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Introducing invasive plant life? You're in luck

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In a recent study, a Brown researcher and a colleague have challenged the conventional understanding of the dangers of introducing new species to existing ecosystems.

The study, published in the Proceedings of the National Academy of Sciences by Dov Sax, assistant professor of biology, and Steven Gaines, a professor at the University of California, Santa Barbara, found that invasive plant species have rarely caused the extinction of native plant species on islands.

Sax said this discovery was unexpected because the introduction of exotic birds and other terrestrial vertebrates to islands frequently leads to extinction of native species.

Additionally, on the islands the scientists examined in their study, more exotic plant species are becoming naturalized over time, and this process shows no signs of slowing. As a result, biodiversity in these areas is steadily increasing.

Furthermore, the results of the study have helped further scientists' understanding of what causes extinctions, allowing them to better avoid these future events.

The study suggests that invasive terrestrial vertebrates are more threatening to native species than invasive plants because vertebrates are more likely to be predators. In cases involving the introduction of exotic terrestrial vertebrates, "the combined influence of predation acting alone and predation acting in concert with other factors is believed to account for 98 percent of all extinctions," says the study.

The competition between exotic and native plants does not usually lead to immediate extinctions, so exotic plants are able to gradually become a part of the islands' biodiversity.

"The number of new exotic species is just going up every year," said Sax. "That's surprising because the expectation would be that the number should be starting to level off at some point if these islands are filling up with species. And so there's just no evidence that these islands are filling up. There seems to be room for more and more species to be added."

The findings offer a better understanding of conservation strategies such as assisted migration, in which a threatened species is relocated to a more advantageous location.

"On some level, my work suggests, on islands -- if that can be generalized -- is that you could probably move plants without causing other plants to go extinct," Sax said.

But there are still concerns that invasive plants might contribute to the long-term extinction of native plant species. According to Sax, some native species might be experiencing what is called "extinction debt".

"What's really the next level is figuring out how extinction debt works," said Sax, who hopes that his research will address the possibility of long-term extinctions that are not immediately apparent.

For the time being, scientists like Sax choose to err on the side of caution. Until more is known about extinction debt, "you probably wouldn't want to move plants around," said Sax, whose next research project will investigate the phenomenon.

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