

JAMES D. FORESTER

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RESEARCH INTERESTS

I am interested in understanding how population and community dynamics are affected by broad-scale perturbations. Specifically, I want to understand how animal movement patterns are affected by changes in the spatial configuration and amount of habitat and how these changes feed back to affect population and ecosystem-level processes.

EDUCATION

- Ph.D. University of Wisconsin – Madison, Zoology 2005
Monica Turner as advisor: “Animal movement and habitat use in heterogeneous landscapes: elk (*Cervus elaphus*) responses to forage, predation and disturbance in Yellowstone National Park, USA.”
- M.S. University of Wisconsin – Madison, Zoology 2002
Monica Turner as advisor: “Landscape and local factors affecting northern white cedar recruitment in the Chequamegon National Forest, WI.”
- B.S. Frostburg State University, Wildlife/Fisheries, *magna cum laude* 1997
Dual major: Biology; Minor: Chemistry

EMPLOYMENT

- Asst. Prof., Dept. Fisheries, Wildlife & Conservation Biol., U Minnesota July 2010 – present
- Postdoctoral Fellow, Dept. of OEB, Harvard University Sep. 2008 – June 2010
I worked with Paul Moorcroft to develop mechanistic models of animal movement.
- Postdoctoral Scholar, Dept. of Ecology and Evolution, U Chicago Sep. 2007 – Sep. 2008
I worked with Tim Wootton to study the community dynamics of intertidal mussel beds and the dispersal of juvenile salmon in coastal Washington.
- Research Associate, CISES, University of Chicago Sep. 2005 – Aug. 2007
At the Center for Integrating Statistical and Environmental Science, I worked with Tim Wootton, Cathy Pfister and Greg Dwyer on the project, “Model Choice and Ecological Complexity.”
- Research Assistant, Department of Zoology, UW–Madison Jan. 2001 – Aug. 2005
- Teaching Assistant, Department of Zoology, UW–Madison Aug. 2000 – Jan. 2001
- US Fish and Wildlife Service, Chesapeake Bay Field Office, MD Apr. 1999 – Aug. 2000
I worked with Dr. Fred Pinkney on a study of the relationship between the prevalence of malformations in frogs and pesticide inputs on R5 National Wildlife Refuges.

SOCIETY MEMBERSHIPS

Ecological Society of America, International Association for Landscape Ecology, The Wildlife Society

HONORS AND AWARDS

Duke Summer Institute on Uncertainty and Variability in Ecological Inference	2006
Canon National Parks Science Scholars Program – Honorable Mention	2002
National Science Foundation Graduate Research Fellowship – Honorable Mention	2002
Outstanding Wildlife/Fisheries Student, Frostburg State University	1997
Nemacolin Trout Unlimited Scholar	1997

GRANTS

USDA – AFRI, CoPI “Landscape Configurations: A new approach to manage invasion by bio-fuel crops?” \$470,000	2011
Resident Fellow, Institute on the Environment – UMN \$20,000	2011-2014

SUBMITTED GRANTS

UMN Grant in Aid – PI “Linking animal movement and population demography to environmental change.” (submitted 2012)

NSF – PI “Preliminary Proposal: Linking movement behavior and landscape pattern to population demography” (submitted 2012)

NSF – CoPI “Preliminary Proposal: Predicting the spread of infectious disease in heterogeneous landscapes” (submitted 2012)

NSF – PI “Linking movement behavior and landscape pattern to population demography” Proposal declined (submitted 2011)

UMN Grant in Aid – PI “Linking animal movement and population demography to environmental change.” Proposal declined (submitted 2011)

PUBLICATIONS

Bee, M. A., A. Vézé, and **J. D. Forester**. 2012. Sound level discrimination by gray treefrogs in the presence and absence of chorus-shaped noise. *Journal of the Acoustical Society of America* (in press).

Forester, J. D. 2011. Dispersal from the frying pan to the fire. *Animal Conservation* 14(3): 225-226.

Smouse, P. E., S. Focardi, P. R. Moorcroft, J. G. Kie, **J. D. Forester**, and J. M. Morales. 2010. Stochastic modelling of animal movement. *Philosophical Transactions of the Royal Society B* 365: 2201-2211.

Forester, J. D., H. K. Im, and P. J. Rathouz. 2009. Accounting for animal movement in estimation of Resource Selection Functions: Sampling and data analysis. *Ecology* 90(12):3554–3565.

Wootton, J. T., C. A. Pfister, and **J. D. Forester**. 2008. Dynamical patterns and ecological impacts of changing ocean pH in a high-resolution multi-year dataset. *Proceedings of the*

National Academy of Sciences 105(48):18848-18853.

Forester, J. D., D. P. Anderson, and M. G. Turner. 2008. Landscape and local factors affecting northern white cedar (*Thuja occidentalis*) recruitment in the Chequamegon-Nicolet National Forest, Wisconsin (USA). *American Midland Naturalist* 160:438-453.

Forester, D. C., M. Cameron, **J. D. Forester**. 2008. Nest and egg recognition by salamanders in the genus *Desmognathus*: A comprehensive re-examination. *Ethology* 114:965-976.

Anderson, D. P., **J. D. Forester**, and M. G. Turner. 2008. When to slow down?: Elk residency rates on a heterogeneous landscape. *Journal of Mammalogy* 89(1):105-114.

Forester, J. D., D. P. Anderson, and M. G. Turner. 2007a. Do high-density patches of coarse wood and regenerating saplings create browsing refugia for aspen (*Populus tremuloides* Michx.) in Yellowstone National Park (USA)? *Forest Ecology and Management* 253:211-219.

Forester, J. D., A. R. Ives, M. G. Turner, D. P. Anderson, D. Fortin, H. L. Beyer, D. W. Smith, and M. S. Boyce. 2007b. State-space models link elk movement patterns to landscape characteristics in Yellowstone National Park. *Ecological Monographs* 77(2):285-299.

Gardner, R. H., **J. D. Forester**, and R. E. Plotnick. 2006. Determining pattern-process relationships in heterogeneous landscapes. Pages 92-114 in Wu, J. and Hobbs, R. J. (Eds.), *Key Topics in Landscape Ecology*. Cambridge University Press, New York, New York USA.

Anderson, D. P., **J. D. Forester**, M. G. Turner, J. L. Frair, E. H. Merrill, D. Fortin, J. S. Mao, and M. S. Boyce. 2005-a. Factors influencing seasonal home-range sizes in elk (*Cervus elaphus*) in North American landscapes. *Landscape Ecology* 20:257-271.

Anderson, D. P., M. G. Turner, **J. D. Forester**, J. Zhu, M. S. Boyce, H. Beyer, and L. Stowell. 2005-b. Scale-dependent summer resource selection by reintroduced elk in Wisconsin, USA. *Journal of Wildlife Management* 69:298-310.

Howard, A. K., **J. D. Forester**, J. M. Ruder, J. S. Parmerlee, and R. Powell. 1999. Natural history of a terrestrial Hispaniolan anole: *Anolis barbouri*. *Journal of Herpetology* 33:702-706.

Howard, A. K., **J. D. Forester**, J. M. Ruder, and R. Powell. 1997. Diets of two syntopic frogs: *Eleutherodactylus abboti* and *E. armstrongi* (Leptodactylidae) from the Sierra de Baroruco, Hispaniola. *Herpetological Natural History* 5(1): 77-82.

MANUSCRIPTS SUBMITTED

Metcalf, C. J. E., G. H. Long, N. Mideo, **J. D. Forester**, O. N. Bjørnstad, and A. L. Graham. Revealing mechanisms underlying variation in malaria parasite virulence: effective propagation and host control of uninfected red blood cell supply. *Journal of the Royal Society Interface* (in review).

Wootton, J. T., and **J. D. Forester**. Density-dependent stochasticity. *Philosophical Transactions of the Royal Society B* (submitted).

MANUSCRIPTS IN PREPARATION

Forester, J. D., P. R. Moorcroft, and R. Crabtree. In prep. Incorporating memory into

mechanistic movement models. To be submitted to *Ecology Letters*.

Forester, J. D., M. G. Turner, D. Fortin, D. P. Anderson, H. L. Beyer, D. W. Smith, and M. S. Boyce. In prep. Multi-scale habitat selection by elk: generalizing from individuals to populations. To be submitted to *Ecological Applications*.

Forester, J. D., and D. C. Forester. In prep. State-dependent predator avoidance in *Desmognathus wrighti*. To be submitted to *Animal Behaviour*.

INVITED SEMINARS

Symposium: “Modelling Ecological Environments and Agents: Understanding the Past and Predicting the Future,” Université de Montréal, Département d’anthropologie 24 October 2011

University of Minnesota, Dept. of Ecology, Evolution and Behavior 4 May 2011

Université de Montréal, Département de géographie 7 February 2011

“Emerging Directions in the Analysis and Modelling of Animal Location Data Symposium”
Keynote speaker, Melbourne, Australia 16 March 2010

University of Minnesota, Dept. of Fisheries, Wildlife & Cons. Biology 14 December 2009

Harvard University, Museum of Comparative Zoology 9 December 2009

University of Wisconsin – Madison, Department of Forest and Wildlife Ecology 15 May 2009

Florida Atlantic University, Department of Biological Sciences 30 January 2009

University of Toronto, Department of Ecology and Evolutionary Biology 5 December 2008

Harvard University, Department of Organismic and Evolutionary Biology 27 February 2008

Université Laval, Département de biologie 14 February 2008

Simon Fraser University, School of Resources and Environmental Mgmt. 21 January 2008

University of Wisconsin – Milwaukee, Department of Biology 7 December 2007

Towson University, Department of Biology 29 November 2005

University of Chicago, CISES 3 November 2005

University of Wisconsin – Madison, Department of Zoology 16 September 2005

SCIENTIFIC PRESENTATIONS (First authored only)

Forester, J. D. 2011. Mechanistic home range models for ungulates. Annual Conference of The Wildlife Society. Waikoloa, HI. (invited paper for the symposium : “Recent Developments in the Study of Animal Movement”.)

Forester, J. D., and P. R. Moorcroft. 2009. Mechanistic home range models for ungulates. Ecological Society of America, Albuquerque, NM.

Forester, J. D., and J. T. Wootton. 2008. Density-dependent stochasticity in the dynamics of rocky intertidal communities. Ecological Society of America, Milwaukee, WI.

Forester, J. D., H. K. Im, and P. J. Rathouz. 2008. Incorporating behavior into resource selection models. US-International Association for Landscape Ecology, Madison, WI.

Forester, J. D. and H. K. Im. 2007. Incorporating behavior into habitat selection models. Ecological Society of America, San Jose, CA.

Forester, J. D., J. T. Wootton, M. A. Coram, and G. Dwyer. 2006. Density dependent stochasticity in the population dynamics of intertidal mussels. Ecological Society of America, Memphis, TN.

Forester, J. D., A. R. Ives, M. G. Turner, and D. P. Anderson. 2005. Using state-space models to link patterns of elk movement to landscape characteristics in Yellowstone National Park. Ecological Society of America, Montréal, Québec, Canada.

Forester, J. D., D. P. Anderson, and M. G. Turner. 2004. Elk response to high-density patches of post-fire coarse wood and pine saplings: a multi-scale analysis of browsing refugia in Yellowstone National Park. The Wildlife Society, Calgary, Alberta, Canada.

Forester, J. D., D. P. Anderson, and M. G. Turner. 2004. Linking elk movement patterns to landscape composition and forage availability in Yellowstone National Park. Ecological Society of America, Portland, OR.

Forester, J. D., D. P. Anderson, and M. G. Turner. 2002. Effects of elk (*Cervus elaphus*) reintroduction on northern white cedar (*Thuja occidentalis*) regeneration in Chequamegon National Forest, WI. US-International Association for Landscape Ecology, Lincoln, NE. (Poster)

Forester, J. D., R. H. Gardner, and R. E. Plotnick. 1999. The importance of landscape structure, life history characteristics, and competition on simulated corridor use by annual plants. US-International Association for Landscape Ecology, Fort Lauderdale, FL. (Poster)

TEACHING

Courses:

Professor, FW5603W "Habitats and Regulation of Wildlife." Fall 2010, 2011

In this course, the students learn how to: 1) define and quantify wildlife habitat using field sampling and GIS analysis; 2) quantify how animals respond to landscape patterns through analysis of animal location data; 3) develop a high-stakes research proposal for research that will focus on wildlife-habitat interactions in the context of management and/or conservation.

Lecturer, UC, "Natural History of North American Deserts: Field School" Summer 2007

A classroom and field course co-taught with Dr. Eric Larsen in which students learned about desert ecosystems while being guided in the design and implementation of independent research projects carried out during a two-week field trip through the Southwest.

Assoc. Instructor, UC, "Field Course in Modern and Ancient Environments" Mar. 2007

A field course to San Salvador Island in the Bahamas, in which students were taught about modern and ancient marine environments through a series of field exercises and small-group research projects. Co-taught with Dr. Susan Kidwell and Paul Harnik.

Professional Development:

Teaching With Writing A Five Day Seminar 2011
 Making a Difference: Designing Courses to Improve Student Learning Spring 2011

Workshops:

“Modern Approaches to Resource Selection Modeling.” 6 April 2008
 This workshop at the US-IALE meetings in Madison, WI provided hands-on experience to researchers interested in developing resource selection models using current GIS and statistical methods. We covered sampling methods, mixed-effects models, step selection functions, and methods for correcting measurement error and bias.

Guest Lectures:

CBIO 8004 Economic and Social Aspects of Cons Bio, UMN 2012
 FW 3565 Yellowstone Field Trip, UMN 2011
 Systèmes d’Information Géographique II, U. de Montréal 2011
 Exp. Approaches in Quant. Ecological Genetics, U. of Chicago Winter 2008
 Ecology for non-majors, University of Chicago Winter 2006

GRADUATE STUDENT DIRECTION

John Berini (Ph.D. Cons. Bio.)
 Serge Berg (Ph.D. Cons. Bio., NSF Grad. Research Fellowship)
 Rodrigo Castro Bustamante (M.S. Cons. Bio., Becas Chile Fellowship)

Graduate Student Committees: Mark Ditmer (Cons. Bio.); Sarah Thompson (Cons. Bio.); Chih-Chien “Jerry” Huang (Cons. Bio.); Andrea Claassen (Cons. Bio.); Karl Tinsley (Cons. Bio.); Michael Dixon (Cons. Bio.); Lorraine Scotson (Cons. Bio.); Stephania Galuppo Gaete (Cons. Bio.); Ali Swanson (EEB)

Hosted Graduate Students: Marie-Claude Labbé (Université Laval) January-March 2011

PROFESSIONAL ACTIVITIES AND SERVICE

CFANS Committees: Undergraduate Research Program Committee (2011).

Dept. Committees: Kolshorn Lecture Comm. (2010, 2011);
 FWCB Scholarship Comm. (2010).

Undergraduate Activity: Dean’s Welcome Weekend (2011); Student Sneak Preview (2011)

Peer reviewer[†]: *Acta Theriologica*, *Animal Conservation* (1), *Ecography*, *Ecological Applications*, *Ecology* (1), *Ecology Letters*, *Écoscience*, *Journal of Animal Ecology*, *Journal of Wildlife Management*, *Landscape Ecology* (2), *Nature*, *Oikos*, *PLoS ONE* (1), *Proceedings of the National Academy of Sciences*, *Proceedings of the Royal Society – Biological Sciences*, *Restoration Ecology*, Louisiana Board of Regents (2), National Oceanic and Atmospheric Administration, National Science Foundation, US–Israel Science Foundation (1)

Coordinator: Statistics review for an Environmental Impact Statement to assess the potential effects of introducing Asiatic mussels into the Chesapeake Bay.

[†] All reviews completed during the 2011 calendar year are listed in parentheses.