

Ethan P. White

Department of Biology and the Ecology Center

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Education

Ph.D. Biology (*Distinction*). 2005. University of New Mexico, Albuquerque.
Advisor: James H. Brown

B.A. Biology (*Magna Cum Laude, Distinction*). 1998. Colorado College, Colorado Springs.
Advisors: Marc A. Snyder and Alex Vargo.

Other Training

An introduction to structural equation modeling (ESA, San Jose, August 2007)
Uncertainty and variability in ecological inference, forecasting and decision making: an introduction to modern statistical computation (Duke University, June 2006)
Kullback-Leibler Information in Model Selection (Utah State University, January 2006)
Non-linear dynamics and chaos (University of New Mexico, Spring 2004)
Santa Fe Institute complex systems summer school (Summer 2001)

Research and Professional Experience

Assistant Professor, Utah State University (2007-present)

NSF Postdoctoral Fellow in Biological Informatics, Univ. of Arizona. & U.C. Merced (2005-2007)

Fellowships and Awards

NSF Postdoctoral Fellowship in Biological Informatics 2005-2007

NSF Graduate Research Fellowship 2000-2005

University of New Mexico Biocomplexity Fellowship 2002-2004

Richard G. Beidleman Award (Outstanding Undergraduate in Ecology) – Colorado College 1998

Phi Beta Kappa – Colorado College 1998

Research Program

Many of the most pressing issues in ecology require understanding how biological systems respond to global scale changes in climate and habitat. In order to understand these impacts it is necessary to study ecology at large scales. Research in my lab focuses on using quantitative approaches, including large ecological databases, advanced statistical methods, and theoretical modeling to understand broad scale ecological patterns. To facilitate rapid research in these areas my lab employs a database server that provides access to all of the major macroecological datasets and a small server farm for simulation modeling and complex data analysis. I am also involved in research on the the temporal dynamics of biological systems and on the use of sensor networks for collecting ecological and environmental data.

Publications

Journal Articles

- Thibault, K.M., **E.P. White**, A.H. Hurlbert, and S.K.M. Ernest. 2010. Multimodality in the individual size distribution of bird communities. *Global Ecology and Biogeography* In press.
- White, E.P.** and A.H. Hurlbert. 2010. The combined influence of the local environment and regional enrichment on bird species richness. *American Naturalist* 172:E35-E43.
- Thibault, K.M., S.K.M. Ernest, **E.P. White**, and J.H. Brown. 2010. Complex dynamics of rodent response to precipitation in the Chihuahuan Desert. *Journal of Mammalogy* In press.
- Price, C.A., K. Ogle, **E.P. White**, and J.S. Weitz. 2009. Evaluating allometric scaling models in biology using hierarchical Bayesian approaches. *Ecology Letters* 12:641-651.
- Ernest, S.K.M., **E.P. White** and J.H. Brown. 2009. Metabolic zero-sum dynamics predict long term changes in a tropical forest. *Ecology Letters* 12:507-515.
- Morlon, H., **E.P. White**, R.S. Etienne, J.L. Green, A. Ostling, D. Alonso, B.J. Enquist, F. He, A.H. Hurlbert, A.E. Magurran, B.A. Maurer, B.J. McGill, H. Olf, D. Storch, and T. Zillio. 2009. Taking species abundance distributions beyond individuals. *Ecology Letters* 12:488-501.
- White, E.P.**, B.J. Enquist, and J.L. Green. 2008. On estimating the exponent of power-law frequency distributions. *Ecology* 89:905-912.
- Ernest, S.K.M., J.H. Brown, K.M. Thibault, **E.P. White**, and J.R. Goheen. 2008. Zero-sum dynamics, the niche, and metacommunities: a temporal perspective on community assembly. *American Naturalist* 172:E257-E269.
- Stegen, J. C. and **E.P. White**. 2008. On the relationship between mass and diameter distributions in tree communities. *Ecology Letters* 11:1287-1293.
- White, E.P.**, S.K.M. Ernest, A.J. Kerkhoff, and B.J. Enquist. 2007. Relationships between body size and abundance in ecology. *Trends in Ecology and Evolution* 22:323-330.
- Hurlbert, A.H., and **E.P. White**. 2007. Ecological correlates of geographic range occupancy in North American birds. *Global Ecology and Biogeography* 16:764-773.
- McGill, B.J., R. Etienne, J. Gray, D. Alonso, M. Anderson, H. Benecha, M. Dornelas, B.J. Enquist, J.L. Green, F. He, A.H. Hurlbert, A.E. Magurran, P. Marquet, B. Maurer, A. Ostling, C. Soykan, K. Ugland, and **E.P. White**. 2007. Species abundance distributions: moving beyond single prediction theories to integration within an ecological framework. *Ecology Letters* 10:995-1015.
- McClain, C.R., **E.P. White**, and A.H. Hurlbert. 2007. Challenges in the application of geometric constraint models. *Global Ecology and Biogeography* 16:257-264.
- White, E.P.**, and M.A. Gilchrist. 2007. Effects of population level aggregation, autocorrelation, and interspecific association on the species-time relationship in two desert communities. *Evolutionary Ecology Research* 9:1329-1347.
- Savage, V.M., **E.P. White**, M.E. Moses, S.K.M. Ernest, B.J. Enquist, and E.L. Charnov. 2006. Comment on "The Illusion of Invariant Quantities in Life Histories". *Science* 312:198b.

- Goheen, J.R., **E.P. White**, S.K.M. Ernest, and J.H. Brown. 2006. Intra-guild compensation regulates species richness in desert rodents: reply. Ecology 87:2121-2125.
- White, E.P.**, P.B. Adler, W.K. Lauenroth, R.A. Gill, D. Greenberg, D.M. Kaufman, A. Rassweiler, J.A. Rusak, M.D. Smith, J.R. Steinbeck, R.B. Waide and J. Yao. 2006. A comparison of the species-time relationship across ecosystems and taxonomic groups. Oikos 112:185-195.
- Adler, P.B., **E.P. White**, W.K. Lauenroth, D.M. Kaufman, A. Rassweiler, and J.A. Rusak. 2005. Evidence for a general species-time-area relationship. Ecology 86:2032-2039.
- Goheen, J.R., **E.P. White**, S.K.M. Ernest, and J.H. Brown. 2005. Intra-guild compensation regulates species richness in desert rodents. Ecology 86:567-573.
- Hurlbert, A.H., and **E.P. White**. 2005. Disparity between range map and survey based analyses of species richness: patterns, processes, and implications. Ecology Letters 8:319-327.
- White, E.P.**, S.K.M. Ernest, and K.M. Thibault. 2004. Tradeoffs in community properties through time in a desert rodent community. American Naturalist 164:670-676.
- Thibault, K.M., **E.P. White**, and S.K.M. Ernest. 2004. Temporal dynamics in the structure and composition of a desert rodent community. Ecology 85:2649-2655.
- White, E.P.** 2004. Two-phase species-time relationships in North American land birds. Ecology Letters 7:329-336.
- Lyons, S.K., F.A. Smith, P.J. Wagner, **E.P. White**, and J.H. Brown. 2004. Testing the disease hypothesis for late-pleistocene extinctions using West Nile virus as a model. Ecology Letters 7:859-868.
- White, E.P.** 2004. Factors affecting bat house occupancy in Colorado. The Southwestern Naturalist 49:344-349.
- Ernest, S.K.M., B.J. Enquist, J.H. Brown, E.L. Charnov, J.F. Gillooly, V.M. Savage, **E.P. White**, F.A. Smith, E.A. Hadly, J.P. Haskell, S.K. Lyons, B.A. Maurer, K.J. Niklas, and B. Tiffney. 2003. Thermodynamic and metabolic effects on the scaling of production and population energy use. Ecology Letters 6:990-995.
- Allen, A.P., and **E.P. White**. 2003. Interactive effects of range size and plot area on species-area relationships. Evolutionary Ecology Research 5:493-499.
- White, E.P.**, and S.D. Gehrt. 2001. Effects of recording media on echolocation data from broad band bat detectors. Wildlife Society Bulletin 29:974-978.

Book Chapters

- White, E.P.** 2007. Spatiotemporal scaling of species richness: patterns, processes and implications. Pages 325-346 in D. Storch, P.A. Marquet, and J.H. Brown, editors. Scaling Biodiversity. Cambridge University Press.
- White, E.P.**, and J.H. Brown. 2005. The template: patterns and processes of spatial variation. Pages 31-47 in G.M. Lovett, C.G. Jones, M.G. Turner and K.C. Weathers, editors. Ecosystem Function in Heterogeneous Landscapes. Springer, New York.

Sax, D.F., J.H. Brown, **E.P. White**, and S.D. Gaines. 2005. Dynamics of species invasions: Insights into the mechanisms that limit species diversity. Pages 447-465 in D.F. Sax, S.D. Gaines, and J.J. Stachowicz, editors. *Species Invasions: Insights to Ecology, Evolution and Biogeography*. Sinauer Associates, Sunderland, MA.

Submitted

Stegen, J.C., N.G. Swenson, B.J. Enquist, **E.P. White**, O.L. Phillips, P.M. Jørgensen, M.D. Weiser, A.M. Monteagudo, and P. Núñez Vargas. Variation in above-ground forest biomass across broad climatic gradients. Submitted to Global Ecology and Biogeography.

Grants¹

Current

National Science Foundation (DEB-0953694). CAREER: Advancing macroecology using informatics and entropy maximization. PI: **E.P. White**. 2010-2015.

National Science Foundation (DEB-0827826). Understanding multimodality in animal size distributions (Research Starter Grant). PI: **E.P. White**. 2008-2010.

Completed

National Science Foundation (DBI-0532847). Broad-scale patterns of the distribution of body sizes of individuals in ecological communities (Postdoctoral Fellowship in Biological Informatics). PI: **E.P. White**. 2005-2007.

LTER Network Office workshop grant. Species richness in space and time workshop. PIs: W.K. Lauenroth, **E.P. White** and P.B. Adler. 2004

Pending

National Science Foundation (DEB). Collaborative Research: The macroecology of zero-sum dynamics. PIs: S.K.M. Ernest, **E.P. White**, A.H. Hurlbert.

Invited Workshops

“Tools and fresh approaches for species abundance distributions”. National Center for Ecological Analysis and Synthesis Working Group. 2006-2008. Santa Barbara, CA. Organizers: B. McGill, R.S. Etienne, J.S. Gray, and J.L. Green.

“Scaling Biodiversity”. Santa Fe Institute Workshop. 2004. Prague. (Invited Talk and Participant). Organizers: D. Storch, P.A. Marquet, J.H. Brown, and G.B. West.

“Species richness in space and time”. LTER sponsored working group. 2004. Albuquerque, NM. Organizers: W.K. Lauenroth, E.P. White, and P.B. Adler.

“Species richness in space and time”. LTER All Scientists Meeting Workshop. 2003. Seattle, WA. (Invited Talk and Participant). Organizer: W.K. Lauenroth.

“A Knowledge Network for Biocomplexity”. National Center for Ecological Analysis and Synthesis Working Group. 2001. Organizers: R. Waide, S. Andelman, M.R. Willig.

¹ I do not believe in listing the monetary value of the grants I have received because the true value of grants is in the science they facilitate, not in how much the research costs.

Invited Seminars

“Understanding ecology at broad scales using macroecology and ecoinformatics”. March 30th, 2010. University of Wyoming.

“A metabolic zero-sum approach to community ecology?”. March 28th, 2008. Keynote speaker at 21st Annual Colorado College Biology Day, Colorado Springs, Colorado.

Professional and Community Service

National Science Foundation Panelist (2009 – 18 proposals)

Reviewer: *Science* (1), *Nature* (3), *PNAS* (5), *PLOS Biology* (1), *Proceedings of the Royal Society B* (1), *Ecology Letters* (14), *Ecology* (8), *American Naturalist* (2), *Journal of Animal Ecology* (5), *Global Ecology and Biogeography* (2), *Journal of Ecology* (2), *Oikos* (4), *PLOS One* (2), *Bioscience* (1), *Bulletin of Mathematical Biology* (1), *Functional Ecology* (1), *Journal of Biogeography* (1), *Journal of Theoretical Biology* (1), *NSERC ad hoc* (1), *NSF ad hoc* (1), *Theoretical Population Biology* (1), *Cambridge University Press* (1), *Folia Geobotanica* (1), *Research Letters in Ecology* (1), *Geological Society of America* (1)

External examiner of Ph.D. Theses: Macquarie University (2008)

Teaching and Advising

Courses Taught

Biogeography, Biology 5010/6010, Utah State University (2008, 2009)

Guest Lecturer:

Invasion Ecology, Utah State University (2006)

Biology and the Citizen (Non-majors introductory biology), Utah State University (2005)

Graduate Ecology, Utah State University (2005)

Biogeography, University of New Mexico (2004)

Teaching Assistant, Anatomy and Physiology, University of New Mexico (1999-2000)

Paraprofessional, The Colorado College 1998-1999

Training

Utah State University Teaching Academy

30 hours of instruction on contemporary approaches to teaching (Fall 2007)

Master Teacher Observation

Dr. Andy Anderson, Utah State University (Fall 2007)

Advising

Graduate Students

Xiao Xiao (Ph.D. student; 2008-present)

Recipient of the Utah State College of Science Diversity Fellowship (3 years; \$22,500/yr)

Kenneth Locey (Ph.D. student; 2008-present)

Recipient of the Utah State College of Science Eccles Fellowship (3 years; \$22,000/yr)

Undergraduate Researchers

Mikaelle Giffen (2008-2009), Clayton Bingham (2009-present)

Graduate Student Committees

Current: Ryan Choi (M.S.), Amy Croft (Ph.D.), Sarah Mohlman (Ph.D.), Bridget Olsen (M.S.), Daniel Olson (Ph.D.), Lori Spears (Ph.D.), Glenda Yenni (Ph.D.)

Completed: Chris Feldman (Ph.D., 2008, Utah State University)

Presentations

- Thibault, K.M., E.P. White, A.H. Hurlbert, S.K.M. Ernest. 2009. 93rd Annual Meeting of the Ecological Society of America. Albuquerque, NM.
- White, E.P., B.J. Enquist, J.C. Stegen, S.C. Stark, and C.A. Price. 2008. 92nd Annual Meeting of the Ecological Society of America. Milwaukee, WI.
- Price, C.A., E.P. White, J.S. Weitz, and K. Ogle. 92nd Annual Meeting of the Ecological Society of America. Milwaukee, WI.
- Ernest, S.K.M, E.P. White, and J.H. Brown. 2008. 92nd Annual Meeting of the Ecological Society of America. Milwaukee, WI.
- White, E.P., B.J. Enquist, J.C. Stegen, S.C. Stark, and C.A. Price. 2008. Gordon Research Conference – Metabolic Basis of Ecology, Biddeford, Maine.
- Ernest, S.K.M, E.P. White, and J.H. Brown. 2008. Gordon Research Conference – Metabolic Basis of Ecology, Biddeford, Maine.
- White, E.P., A.H. Hurlbert, and S.K.M. Ernest. 2007. Macroecology of avian size distributions. 92nd Annual Meeting of the Ecological Society of America. San Jose, CA.
- Ernest, S.K.M, J.H. Brown, J.R. Goheen, K.M. Thibault, and E.P. White. 2007. 87th Annual Meeting of the American Society of Mammalogists. Albuquerque, NM.
- White, E.P., B.J. Enquist, S.K.M. Ernest, and J.L. Green. 2006. 91st Annual Meeting of the Ecological Society of America. Memphis, TN.
- Ernest, S.K.M, J.H. Brown, J.R. Goheen, K.M. Thibault, and E.P. White. 2006. 91st Annual Meeting of the Ecological Society of America. Memphis, TN.
- White, E.P., B.J. Enquist, S.K.M. Ernest, and J.L. Green. 2006. Gordon Research Conference – The Metabolic Basis of Ecology and Evolution. Lewiston, Maine.
- Ernest, S.K.M, J.H. Brown, J.R. Goheen, K.M. Thibault, and E.P. White. 2006. Gordon Research Conference – The Metabolic Basis of Ecology and Evolution. Lewiston, Maine.
- White, E.P., and M.A. Gilchrist. 2005. 90th Annual Meeting of the Ecological Society of America. Montreal, Canada.
- Hurlbert, A.H., and E.P. White. 2005. 90th Annual Meeting of the Ecological Society of America. Montreal, Canada.
- Goheen, J.R., E.P. White, S.K.M. Ernest, J.H. Brown, J.F. Merritt, P.L. Meserve, N.A. Slade. 2005. International Biogeography Society Meeting.
- Hurlbert, A.H., and E.P. White. 2005. International Biogeography Society Meeting.
- White, E.P. 2004. Santa Fe Institute Scaling Biodiversity Workshop. Prague, Czech Republic.
- Hurlbert, A.H., and E.P. White. 2004. Southwestern Association of Biologists Annual Meeting. Portal, AZ.
- Lyons, S.K., F.A. Smith, P.J. Wagner, E.P. White, and J.H. Brown. 2004. Geological Society of America's Annual Meeting. Denver, CO.
- White, E.P, S.K.M. Ernest, and K.M. Thibault. 2004. 89th Annual Meeting of the Ecological Society of America. Portland, OR.
- Thibault, K.M., E.P. White, and S.K.M. Ernest. 2004. 89th Annual Meeting of the Ecological Society of America. Portland, OR.

- White, E.P., S.K.M. Ernest, and K.M. Thibault. 2004. Gordon Research Conference – Metabolic basis of ecology. Bates College, ME.
- Lyons, S.K., F.A. Smith, E.P. White, and J.H. Brown. 2004. American Society of Mammalogists Annual Meeting. Humbolt State University, CA.
- White, E. P. 2003. Southwestern Association of Biologists Annual Meeting, Portal, AZ.
- White, E. P. 2003. LTER All Scientists Meeting, Seattle, WA.
- White, E. P. 2003. 88th Annual Meeting of the Ecological Society of America, Savannah, GA.
- Brown, J. H., and E. P. White. 2003. Cary Conference, Millbrook, NY.
- White, E. P. 2003. International Society of Biogeography Meeting, Mesquite, NV.
- White, E. P. 2002. Southwestern Association of Biologists Annual Meeting, Portal, AZ.
- Meehan, T. D., and E. P. White. 2002. Southwestern Association of Biologists Annual Meeting, Portal, AZ.
- White, E. P. 2002. 87th Annual Meeting of the Ecological Society of America, Tucson, AZ.
- White, E. P. 2002. British Ecological Society's Macroecology Conference, Birmingham, England.
- White, E. P. 1998. Guild of Rocky Mountain Population Biologists Annual Meeting, Nederland, CO.
- White, E. P. 1997. North American Symposium on Bat Research, University of Arizona, Tucson, AZ.