

Promotion Recommendation
The University of Michigan
School of Natural Resources and Environment

Bradley J. Cardinale, associate professor of natural resources, with tenure, School of Natural Resources and Environment, and associate professor of ecology and evolutionary biology, without tenure, College of Literature, Science, and the Arts, is recommended for promotion to professor of natural resources, with tenure, School of Natural Resources and Environment, and professor of ecology and evolutionary biology, without tenure, College of Literature, Science, and the Arts.

Academic Degrees:

Ph.D. 2002 University of Maryland, Biology
M.S. 1996 Michigan State University, Fisheries and Wildlife
B.S. 1993 Arizona State University, Biology

Professional Record:

2012 – present Associate Professor, School of Natural Resources and Environment, University of Michigan
Associate Professor, Department of Ecology and Evolutionary Biology, College of Literature, Science, and the Arts, University of Michigan
2011 – 2012 Assistant Professor, School of Natural Resources and Environment, University of Michigan
Assistant Professor, Department of Ecology and Evolutionary Biology, College of Literature, Science, and the Arts, University of Michigan
2010 - 2011 Associate Professor, Department of Ecology, Evolution and Marine Biology, University of California-Santa Barbara
2005 – 2010 Assistant Professor, Department of Ecology, Evolution and Marine Biology, University of California-Santa Barbara
2002 – 2005 Postdoctoral Fellow, Department of Zoology, University of Wisconsin-Madison

Summary of Evaluation:

Teaching: Professor Cardinale is an energetic and dedicated teacher with a commitment to excellence in all settings. His teaching portfolio focuses on some of the most challenging applications of ecology to conservation and ecosystem management, including Conservation Biology (a core course in the conservation ecology curriculum at SNRE), Ecosystem Services (a novel, interdisciplinary class co-taught with an environmental economist) and Ecological Restoration (also interdisciplinary, co-taught with a landscape architect).

Professor Cardinale is one of only two conservation ecologists at SNRE who has co-taught a course with faculty from other fields. Such crossover courses are quite time-consuming, but are also critical to the success of the SNRE degree programs. Professor Cardinale has also incorporated a series of innovative laboratories, simulations, and field-based exercises into his classes that have strong appeal to students and improve the learning process considerably.

Research: Professor Cardinale is a conservation ecologist who combines mechanistic theory with field and laboratory experiments, as well as meta-analyses, to ask questions about the conservation of biodiversity and the relationship between biodiversity and ecosystem function and services. In addition to his work on biodiversity and ecosystem function, he has made important contributions to the applied field of restoration ecology. In particular, his work on Chinook salmon provides a cautionary tale about the importance of considering all life-history stages of an organism when designing restoration projects.

Professor Cardinale is a prolific researcher who publishes in the very best journals in the field, including *Science*, *Nature*, *PNAS*, *Ecology*, and *Ecology Letters*, and his papers are frequently cited. In 2014, Thomson Reuters named him one of the 10 most cited researchers in the field of environment/ecology, and, in 2013, he was elected as a fellow of the American Association for the Advancement of Science. Moreover, he is frequently a co-author with his students.

Professor Cardinale has an impressive record of research funding. To date, he has received close to \$6 million in grant support with \$5 million of these as a PI. Since he joined SNRE, he has secured over \$4,000,000 in additional external funding, including funding under NSF's Dimensions of Biodiversity program, NSF's Emerging Frontiers in Research & Innovations program, and the Socio-Environmental Synthesis Center (SESYNC). While smaller in size, we are especially pleased with a grant proposal that was recently recommended for funding by NSF which would provide under-represented minority students with the opportunity to do research rotations in the Cardinale lab.

Recent and Significant Publications:

Venail, P.A., A. Narwani, K. Fritschie, M. A. Alexandrou, T. H. Oakley, and B. J. Cardinale. 2014. The influence of phylogenetic relatedness on competition and facilitation among freshwater algae in a mesocosm experiment. *Journal of Ecology*, DOI: 10.1111/1365-2745.12271.

Fritschie, K. J., B. J. Cardinale, M. A. Alexandrou, and T. H. Oakley. 2014. Evolutionary history and the strength of species interactions: testing the phylogenetic limiting similarity hypothesis. *Ecology*, 95:1407-1417.

Allen, D. C., B. J. Cardinale, and T. Wynn-Thompson. 2014. Integrating ecological principles into interdisciplinary ecogeoscience research. *BioScience*, 64: 444-454.

Boyero, L., B. J. Cardinale, M. Bastian, and R. G. Pearson. 2014. Biotic vs. abiotic control of decomposition: A comparison of the effects of simulated extinctions and changes in temperature. *PLoS One*, 9:e87426.

Byrnes, J. E. K., L. Gamfeldt, F. Isbell, J. E. Duffy, J. S. Lefcheck, J. N. Griffin, A. Hector, B. J. Cardinale, D.U. Hooper, L. E. Dee. 2014. Investigating the relationship between biodiversity and ecosystem multifunctionality: Challenges and solutions. *Methods in Ecology & Evolution*, 5:111-124.

Service: Within SNRE, Professor Cardinale has served on several committees, most recently spending two years as the coordinator of the conservation ecology field of study. Outside SNRE/UM, Professor Cardinale has been elected or appointed to several key national or international committees that will influence the development of biodiversity science for many

years to come. For example, in 2013 he was elected to the Science Committee of Future Earth, the International Council of Science initiative to unify the United Nation's Environmental Change Programs. Similarly, he has served on the freshwater biodiversity committee of DIVERSITAS, the United Nations Environment Program charged with summarizing biodiversity science to develop international policy recommendations for conservation. He has served as a member (and founding PI) of the science working group of the Stream Experimental and Observational Network (STREON). STREON seeks to monitor, understand, and predict the health of stream ecosystems under a series of environmental challenges.

External Reviewers:

Reviewer A: “[Professor Cardinale’s] papers have led the field in being concrete and rigorous examinations of the mechanistic causes of community and ecosystem level effects.”

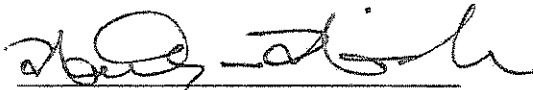
Reviewer B: “Cardinale is among the most productive ecologists of his cohort.”

Reviewer C: “[Professor Cardinale] is not a rising star, he IS a clear star of the field.”

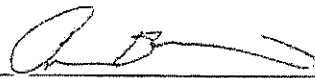
Reviewer D: “[Professor Cardinale] is among the top 10 ecologists in the nation working in the area of biodiversity and its importance for ecosystem function and human services.”

Reviewer E: “In terms of quality of his writings, the candidate’s performance is truly exceptional, with well over half of his output published in excellent (e.g. *Ecology*, *Journal of Animal Ecology*, *American Naturalist*) or top-notch journals (e.g. *Nature*, *Science*, *Ecology Letters*).”

Summary of Recommendation: Professor Cardinale has an outstanding record of research accomplishments and is widely recognized as a leader in the fields of biodiversity and its relationship with ecosystem function and services. His work is highly cited, and he has been very successful in competing for extramural support. He is a good teacher who is committed to consistently improving his classroom performance. His external recognition and service are exceptional. We recommend Bradley J. Cardinale for promotion to professor of natural resources, with tenure, School of Natural Resources and Environment, and professor of ecology and evolutionary biology, without tenure, College of Literature, Science, and the Arts.



Marie Lynn Miranda, Ph.D.
Professor and Samuel A. Graham Dean
School of Natural Resources and Environment



Andrew D. Martin
Dean, and Professor of Political Science
College of Literature, Science, and the Arts