

Protecting rare species can benefit human life

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Preserving rare species for the sake of global biodiversity has long been the primary focus for conservationists.

To better protect rare animals, insects and plants, and to prepare for an uncertain future influenced by climate change, a team of researchers is aiming to merge this [conventional wisdom](#) with a new way of thinking: arguing researchers needs to better understand how rare species [benefit](#) people outside of their existence value.

In a new paper published Thursday in the journal *Trends in Ecology and Evolution*, researchers with the Long-Term Ecological Research Network (LTER) outlined an agenda for improving our understanding of how rare species help support [human lives](#) and well-being by contributing to the benefits of ecosystems on which people depend.

Such an understanding is especially important given a recent United Nations report that warns up to 1 million species are at risk of extinction due to [human activity](#).

The novel approach is poised to help global policy initiatives, such as the UN Intergovernmental Panel on Biodiversity and Ecosystem Services, that are trying to respond to the world's biodiversity crisis and protect nature's benefits to people.

"If rare species that are of the most interest to conservation also benefit people's lives, it creates an added incentive to protect them," said lead

researcher Laura Dee, assistant professor of conservation sciences at the University of Minnesota's College of Food, Agricultural and Natural Resource Sciences.

"Rare species tend to be different from some of the other species we find in ecosystems. People are starting to think about whether that means they might play a unique role in the future that might otherwise not be represented by the more [common species](#)."

Few studies have looked into the role rare species play in providing the natural benefits of ecosystems on which people depend. Thus, researchers don't know much about which rare species matter to nature's life-supporting services, like storing carbon and providing food.

Climate change is creating even more urgency to understand their roles and what losing them might mean. Researchers found that rare species may offer a kind of insurance against an [uncertain future](#), and by overlooking them in research studies, ecologists risk missing opportunities to buffer the worst effects of climate change.

The team found that:

- rare species contribute to their ecosystems and support human life in a variety of unique, often unconventional ways, such as keystone species or plants that support soil fertility;
- likewise preserving rare species can have a direct positive impact on human life. For example, restoring populations of bluefin tuna could restore their role as a provisioner of food for people, and protecting giant sequoias can help store airborne carbon that makes climate change worse;
- humans have an incentive to protect rare species whose impacts on our lives are less obvious, because new diseases or biotechnological breakthroughs could create situations in which

rare species provide benefits to people. This has happened before: past discoveries found that the rare Madagascar rosy periwinkle, *Catharanthus roseus*, contains compounds useful as medicine for childhood leukemia.

Assessing [species](#) based on their benefits to humanity under [climate change](#) will better inform conservation decisions, Dee said, shifting decision-making to focus on what the future might look like, rather than what conditions are like today.

"Knowing when, and to what extent, [rare species](#) positively affect people's lives can help identify when our multiple conservation goals are aligned," Dee said.

More information: Laura E. Dee et al, When Do Ecosystem Services Depend on Rare Species?, *Trends in Ecology & Evolution* (2019). [DOI: 10.1016/j.tree.2019.03.010](#)

Provided by University of Minnesota

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