

More funding for long-term studies necessary for best science, environmental policy

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Credit: Oregon State University

Environmental scientists and policymakers value long-term research to an extent that far outstrips the amount of funding awarded for it, according to a study published today.

Graduate students and faculty members in the Oregon State University College of Science were part of a collaboration that evaluated the perceived benefits of long-term ecological and environmental studies - known as LTEES - to both researchers and those who determine

environmental policy.

The issue is particularly important because support for LTEES by agencies such as the National Science Foundation is declining even though such research is disproportionately valued in comparison to the one- to five-year studies the agencies tend to support.

The OSU group was among 36 researchers who collectively analyzed the perceived value of LTEES, which can run for multiple decades, in research published in *BioScience*. The evaluation noted the policymaking and scientific communities' growing appreciation and demand for studies that last much longer than the ones typically being funded.

Specifically, the scientists found:

- The greater a scientific journal's impact factor - the frequency with which its articles are cited in other scholarly articles - the higher its percentage of articles dealing with long-term studies;
- The longer a study lasts, the more an article about it is cited;
- In the policy-informing ecological reports of the U.S. National Research Council, long-term environmental studies have representation that's greater than their frequency in scientific journals;
- The authors of those reports expressed more demand for LTEES than they did for short-term research.

"For a long time, 'monitoring' has been a word you never put in a grant proposal, simply because if you did your work was perceived as not being hypothesis-driven research," said Mark Novak, assistant professor of integrative biology at Oregon State.

"But many [environmental scientists](#) have long known from personal experience that you can't know the value of new events unless you've

studied a system long enough. The relative investment in LTEES by ecologists and funders needs to be seriously reconsidered, because LTEES advance our understanding of ecology the most, and contribute disproportionately to informing policy."

The collaboration also found that among the comparatively few long-term studies that do exist, most are limited to single species or pairs of species.

"It's not that short-term research isn't important," said Bruce Menge, the Wayne and Gladys Valley Professor of Marine Biology at Oregon State. "Both short- and long-term are really valuable. A shorter term can give you a more mechanistic understanding of long-term patterns. But the longer time series you have, the more power you have to understand changes.

"Ideally short- and long-term should go hand in hand," Menge said. "We're hoping to provide a prod to funding agencies, and give at least those in an agency who do appreciate long-term research some ammunition for reconsidering the allocation of funds."

Menge has been studying intertidal rocky zones at numerous sites on the Oregon coast for more than three decades, analyzing ecological processes and patterns of community structure. The intertidal community includes sea stars, whose population was nearly wiped out three years ago by an epidemic of sea star wasting disease.

"One of the consequences of the disease was a huge influx of baby sea stars after the peak of the wasting was over," Menge said. "We wouldn't have really known the significance of that if we hadn't been keeping track of how abundant [sea stars](#) were over the last 20-some years. The influx would have been remarkable, but we'd have had no idea how remarkable it truly was."

Species studied by another of Menge's OSU colleagues, assistant professor Kirsten Grorud-Colvert, are rockfishes, important commercial fishes whose long lifespan is a challenge for researchers being funded for only a few years.

"Rockfish can live for more than 100 years," she said. "Three years doesn't do it for us. If we want environmental research that effectively informs policy, that means we need funding cycles - and funding agencies - to help build that long-term storehouse of science. That's how we can meet the demand for policy-relevant data."

Graduate students and faculty from the University of California, Santa Cruz, joined the Oregon State scientists in the collaboration.

More information: *BioScience*, [DOI: 10.1093/biosci/biw185](https://doi.org/10.1093/biosci/biw185)

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