

PROMOTION RECOMMENDATION

The University of Michigan
School of Natural Resources and Environment

William Currie, Assistant Professor of Natural Resources and Environment, School of Natural Resources and Environment, is recommended for promotion to Associate Professor of Natural Resources and Environment, with tenure, School of Natural Resources and Environment.

Academic Degrees:

1995 Ph.D. Natural Resources, University of New Hampshire Institute for the Study of Earth, Oceans and Space
1992 M.S. Environmental Sciences, University of Virginia
1983 B.S. Physics, Brown University

Professional Record:

2003 Assistant Professor (Ecosystem Modeling), School of Natural Resources and Environment, University of Michigan
1997-2003 Assistant Professor (Forest Ecology and Biogeochemistry), Appalachian Laboratory, University of Maryland Center for Environmental Sciences
1995-1997 Visiting Postdoctoral Scholar, The Ecosystems Center, Marine Biological Laboratory, Woods Hole, MA.

Summary of Evaluation:

Teaching – Professor Currie teaches a large undergraduate course that forms the foundation for analytical thinking and analysis in the Program in the Environment (PitE). This course is required by all concentrators, and as a gateway course fosters student interest in statistics, geographic information systems, and computer modeling. Professor Currie has re-invigorated teaching this important area, which has been key to curriculum development for PitE. At the advanced undergraduate/graduate level, Professor Currie has successfully implemented a course in ecosystem modeling, in which students learn the conceptual approaches enabling them to translate ecological processes mathematically into computer simulation models of ecosystems. The ability to do this lies at the heart of sustainable resource management. Professor Currie's course prepares students well to meet current and future intellectual challenges in this area, as the attached student comments make clear. He has been active in graduate student mentoring; currently he chairs two doctoral committees and two master's committee, and is a member of six Ph.D. committees.

Research – Professor Currie's research lies at the confluence of ecosystem science, biogeochemistry, and computer modeling of dynamic systems. He develops ecological models from first principles and subsequently links the models to real-world, large-scale empirical data—ground-truthing the models. His work is intrinsically interdisciplinary, and requires work with scholars across quite disparate fields; he regularly publishes with them. He has achieved an impressive level of productivity in several fields, as well as ground-breaking interdisciplinary work; as the depth and breadth of his inquiry increases, so, in recent years, has the number of his co-authors. His approach is widely recognized as novel, and he is a clear leader in this area of ecosystem science. Professor Currie has been successful in obtaining extramural support for his research program, with extramural funding consistently since 1995. He has obtained both grants on which he is the sole Principal Investigator, and (much larger) grants from NSF for which he serves as co-PI. In the past five years,

he has published 11 peer-reviewed articles in journals such as *Ecosystems*, *Forest Ecology and Management*, *Trends in Ecology and Evolution*, *Ecological Applications*; he is senior or sole author on four. He currently has three manuscripts under review; one was published and two new ones submitted this fall.

Recent and Significant Publications:

- Currie, W.S., K.J. Nadelhoffer, and J.D. Aber. 2004. Redistributions of ^{15}N highlight turnover and replenishment of mineral soil organic N as a long-term control on forest C balance. *Forest Ecology and Management* 196: 109-127.
- Johnston, C. A., D. D. Breshears, Z. G. Cardon, W. S. Currie, W. R. Emanuel, J. B. Gaudinski, P. Groffman, R. B. Jackson, K. Lajtha, D. W. Nelson, W. M. Post, G. J. Retallack, R. Stallard, and L. Wielpolski. 2004. The frontier below: Carbon cycling in soil. *Frontiers in Ecology and the Environment* 10:522-528.
- Currie, W.S. 2003. Relationships between carbon turnover and bioavailable energy fluxes in two temperate forest soils. *Global Change Biology* 9: 919-930.
- Currie, W.S., and K.J. Nadelhoffer. 2002. The imprint of land use history: Patterns of carbon and nitrogen in downed woody debris at Harvard Forest. *Ecosystems* 5:446-460.
- Currie, W.S., K.J. Nadelhoffer, and B. Colman. 2002. Long-term movement of ^{15}N tracers into fine woody debris under chronically elevated N inputs. *Plant and Soil* 238:313-323.
- Currie, W.S. 1999. The responsive C and N biogeochemistry of the temperate forest floor. *Trends in Ecology and Evolution* 14: 316-320.

Service – Professor Currie has provided a high level of service to his institution, and his field at the national level. At the University of Michigan he served on the Program in the Environment's faculty advisory board; he also serves as a faculty associate in the Applied Physics Program. He has served on the Ecology and Evolutionary Biology faculty search committee for an ecologist, on SNRE's Ph.D. committee, the steering committee of SNRE's Interdisciplinary Seminar and Workshop series, and on the selection committee for the Doris Duke Fellowships. His service at previous institutions is similarly exemplary. At the national level, he serves as associate editor of the journal *Biogeochemistry*, as an NSF panelist for the Ecosystem Studies Program and a panelist at EPA for the START Grants program, on the finance committee for the Ecological Society of America, and serves as a reviewer for 12 journals and on at least seven national committees (e.g., NSF Division of Environmental Biology, NSF Integrative Research Challenges).

External Reviewers:

Reviewer (A)

"Bill is a creative and productive scientist widely recognized as a leader in nutrient cycling and ecosystem ecology."

"Bill is one of the top few ecosystem modelers of his generation."

"I regard Bill's models, especially TRACE, as representing the pinnacle of current sophistication."

Reviewer (B)

"...there is not one paper that he has published that is conceptually trivial, will not stand the test of time (be easily dismissed), or is weak in terms of data, thought or structure—and that is an extremely rare assessment for any scientist."

Reviewer (C)

“He has worked very effectively between a model of nutrient cycling in forest ecosystems (TRACE) that he developed and large-scale field experiments in which tracers were applied to gain substantial insight into the controls of nutrient cycling in forests. He has generalized what he learned thereby—appropriately—and in so doing has made a significant contribution to our understanding of forest biogeochemistry.”

Reviewer (D)

“Bill has a rare set of skills that we desperately need in Ecology. He has the potential to become a very big name in the field and I am sure he will do great things no matter where he is.”

Reviewer (E)

“He has received national and international recognition as a researcher in ecosystem ecology, with an emphasis on simulation modeling.”

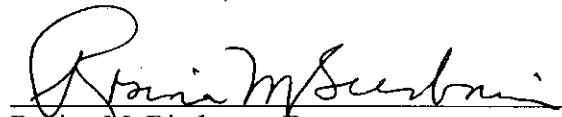
Reviewer (F)

“His major strength is to combine field experience running biogeochemistry experiments with a strong ecosystem modeling background. It is rare that an ecosystem ecologist is equally proficient as a field experimental scientist and ecosystem computer modeler.”

“Bill’s papers do an excellent job of combining computer modeling results with experimental field data and using ecosystem models to better understand the basic principles in ecosystem ecology.”

Summary of Recommendation:

Professor Currie is a creative, productive, and innovative scholar, who has gained national recognition for his work modeling complex ecological interactions and connecting models to empirical findings in ways that yields new understanding. He integrates courses that form the foundation for quantitative analysis in the Program in the Environment and the School of Natural Resources and Environment; moreover, he mentors graduate students successfully. His service is significant at the School, University, and national level. It is with the support of the Promotion and Tenure Committee that I recommend him for promotion to Associate Professor of Natural Resources and Environment, with tenure.



Rosina M. Bierbaum, Dean
School of Natural Resources and Environment

May 2006