

REUBEN P. KELLER

**CONTACT:**

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**EDUCATION:**

**University of Notre Dame, Department of Biological Sciences**, Notre Dame, IN, USA

Ph. D., October 2006

Dissertation: *Ecological and Bioeconomic Risk Assessment for Invasive Species*

Committee: DM Lodge (Advisor), GA Lamberti, JL Tank, G Belovsky

**Monash University**, Melbourne, Australia

BA & BSc(Hons), November 2000

Majors: Biology, Statistics, Geography & Philosophy.

Honors Advisor: Prof. P.S. (Sam) Lake.

**RESEARCH POSITIONS:**

**University of Notre Dame, Center for Aquatic Conservation**

March 2007-present

Post-doctoral Research Associate with Prof. David M. Lodge

**University of Cambridge, Department of Zoology**, Cambridge, UK

October 2006-present

Affiliated Researcher, working with Dr. David Aldridge

**RESEARCH:**

- Community ecology, especially of aquatic systems.
- Bioeconomic modeling.
- Interactions among trade, species invasions and human welfare.

**EDITED VOLUME:**

**Keller RP**, DM Lodge, M Lewis & J Shogren. 2009. *Bioeconomics of Invasive Species: Integrating Ecology, Economics, Policy and Management*. Oxford University Press.

**PEER REVIEWED PUBLICATIONS** (\*undergraduate or high-school teacher mentoree):

**Keller RP**, PSE zu Ermgassen & D Aldridge. In press. Vectors and timing of nonindigenous freshwater species establishment in Great Britain. *Conservation Biology*.

**Keller RP** & DM Lodge. In Press. Prevention: designing and implementing national policy and management programs to reduce the risks from invasive species. *In* Perrings C, M Williamson & M Lonsdale (editors). *Bioinvasions and Globalization*. Oxford University Press.

**Keller RP** & JM Drake. 2009. Trait based risk assessment for invasive species. *In* Keller RP, DM Lodge, MA Lewis & JF Shogren (editors). *Bioeconomics of Invasive Species: Integrating Ecology, Economics, Policy and Management*. Oxford University Press.

- Keller RP**, DM Lodge, M Lewis & J Shogren. 2009. Putting bioeconomic research into practice. *In* Keller RP, DM Lodge, MA Lewis & JF Shogren (editors) *Bioeconomics of Invasive Species: Integrating Ecology, Economics, Policy and Management*. Oxford University Press.
- Lodge DM, M Lewis, J Shogren & **RP Keller**. 2009. Introduction to biological invasions: biological, economic and social perspectives. *In* Keller RP, DM Lodge, MA Lewis & JF Shogren (editors) *Bioeconomics of Invasive Species: Integrating Ecology, Economics, Policy and Management*. Oxford University Press.
- Bampfylde C, A Bobeldyk, JA Murray, K Drury, **RP Keller**, C McIntosh. 2009. Interactions between theoreticians and empiricists: rusty crayfish as a case-study. *In* Keller RP, DM Lodge, MA Lewis & JF Shogren (editors). *Bioeconomics of Invasive Species: Integrating Ecology, Economics, Policy and Management*. Oxford University Press.
- Keller RP** & DM Lodge. 2009. Invasive Species. *In* GE Likens (editor). *Encyclopedia of Freshwaters*. Elsevier, Oxford, UK.
- Keller RP**, K Frang\* & DM Lodge. 2008. Preventing the spread of invasive species: intervention guided by ecological predictions leads to economic benefits. *Conservation Biology* 22:80-88.
- Keller RP**, DM Lodge & DC Finnoff. 2007. Risk assessment for invasive species produces net bioeconomic benefits. *Proceedings of the National Academy of Sciences USA* 104:203-207.
- Keller RP** & DM Lodge. 2007. Species invasions from commerce in live aquatic organisms – problems and possible solutions. *BioScience* 57:428-436.
- Keller RP**, JM Drake & DM Lodge. 2007. Fecundity as a basis for risk assessment of nonindigenous molluscs. *Conservation Biology* 21:191-200.
- Keller RP** & PS Lake. 2007. Potential impacts of a recent and rapidly spreading colonizer of Australian freshwaters: Oriental weatherloach (*Misgurnus anguillicaudatus*). *Ecology of Freshwater Fish* 16:124-132.
- Keller RP**, C VanLoon\*, AN Cox\*, DM Lodge, L-M Herborg & J Rothlisberger. 2007. From bait shops to the forest floor: earthworm use, transport and disposal by anglers. *American Midland Naturalist* 158:321-328.
- Loo SE, **RP Keller** & B Leung. 2007. Freshwater invasions: using historical data to analyze spread. *Diversity and Distributions* 13:23-32.
- Bossenbroek JM, J McNulty & **RP Keller**. 2005. Can ecologists heat up the discussion on invasive species risk? *Risk Analysis* 25:1595-1597.

**OTHER PUBLICATIONS:**

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**Keller RP.** 2007. Trade in live aquatic organisms. *Lakeline* Fall 2007:30-31 (review article in lake management publication).

**Keller RP & DM Lodge.** 2005. Probability of nonindigenous seafood species becoming established. *Conservation Biology* 19:287-288 (letter to editor).

**Drake JM & RP Keller.** 2004. Environmental justice alert: do developing nations bear the burden of risk for invasive species? *BioScience* 54:718-719 (op-ed).

**PUBLICATIONS IN REVIEW:**

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**Drake JM, RP Keller & JA Murray.** Risk factors for invasion by Rainbow Smelt (*Osmerus mordax*) and niche overlap with walleye (*Stizostedion vitreum*) in Flambeau watershed, Wisconsin, USA. (In post-review revision).

**PUBLICATIONS IN PREPARATION:**

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**Keller RP, JM Drake, M Drew & DM Lodge.** Global shipping network and port environmental conditions drive ballast invasions.

**Keller RP, D. Kocev & S. Dzeroski.** Comparison of statistical and new machine learning approaches for risk assessment of species introductions.

**INVITED ORAL PRESENTATIONS (SELECTED):**

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**Keller RP.** April 2009. Global shipping networks drive changing risks of invasion. Odum Conference, Understanding and Managing Biological Invasions as Dynamic Processes. Rensselaerville Institute, New York, USA.

**Keller RP, JM Drake, M Drew & D Lodge.** April 2009. Predicting future Great Lakes invaders: global datasets of shipping traffic and environmental conditions identify high-risk shipping routes. International Conference on Aquatic Invasive Species. Montreal, Canada.

**Keller RP, K Frang & DM Lodge.** December 2008. Risks and bio-economic impacts associated with movement of live bait. Midwest Fish and Wildlife Conference. Columbus, Ohio, USA.

**Keller RP, J Rothlisberger, WL Chadderton & DM Lodge.** October 2008. Prevention strategies for limiting the spread of aquatic invasive species by recreational boaters. Natural Areas Association annual meeting. Nashville, Tennessee, USA.

**Keller RP, PSE zu Ermgassen & D Aldridge.** 2007. The history and future of freshwater invasions in Great Britain. London Freshwater Group Spring 2007 meeting. Linnean Society, London, UK.

**Keller RP, DM Lodge, K Frang\* & DC Finnoff.** 2007. Ecological and economic theory in analyzing risk in biological invasions. Symposium presentation at Ecological Society of America annual meeting, San Jose, CA, USA.

**TEACHING AND MENTORING:**

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**Teaching Fellow**, University of Notre Dame Fall 2007

- Taught upper level *General Ecology* with Prof. Jennifer Tank.

**Laboratory course coordinator**, University of Notre Dame Spring 2006

- Wrote labs for upper level *Biostatistics* lab course and coordinated 10 teaching assistants across five lab sections (~150 total undergraduates).

**Teaching Assistant**, University of Notre Dame Spring 2003 & 2004

- Taught upper level *Biostatistics* lab course section.

**Mentoring experience:**

- NSF Research Experience for Teachers fellow Summer 2005
- NSF Research Experience for Undergraduates student Summer 2004
- Undergraduate research students (>5) during graduate and post-doc career 2001-present

**OUTREACH:**

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**Advisor to Indiana Department of Natural Resources Lake and River Enhancement (LARE) program** 2008-present

- Creating a bioeconomic model so that the LARE program can determine optimal expenditure for controlling invasive aquatic plant species.

**Advisor to City of Chicago program on invasive species** 2006-present

- Advised City as to which species should be banned from sale (many of these species identified through research reported in Keller & Lodge 2007).
- Presented expert testimony at City Council meeting in support of new invasive species ordinance (ordinance passed).

**Member of Indiana Department of Natural Resources working group on risk assessment for aquatic invasive plants** 2007-present

- Developed risk assessment tool for predicting which aquatic plant species proposed for trade are likely to cause harm.

**AWARDS:**

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- *Outstanding teaching in the Biological Sciences*. University of Notre Dame. 2006.
- *Outstanding Graduate Student Teacher Award for Excellence in Teaching*. Kaneb Center for Teaching and Learning, University of Notre Dame. 2006.
- *Striving for Excellence in Teaching certificate*. Kaneb Center for Teaching and Learning, University of Notre Dame. 2006.
- *Fisher Fellowship* (one semester of stipend) awarded by Department of Biological Sciences in Fall, 2003, in recognition of contributions made to non-academic department life (in particular, establishing and serving as founding president of the Biology Graduate Student Organization).

**GRANT WRITING EXPERIENCE:**

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- Co-author of funding proposals to National Science Foundation (2), US Environmental Protection Agency, National Oceanic and Atmospheric Administration (2), National Center for Ecological Analysis and Synthesis.

**WORKING GROUP AND POLICY REVIEW GROUP MEMBERSHIP:**

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Member expert peer review panel for Canada's proposed National Biological Risk Assessment Guidelines, June 2008.

Participated in *Ecological and Economic Science and Management of Invasive Species*.  
Workshop to develop recommendations for COP9 of Convention on Biological Diversity,  
October 2007.

Member *Machine Learning Tools for Ecology* working group. Funded by National Center for Ecological Analysis and Synthesis, 2006-2008.

**PRESS COVERAGE (SELECTED):**

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**Research cited by articles in:** New York Times, Nature Conservancy Magazine, Environmental Science & Technology, newswise.com, suburbanchicagonews.com, Wyoming Public Radio, South Bend Tribune.

**Research described in press releases from:** Union of Concerned Scientists, The Nature Conservancy, Illinois-Indiana SeaGrant, University of Notre Dame, University of Wyoming, the Australian Weeds Co-operative Research Center.

**ACADEMIC SERVICE:**

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- **Reviewer** for *Conservation Biology, Frontiers in Ecology and the Environment, BioScience, Diversity and Distributions, Ecological Applications, Oikos, Limnology and Oceanography, Journal of Environmental Management, Biological Invasions, American Malacological Bulletin, International Journal of Biodiversity Science and Management, Limnologica.*
- **Co-organizer** of Midwest Ecology and Evolution Conference, 2004.