

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

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

Academic Degrees:

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

Professional Record:

2011 – present Assistant Professor, School of Natural Resources & Environment, University of Michigan
2011 – present Assistant Professor, Department of Ecology and Evolutionary Biology, College of Literature, Science, and the Arts, University of Michigan
2010 Associate Professor (with tenure), Department of Ecology, University of California – Santa Barbara (accelerated promotion)
2005 – 2010 Assistant Professor, Department of Ecology, University of California – Santa Barbara
2002 – 2005 Post-doctoral Research Associate, Department of Zoology, University of Wisconsin – Madison

Summary of Evaluation:

Teaching: Professor Cardinale is a dedicated and successful instructor. His courses are well-prepared, organized, and enthusiastically presented. He taught four different courses and five graduate seminars while at UCSB and received ratings above departmental averages. During his first semester at Michigan, he taught a new course in Conservation Biology. The evaluations of this first course were bimodal in their distribution, reflecting the School's professionally-oriented students and the broad range of backgrounds and interests among SNRE students. Professor Cardinale has outlined positive steps to adjust his teaching approach to address the needs of this broader audience, including engaging with CRLT, using peer review, and providing students with more voice in the classroom. Currently he is developing three new courses and seminars.

Professor Cardinale has been very successful advising post-doctoral scholars and undergraduate student researchers. He has advised eight post-doctoral scholars and 30 undergraduate researchers, and has been research advisor to two doctoral students (both of whom are completing their degrees at UCSB) and currently advises one Master's Degree student and serves on one Ph.D. committee in SNRE. It is noteworthy that the undergraduates he has advised have completed honors theses, co-authored seven publications, and received Best Student Paper at an international conference. Six of these students went on to graduate school. We would expect Professor Cardinale's success in advising graduate students to increase as he has more time at Michigan in the graduate professional and doctoral program at SNRE.

Research: Professor Cardinale is already an internationally renowned leader in the field of biodiversity, particularly for his work on the connections between biodiversity and ecosystem function. His research focuses on understanding the relationships between biological diversity and ecosystem functioning. He is recognized as one of the leading "clear thinkers" as well as a cohesive force that has brought ecologists

with disparate viewpoints into collaboration. His research seeks answers to questions that are of fundamental importance to the science of ecology.

Professor Cardinale has an exceptional extramural funding record, with several million dollars in only eight years after completing his Ph.D., coming primarily from the National Science Foundation. He has had continuous funding in the form of 18 awards since 2001, and the resulting publications have been nothing short of outstanding. Since 1993, he has published 56 peer-reviewed papers, including top journals in his field (five in *Nature*, one in *Science*, three in *Proceedings of the National Academy of Sciences*, and 16 in *Ecology* or *Ecology Letters*). Indeed, it is highly unusual for any scholar, much less one so early in his career, to consistently publish in *Nature*, *Science*, *PNAS*, *Ecology Letters*, and *Ecology*. Another important metric of Professor Cardinale's scientific stature is the frequency with which his peers cite his work. Eight of his papers have over 100 citations and the corpus of his work has been cited over 2,400 times over a relatively short career.

Recent and Significant Publications:

- Cardinale, B.J. 2011. "Biodiversity improves water quality through niche partitioning," *Nature*, 472:86-89.
- Cardinale, B.J. et al. 2009. "Does productivity drive diversity or vice versa? A test of the multivariate productivity-diversity hypothesis in streams," *Ecology* 90:1227-1241.
- Cadotte, M.C., B.J. Cardinale, T.H. Oakley. 2008. "Evolutionary history and the effect of biodiversity on plant productivity," *Proceedings of the National Academy of Sciences* 105: 17012-17017.
- Bruno, J., B.J. Cardinale. 2008. "Cascading effects of predator diversity," *Frontiers in Ecology & the Environment* 10:539-546.
- Cardinale, B.J. et al. 2007. "Effects of plant diversity on biomass production increase through time because of species complementarity," *Proceedings of the National Academy of Sciences* 104: 18123-18128.
- Gross, K., B.J. Cardinale. 2007. "Does species richness drive community production or vice versa? Reconciling historical and contemporary paradigms in competitive communities," *American Naturalist* 170:207-220.
- Cardinale, B.J. et al. 2006. "Effects of biodiversity on the functioning of trophic groups and ecosystems," *Nature* 443:989-992.

Service: While at UCSB, Professor Cardinale was involved in an appropriate amount of university and professional service. He has served on the NSF Ecosystem Ecology panel and other distinguished NSF initiatives and workgroups (e.g., STREON, NEON). His service record has also demonstrated his international reputation, such as serving as an associate editor for *Ecology and Ecological Monographs*, one of the premier journals in his field, and invitations for lectures. He has a strong record of reviewing manuscripts, providing invited lectures to academia and the public, and responding to national media inquiries. While he has been at Michigan for only a few months, his internal service also has included the Cooperative Institute for Limnology and Ecosystems Research Council of Fellows and the Executive Committee of the University of Michigan Biological Station.

External Reviewers:

Reviewer A: "Bradley's scholarship is on a trajectory to match that of the senior leaders, and his impact compares quite favorably with that of the junior colleagues. He has an exemplary publication record both in terms of number of paper published...as well as their quality... His work is being exceedingly well cited for someone at his career stage (2456 total citations according to ISI Web of Science). Furthermore, the citations are from scientists across the globe, evidence that the international ecological community is paying a lot of attention to his work. ... Admirably, he does more than his fair share of the vital job of serving on NSF grant review panels."

Reviewer B: "The number of publications, the proportion in good journals, the importance of the areas he addresses – all of these are off the charts, in any comparative sense. I can't think of anyone who does this much, across this broad a range, this effectively. ...they represent a substantial and meaningful body of work that is well recognized internationally."

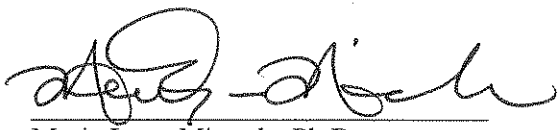
Reviewer C: "He seems tremendously productive....several large NSF awards suggest a leadership role. Few assistant professors can claim the level of productivity demonstrated here."

Reviewer D: "His record is truly outstanding... ..he is well beyond the Assistant Professor stage and you should promote him as quickly as possible. ... His funding is outstanding and more typical of a mid-career researcher... operating at full throttle. ... His scholarship is influencing the field of ecology. ...among the best in the area of biodiversity studies."

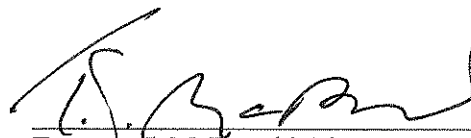
Reviewer E: "There is no question that Brad should be promoted with tenure and his thoroughly impressive promotion and tenure package speaks for itself. ...highly driven and creative scholar. ... Brad's work is persuasive, highly visible and well cited. ... Brad is a creative, meticulous, and productive investigator who has demonstrated a superb level of scholarship."

Reviewer F: "His citations are increasing at an exponential rate, and his papers are currently receiving over 500 citations per year. This h-index is outstanding for someone at his career stage... ..close to \$3M in current active funding, with the majority coming from the National Science Foundation. ...already among the top 10 ecologists in the nation who focus their efforts on biodiversity of ecosystems... ..one of the world's leading mid-career aquatic ecologists... You are very fortunate to have him on your faculty."

Summary of Recommendation: Professor Cardinale is one of the most accomplished and highly cited ecologists of his generation and is a tremendous asset to our schools and to the University of Michigan. We enthusiastically recommend Bradley J. Cardinale for promotion to associate professor of natural resources, with tenure, School of Natural Resources and Environment, and associate professor of ecology and evolutionary biology, without tenure, Department of Ecology and Evolutionary Biology, College of Literature, Science, and the Arts.



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



Terrence J. McDonald, Ph.D.
Arthur F. Thurnau Professor,
Professor of History and Dean
College of Literature, Science, and the Arts

May 2012