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Small Mammal Habitat on the Penobscot Experimental Forest

Wildlife habitat ecologist Alessio Mortelliti examines response of wild small animals to a changing environment

How animals react to an environment that is transforming due to human behavior and climate change is at the core of research being conducted by Alessio Mortelliti, assistant professor of wildlife habitat ecology at UMaine.

In the same way that a human's personality affects his or her professional success, an animal's personality affects its chance of survival. To test this, Mortelliti and his students set up a study in the Penobscot Experimental Forest. For five months each year, the researchers capture and tag mammals and measure their personalities using tests to determine how shy, aggressive or active they are. The animals are then tested several more times to see which are at more of an advantage in their environment.

Another aspect of the project relates to how individuals with different personality types make decisions in front of seeds and how those decisions affect the composition of Maine's forests.

Understanding how individual animals and populations are affected by global change is important, especially in a state such as Maine, which represents either the northern or southern edge of the range of many species. By favoring certain plant seeds over others, small mammals help shape forest composition.

If certain personalities in a species population become homogenized, the capability of populations to adapt to land-use change will become affected. In the long term, species need variation in personality to preserve their evolutionary potential.

Because small mammals play a fundamental role in the process of forest regeneration, understanding the impact they can have on the structure and species composition of the forest is critical.

Resource Links

Catalina, E. 2018. Wallflower or risk-taker? UMaine Today.

Brehm A.M., Mortelliti A. 2021. Land-use change alters associations between personality and microhabitat selection. Ecological applications

Boone S., Brehm A.M., Mortelliti A. 2021. Seed predation and dispersal by small mammals in a landscape of fear: effects of personality, predation risk, and land-use change. Oikos

Boone S., Mortelliti A. 2019 Small mammal tree seed selection in mixed forests of the Eastern United States. Forest Ecology and Management.

YouTube Videos

Small Mammals, Big Personalities

Carnivores of Maine

"Research in my lab is focused on the impact of global change on vertebrate species (mammals and birds). We combine large-scale field-based projects with cutting-edge quantitative approaches."