly related to shorter periods of snow cover, which make the hares easier to spot. In the absence of snowshoe hares, fishers are preying on young porcupines instead, leading to concerns that their populations will also dwindle. A better understanding of how climate patterns affect habitats and predator-prey relationships will help develop effective management strategies that offset losses due to climate change.

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The Land-Grant University System is a uniquely American institution, and has operated successfully for more than a century. The landgrantimpacts.org website documents and demonstrates the collective and individual impacts of the national system of joint teaching, research, and extension institutions.

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