

JAMES B. HEFFERNAN

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EDUCATION

Ph.D. Biology, 2007. School of Life Sciences, Arizona State University, Tempe, AZ.
Dissertation Title: Wetlands as an alternative stable state in desert streams
Advisor: Dr. Stuart Fisher

A.B. Ecology and Evolutionary Biology, 2000. Cornell University, Ithaca, NY

POSITIONS HELD

Assistant Professor of Wetland Ecosystem Ecology, Department of Biological Sciences and Southeast Environmental Research Center, Florida International University, January 2009-

Post-Doctoral Associate, University of Florida Water Institute and School of Forest Resources and Conservation, May 2007-December 2008. Advisor: Dr. Matt Cohen.

Teaching Assistant, Department of Biology, Arizona State University;
Bio 100: The Living World, Fall 2001, Spring 2002
Bio 187: Introduction to Life Sciences, Fall 2005, Spring 2006

Research Assistant, Institute of Ecosystem Studies, Millbrook NY; 2000-2001

PUBLICATIONS

Heffernan, J.B., R.A. Sponseller, and S.G. Fisher. 2008. Consequences of a biogeomorphic regime shift for the hyporheic zone of a Sonoran Desert stream. *Freshwater Biology*. *In press*.
Manuscript available upon request

Roach, W.J., R. Arrowsmith, C. Eisinger, N.B. Grimm, J.B. Heffernan, and T. Rychener. *In Press*. Unintended consequences of urbanization for aquatic ecosystems: a case study from the Arizona desert. *BioScience*.

Heffernan, J.B. 2008. Wetlands as an alternative stable state in desert streams. *Ecology* 89(5): 1261-1271.

Fisher, S.G., J.B. Heffernan, R.A. Sponseller, and J.R. Welter (2007). Functional Ecomorphology: Feedbacks between Form and Function in Fluvial Landscape Ecosystems. *Geomorphology* 89: 84-96. doi:10.1016/j.geomorph.2006.07.013

Grimm, N.B., R.J. Arrowsmith, C. Eisinger, J. Heffernan, D.B. Lewis, A. MacLeod, L. Prashad, W.J. Roach, T. Rychener, and R.W. Sheibley (2005). Effects of urbanization on nutrient biogeochemistry of aridland streams. In R. DeFries, G. Asner, and R. Houghton (editors). Ecosystem interactions with land use change. American Geophysical Union Geophysical Monograph Series.

Sabo, J.L., R. Sponseller, M. Dixon, K. Gade, T. Harms, J.Heffernan, A.Jani, G.Katz, C.Soykan, J.Watts, and J. Welter (2005). Riparian zones increase regional species diversity by harboring different, not more species. *Ecology* 86(1): 56-62.

Heffernan, J.B., and R A. Sponseller (2004). Re-mobilization and processing of nutrients in Sonoran Desert riparian soils following artificial re-wetting. *Biogeochemistry* 70(1):117-134.

Fisher, S.G., R.A. Sponseller, and J.B. Heffernan (2004). Horizons in stream biogeochemistry: Flowpaths to progress. *Ecology* 85(9): 2369-2379.

Stelzer, R.S., J. Heffernan and G.E. Likens (2003). The influence of dissolved nutrients and particulate organic matter quality on microbial respiration and biomass in a forest stream. *Freshwater Biology* 48 (11): 1925-1937.

Manuscripts in Review

Heffernan, J.B. , M.J. Cohen, T.K. Frazer, J.M.Evans, and D.M. Liebowitz. *In review*. Algal blooms and adaptive management in Florida springs: alternatives to the nitrogen enrichment hypothesis. *Ecological Applications*. Manuscript available upon request

Manuscripts in Preparation

Heffernan, J.B., and S.G. Fisher. *In Prep*. Plant-nitrogen interactions during primary wetland succession in a Sonoran desert stream. *Ecology?*

Heffernan, J.B., J.M. Anderies, A.P. Kinzig, and S.G. Fisher. *In Prep*. Desert stream wetlands as a model of biogeomorphic resilience. *American Naturalist*.

Watts, D.L., J.B. Heffernan, and M.J. Cohen. *In Prep*. Soil elevation as an indicator of alternative stable states in the Everglades ridge and slough landscape. *Ecological Applications*.

Heffernan, J.B., M.J. Cohen, and T.K. Frazer. *In Prep*. Nitrogen dynamics in a spring-fed Florida river. *Limnology and Oceanography*.

Heffernan, J.B., D.L. Watts, and M.J. Cohen. *In Prep*. Hydrologic mediation of soil elevation feedbacks in the patterned peatlands of the Florida Everglades. *American Naturalist*.

HONORS

ASU Division of Graduate Studies Dissertation Fellowship, 2006-2007

NSF Graduate Research Fellowship, 2002-2005.

University Graduate Scholarship, Arizona State University, 2001-2003

AWARDS

Pending

Collaborative Research: Controls on Delivery and Fate of Water, Nitrogen and Calcium in a Spring-Fed Karst River. 2009-2012. PI: Wendy Graham, University of Florida. Co-PI with 4 others. \$737,702/3yrs (\$162,638 to JBH at FIU).

St. Johns River Water Management District: "Nitrate removal in Florida Rivers." \$300,000/2 yrs, MJ Cohen PI. Subcontract to JBH at FIU.

Completed

NSF Doctoral Dissertation Improvement Grant: "Temporal Dynamics of Alternative Stable States in a Desert Stream." \$11,300. June 2005-May 2007

ASU Graduate and Professional Students Association Research Grant: "Reciprocal Interactions Between Plant Establishment and Nitrogen Availability in a Sonoran Desert Stream." \$1661. Oct 2004-June 2005

Travel awards from ASU Division of Graduate Studies, School of Life Sciences, and Graduate and Professional Student Association, 2004-2006. \$1600

SERVICE AND SYNERGISTIC ACTIVITIES

Reviewer for: *Ecological Applications*, *Freshwater Biology*, *Geoderma*, *Journal of Arid Environments*, *JGR-Biogeosciences*, *Journal of the North American Benthological Society*

Member: Ecological Society of America, American Society of Limnology and Oceanography, North American Benthological Society

Organizer, Special Session on Nutrients and Hyporheic Processes, Consortium of Universities for the Advancement of Hydrologic Science (CUAHSI), Biennial Science Meeting, July 14th-16th, 2008, Boulder, CO

ASU School of Life Sciences, Graduate Student Committee, 2002-2004

ASU Graduates in the Earth Life and Social Sciences (GELSS), Symposium Committee, 2001-2003

INVITED SEMINARS

Wetlands as an alternative stable state in desert streams. Department of Biological Sciences, Florida International University. February 19th, 2008.

Wetlands as an alternative stable state in desert streams. Department of Fisheries and Wildlife, Michigan State University. January 17th, 2008.

Effects and fates of rising nitrogen loads to Florida springs. Department of Fisheries and Aquatic Sciences, University of Florida. November 9th, 2007.

Wetlands as an alternative stable state in desert streams. Center for Wetlands, University of Florida. October 3rd, 2007.

CONTRIBUTED ORAL PRESENTATIONS (FIRST AUTHOR ONLY)

Heffernan, J.B., M.J. Cohen, and T.K. Frazer. 2008. Nitrogen dynamics in Florida springs. North American Benthological Society, Salt Lake City, UT.

Heffernan, J.B. , M.J. Cohen, T.K. Frazer, J.M.Evans, and D.M. Liebowitz. 2008. Re-evaluating the role of nitrate enrichment in Florida Springs. University of Florida Water Institute Symposium, Gainesville, FL.

Heffernan, J.B. and S.G. Fisher, 2007. Wetlands as an alternate state in desert streams. American Society of Limnology and Oceanography, Santa Fe, NM.

Heffernan, J.B. and S.G. Fisher, 2006. Wetlands as an alternate state in desert streams. Ecological Society of America, Memphis, TN.

- Heffernan, J.B., R.A. Sponseller, and S.G. Fisher, 2006. Effects of herbaceous vegetation on the hyporheic zone of a desert stream. North American Benthological Society, Anchorage, AK.
- Heffernan, J.B., R.A. Sponseller, and S.G. Fisher, 2004. Vegetation establishment in a Sonoran Desert stream: Implications for N dynamics. Ecological Society of America, Portland, OR.
- Heffernan, J.B., R.A. Sponseller, and S.G. Fisher, 2003. Re-mobilization and processing of nutrients in Sonoran Desert riparian soils following artificial re-wetting. North American Benthological Society, Athens, GA.

CONTRIBUTED POSTERS

- Heffernan, J.B., M.J. Cohen, J. Martin, T. Rayfield, R. Thomas, J. Delfino, and W. Graham. 2008. Solute delivery and processing in a spring-fed river. Consortium of Universities for the Advancement of Hydrologic Science, Biennial Meeting, July 14-16th, Boulder, CO.
- Watts, D.L., M.J. Cohen, J.B. Heffernan, T.Z. Osborne, and M.W. Clark. 2008. Soil elevation as an indicator of Everglades ridge and slough alternative stable states. University of Florida Water Institute Symposium, Gainesville, FL.

PUBLIC OUTREACH

- Research in the Santa Fe River Hydrologic Observatory: Where does all the nitrate go? October 5th, 2007. Ichetucknee Springs Basin Working Group meeting, Lake City, FL.

GUEST LECTURES AND OTHER PRESENTATIONS

- Geomorphology Seminar (ASU GPH 591; Instructor: Dr. Mark Schmeekle). Wetlands as an alternative stable state in desert streams. April 15th, 2007.
- Geomorphology (ASU GEO 592; Instructor: Dr. J. R. Arrowsmith). Interactions between ecological and geomorphic processes. November 15th, 2006.
- Ecosystems (ASU MBIO 521; Instructor: Dr. S.G. Fisher). Wetlands as an alternative stable state in desert streams. December 5th, 2005.