

# M. Andrea Previtali

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## EDUCATION

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| <b>Ph.D. in Biological Sciences</b><br>Northern Illinois University (NIU)               | December 2006<br>DeKalb, IL, USA       |
| <b>Licenciatura in Biological Sciences</b><br>Universidad Nacional de Río Cuarto (UNRC) | December 1996<br>Río Cuarto, Argentina |

## RESEARCH INTERESTS

- **Climate & Ecology:** detecting and forecasting climate driven changes in ecology
- **Disease Ecology:** using models to investigate host-pathogen interactions
- **Population dynamics:** explaining and predicting animal population changes
- **Ecoimmunology:** understanding immune responses in an ecological context
- **Mammalogy:** investigating the ecology and behavior of carnivores and small mammals

## RESEARCH EXPERIENCE

- 2009-2010 **Post-doctoral associate** at the Cary Institute of Ecosystem Studies (New York state, USA), working with Dr. Richard Ostfeld to investigate the differences in reservoir competence of vertebrate hosts of the Lyme disease bacteria in temperate deciduous forests of North-Eastern U.S.
- 2007-2008 **Post-doctoral fellow** at the University of Utah, working with Denise Dearing to study the effects of anthropogenic disturbance and climate on the prevalence of Sin Nombre hantavirus on deer mice populations in the Great Basin Desert, Utah, USA.
- 2006-2009 **Research consultant** for the project directed by Peter Meserve (NIU) and Douglas Kelt (University of California, Davis) providing assistance with statistical analyses and data modeling, and writing grant proposals, progress reports and manuscripts.
- 2001-2005 **Research Assistant** to Peter Meserve (NIU) working on maintaining and updating ecological database, analyzing and presenting data, writing grant proposals and progress reports to funding agencies.
- 1998-2001 **Field Technician** at Fray Jorge National Park (Chile) conducting monthly surveys on the abundance of small mammal, vertebrate predators, plants and seeds as part of a long-term ecological project directed by Julio Gutiérrez (Universidad de La Serena, Chile) and Peter Meserve (NIU).

- 1997-1998 **Research Assistant** to Dora Grigera at the Universidad Nacional del Comahue, Bariloche, Argentina to study the biology, ecology, and conservation of vertebrates in the Challhuaco stream.
- 1997 **Research Technician** for a project directed by David Macdonald (Oxford University, UK) and Marcelo Cassini (Universidad de Luján, Argentina) to study the impact of minks (*Mustela vison*) on native species of lakes in Nahuel Huapi National Park (Patagonia, Argentina).
- 1996 **Research Assistant** at the UNRC for the project directed by Jaime Polop to study the factors affecting small mammal population numbers in agricultural ecosystems.

## TEACHING EXPERIENCE

- 2010 **Invited Scientist** to the Ecology Day Camp of the Cary Institute. Designed and coordinated an activity to teach kids about mouse foraging behavior and scientific data collection and interpretation through playing a game and hands-on experimentation with scientific instruments.
- 2010 **Guest Lecture** for the course Seminars from the Cary Institute at Bard College, NY, USA. Guided discussion of a paper and a taped-presentation of a seminar speaker with a group of senior undergraduate students.
- 2002-2005 **Teaching Assistant** for General Ecology, NIU. In charge of instructing and developing the laboratory sessions for the course. Wrote handouts and exercises, gave short lectures, guided students in laboratories, field trips, and use of computers, graded reports and exercises.
- 1995-1996 **Teaching Assistant** for Comparative Anatomy, UNRC. Assisted students in the labs.
- 1993-1994 **Teaching Assistant** for General Biology, UNRC. Assisted students in the labs.

## PUBLICATIONS

Gutiérrez, J.R., P.L. Meserve, D.A. Kelt, A. Engilis, Jr., M.A. **Previtali**, W.B. Milstead, and F. Jaksic. 2010. Long-term research in Bosque Fray Jorge National Park: Twenty years studying the role of biotic and abiotic factors in a Chilean semiarid scrubland. *Revista Chilena de Historia Natural*, 83: 69-98.

**Previtali**, M.A., E.M. Lehmer, J.M.C. Pearce-Duvel, J.D. Jones, C.A. Clay, B.A. Wood, P.W. Ely, and M.D. Dearing. 2010. Investigating the roles of human disturbance, precipitation, and a pathogen on the survival and reproductive probabilities of deer mice (*Peromyscus maniculatus*). *Ecology*, 91: 582–592.

**Previtali**, M.A., P.L. Meserve, D.A. Kelt, W.B. Milstead, and J.R. Gutiérrez. 2010. Effects of more frequent and prolonged El Niño events on life-history parameters of the degu, a long-lived and slow-reproducing rodent. *Conservation Biology* 24: 18-28.

- Meserve, P.L., J.R. Gutiérrez, D.A. Kelt, M.A. **Previtali**, A. Engilis, Jr., and W.B. Milstead. 2009. Global climate change and biotic-abiotic interactions in the northern Chilean semiarid zone: potential long-term consequences of increased El Niños, p. 139-162. IN Ocean circulation and El Niño: new research (J.A. Long & D.S. Wells, eds.). Nova Science Publishers, Hauppauge, NY.
- Clay, C.A., E.M. Lehmer, M.A. **Previtali**, S. St. Jeor, and M.D. Dearing. 2009. Contact heterogeneity in deer mice: implications for Sin Nombre virus transmission. Proceedings of the Royal Society of London B 276: 1305-1312.
- Dearing, M.D., M.A. **Previtali**, J.D. Jones, P.W. Ely, and B.A. Wood. 2009. Seasonal variation in Sin Nombre virus infections in deer mice: Preliminary results. J. of Wildlife Diseases 45: 430-436
- Previtali**, M.A., M. Lima, P.L. Meserve, D.A. Kelt, and J.R. Gutiérrez. 2009. Population dynamics of two sympatric rodents in a highly variable environment: rainfall, resource availability, and predation. Ecology 90: 1996-2006.
- Milstead, W.B., P.L. Meserve, A. Campanella, M.A. **Previtali**, D.A. Kelt, and J.R. Gutiérrez. 2007. Spatial ecology of small mammals in North-central Chile: Role of precipitation and Refuges. Journal of Mammalogy 88: 1532-1538.
- Previtali**, M.A., and M.D. Dearing. 2007. What affects survival of deer mice? Investigating the effects of environmental factors, individual characteristics and infection with Sin Nombre virus. Peromyscus Newsletters 42: 28-31.
- Lima, M., M.A. **Previtali**, P.L. Meserve. 2006. Climate and small rodent dynamics in semiarid Chile: the role of lateral and vertical perturbations and intra-specific processes. Climate Research, 30: 125-132.
- Holmgren, M., P. Stapp, C.R. Dickman, C. García, S. Graham, J.R. Gutiérrez, C. Hice, F. Jaksic, D.A. Kelt, M. Letnic, M. Lima, B.C. López, P.L. Meserve, W.B. Milstead, G.A. Polis, M.A. **Previtali**, M. Richter, S. Sabaté, and F.A. Squeo. 2006. Extreme climatic events shape arid and semiarid ecosystems. Frontiers in Ecology and the Environment, 6: 87-95.
- Holmgren, M., P. Stapp, C.R. Dickman, C. García, S. Graham, J.R. Gutiérrez, C. Hice, F. Jaksic, D.A. Kelt, M. Letnic, M. Lima, B.C. López, P.L. Meserve, W.B. Milstead, G.A. Polis, M.A. **Previtali**, M. Richter, S. Sabaté, and F.A. Squeo. 2006. A synthesis of ENSO effects on drylands in Australia, North America and South America. Adv. Geosciences, 6: 69-72.
- Previtali**, A., M.H. Cassini & D.W. Macdonald. 1998. Habitat use and diet of the American mink, *Mustela vison*, in Argentinean Patagonia. Journal of Zoology, 246:482- 486.

### **Manuscripts in review**

- Groffman, P., C. Stylinski, M.C. Nisbet, C.M. Duarte, R. Jordan, A. Burgin, M.A. **Previtali**, J. Coloso. Restarting the conversation: Challenges at the interface between ecology and society. Frontiers in Ecology and Evolution, in press.
- Wood, B.A., M. A. **Previtali**, J.D. Jones, and M.D. Dearing. Contacts and seasonality influence the probability of pathogen infection in deer mice (*Peromyscus maniculatus*). In review in Journal of Wildlife Diseases.

## **Book Reviews**

Keeling, E., N. Bettez, C. Harris, M. Hersh, K. Notin, M.A. **Previtali**, E. Rosi-Marshall, D. Strayer, and R. Wildova. 2010. Review of Dodds, W.K. 2009. *Laws, Theories, and Patterns in Ecology*. *Ecoscience* 17: 225-228.

## **WORKSHOPS ATTENDED**

- Discrete Dynamical Systems & Applications to Population Dynamics. Rocky Mountain Mathematics Consortium. July 7-18 2003. University of Wyoming, WY, USA.
- Intermediate-Level Program MARK Workshop. June 5-10 2005, Colorado State University, Fort Collins, CO, USA.
- Techniques in Eco-immunology, by Drs. Gregory Demmas and Sussana French. April 2 2009. Park City, UT, USA.
- Likelihood methods in ecology, by Drs. Charlie Canham and Maria Uriarte. November 16-20 2009. Cary Institute of Ecosystem Studies, Millbrook, NY, USA.

## **CONTRIBUTED TALKS AND POSTERS**

**Previtali**, M.A., R. Hanselmann, R.S. Ostfeld, F. Keesing, A.E. Jolles, and L.B. Martin. **2010**. Does variation in host immune function explain differences in reservoir competence among small mammals? 8th Annual Conference on the Ecology and Evolution of Infectious Diseases, Cornell University, Ithaca, NY, USA.

**Previtali**, M.A., and M.D. Dearing. **2008**. Differential persistence of individual deer mice in a population: The role of disease mediated by environmental stressors. 93<sup>rd</sup> Ecological Society of America Annual Meeting, Milwaukee, WI, USA.

**Previtali**, M.A., and M.D. Dearing. **2007**. Does SNV affect survival probabilities of deer mice? VII International Conference on HFRS, HPS and Hantaviruses, Bs. As., Argentina.

**Previtali**, M.A., P.L. Meserve, and J.R. Gutiérrez. **2006**. Changes in demographic parameters of a fluctuating population of the degu (*Octodon degus*), a long-lived hystricognath rodent in semiarid Chile. 86<sup>th</sup> Annual Meeting of the American Society of Mammalogists (ASM), Univ. of Massachusetts at Amherst, Amherst, MA, USA.

**Previtali**, M.A., M. Lima, W.B. Milstead, and P.L. Meserve. **2005**. Effects of rainfall, resource availability and predation on the dynamics of rodents in semiarid Chile. 85<sup>th</sup> Annual Meeting of the ASM, Missouri State Univ., Springfield, MO, USA.

**Previtali**, M.A., M. Lima, and P.L. Meserve. **2005**. The importance of rainfall on the dynamics of plants, rodents, and predators: results from a long term study of a semiarid community of north-central Chile. 25<sup>th</sup> Annual MEEC, Southern Illinois Univ., IL, USA.

**Previtali**, M.A., P.L. Meserve, W.B. Milstead, D.A. Kelt, and J.R. Gutiérrez. **2005**. Influence of rainfall variability on species interactions and predation in a Chilean semiarid small mammal community. 1<sup>st</sup> Alexander von Humboldt International Conference on the El Niño phenomenon and its global impact. Guayaquil, Ecuador.

- Previtali, M.A., M. Lima and P.L. Meserve. 2004.** Feedback structure and the effects on the dynamics of different components of the food web in a thorn scrub community in semiarid Chile. IV Southern Connections Conference, Univ. of Cape Town, South Africa.
- Previtali, M.A., J.R. Gutiérrez, P.L. Meserve and D.A. Kelt. 2003.** Effects of small mammal consumers on ephemeral plants in a Northern Chilean semiarid system: Disentangling the role of key players. 83<sup>rd</sup> Annual Meeting of the ASM, Texas Tech Univ., TX, USA.
- Previtali, M.A., W.B. Milstead, P.L. Meserve and J.R. Gutiérrez. 2003.** Predator-prey interactions from the predator' and the prey's point of view. 23<sup>rd</sup> Annual MEEC, Univ. of Akron, OH, USA.
- Previtali, M.A., F.J. López-Cortes, W.B. Milstead, P.L. Meserve and J.R. Gutiérrez. 2000.** Activity of culpeo foxes (*Pseudalopex culpaeus*) and its relationship with prey availability in Fray Jorge National Park. V International Meeting of Natural Resources Management, Valdivia, Chile.
- Previtali, M.A. and J.J. Polop. 1996.** Relationship between the seed bank and a rodent community. XI Meeting of Argentine Mastozoology, San Luis, Argentina.

## GRANTS AND HONORS

George L. Terwilliger **award to outstanding graduate student** in the Dept. of Biological Sciences, NIU. 2006.

**Dissertation Completion Fellowship** from the NIU Graduate School. 2005.

Award for the **best oral presentation**, Sigma Xi graduate student symposium, NIU. 2005

Graduate Student **Travel Grants** from the NIU Department of Biological Sciences, to attend scientific meetings and workshops. 2002-2005.

**Recognition for the dedication to students** by the Mortar Board Senior Honor Society, NIU. 2004.

Honorable Mention for **poster presentation** at the Midwest Ecology and Evolution Conference, The University of Akron, Ohio. 2003.

**Award for the highest GPA** among the students graduating from the College of Sciences (including Math, Biology, Microbiology, Chemistry, and Physics), UNRC. 1996.

## INVITED TALKS AND LECTURES

Invited seminar speaker at the Department of Biological Sciences, Union College, Schenectady, NY. April 2010.

Invited talk at the meeting of the Greater New York Lyme Neuroborreliosis support group. NYU Langone Medical Center, New York City, NY. April 2010.

Invited seminar speaker at the Department of Biological Sciences, Northern Illinois University, DeKalb, IL. April 2010.

Invited talk at the Department of Integrative Biology, University of South Florida, Tampa, FL. Feb. 2010.

Invited seminar speaker. Biology department, Bard College, Annandale, NY. Oct. 2009.

Job seminar at the Cary Institute of Ecosystem Studies, Millbrook, NY. October 2009.

Invited lecture for the Girls Only camp at the Museum of Natural History, University of Utah, Salt Lake City, UT. June 2008.

Lecture to park personal and administrative staff, and conservation and outreach organizations at Fray Jorge National Park, Chile. January 2006.

## **ACADEMIC SERVICE & OUTREACH ACTIVITIES**

- 2005-2010 Reviewer for the journals: Ecology and Society, American Journal of Tropical Medicine & Hygiene, Journal of Mammalogy, and Mammalian Biology.
- 2009-2010 Chair of the Postdoctoral Committee, Cary Institute of Ecosystem Studies, NY. Responsible for developing activities for post-doctoral training.
- 2010 Review of the chapter on Population Dynamics from Michael Cain's Ecology textbook, 2<sup>nd</sup> Edition for Sinauer Associates Publishing.
- 2010 Developed a game for kids to learn about mouse foraging behavior during the EcoDiscovery day at the Cary Institute of Ecosystem Studies, NY
- 2009-2010 Science fair judge at the Young Environmental Scientists, Cary Institute, NY.
- 2003-2006 Mentoring of three undergraduate students during their independent studies and senior theses. Provided guidance on data analysis and presentation of results at scientific meetings.
- 2005-2006 Elected vice-president of the International Students of Latin America association of NIU. Responsible for developing activities for the integration of Latin American students.
- 2005 Science fair judge at the St. Mary school of DeKalb, IL
- 2001-2005 Visiting student in the Mammal collection of the Field Museum of Natural History, Chicago. In charge of labeling and cataloging specimens collected in Chile.
- 1998-2001 Gave several presentations and demonstrations on small mammal ecology to groups of students of diverse academic levels visiting Fray Jorge National Park, Chile
- 1994 Collaborator in the Organization of the IX Meeting of Argentine Mastozoology.
- 1994 Elected student representative of the Departmental Committee of Natural Sc., UNRC
- 1992-1995 Member of the Supporting Commission of the Argentine Biology Olympics

## **SOCIETIES**

Active member of:

The American Society of Mammalogists,  
The Ecological Society of America,  
Sociedad Argentina de Mastozoología