Vance Thomas Vredenburg

Department of Integrative Biology and Museum of Vertebrate Zoology
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Education

PhD., University of California, Berkeley (Integrative Biology), Dec. 2002 "The effects of introduced trout and ultraviolet radiation on anurans in the Sierra Nevada."
Committee: David Wake (co-chair), Mary Power (co-chair), Wayne Sousa, Vincent Resh.

B.A., University of California, Santa Barbara (Biology), 1992.

Professional background

2003-present. *Postdoctoral Scholar*. Ecology of Infectious Disease, based in part on Vredenburg, PhD dissertation (2002).

1998-present. *Assistant Director*. Co-founder of AmphibiaWeb.org an online bioinformatics project promoting science and conservation of the world's amphibians.

1996-97. *Research coordinator*. USDA Forest Service. Pacific Southwest Research Station, Albany, California. Level: GS 9-11.

1991-95. *Research technician*. University of California Santa Barbara, Marine Science Institute.

Research Grants

- 2002-2007. National Institutes of Health / National Science Foundation Ecology of Infectious Disease Program: Amphibian Disease Dynamics in a Fragmented Landscape, *with C. Briggs, C. Moritz, J. Taylor, and R. Knapp*.
  $*2,484,295*
- 2006-2007. The University of California Institute for Mexico and the United States (UC MEXUS). Is chytridiomycosis contributing to the decline of amphibians in highlands of Guatemala and southern Mexico? *with G. Parra, T. Papenfuss, and C. Briggs*.
  $15,000
- 2006-2007. Lake Tahoe Basin Management Unit. Assessment of recovery plans for the Mountain Yellow-legged Frog in the Lake Tahoe area, *with C. Moritz*.
  $14,000
- 2005-2006. USGS San Diego: Genetic and fungal analysis of the Mountain Yellow-legged Frog in southern California, *with C. Moritz*.
  $*32,250*
- 2003-2004. California Department of Fish and Game and USDA Forest Service: Biogeography and systematics of the mountain yellow-legged frog complex (*Rana muscosa* and *R. sierrae*), *with C. Briggs, and C. Moritz*. *$83,910*
- 2001-2002. US Fish and Wildlife Service Research Award: Conservation

Genetics of the Mountain Yellow-legged Frog, *with C. Moritz and D. Wake*. $*25,000*

- 2000-2002. National Park Service Research Award: Sierra Nevada Terrestrial Salamander Inventory Project, *with D. Wake and T. Papenfuss.* $*20,000*

Teaching Experience University of California Berkeley

Lecturer

- Vertebrate Natural History (Integrative Biology 104)

Graduate Student Instructor

- Introductory Biology (Integrative Biology 1B)
- Population and Community Ecology (Integrative Biology 153)
- Seminar: Amphibian Population Declines (Integrative Biology 292)

Course Development

- Introductory Biology Field Course (Integrative Biology 1B-field course): co-developed curriculum emphasizing student-conducted field research projects

Academic Mentor

- Mentor for undergraduate senior honor thesis projects (2002-present) with students in two departments (Integrative Biology and Environmental Science Policy and Management)

Awards and Fellowships

Teaching- University of California Berkeley

- 2005. Cal Alumnus of the Week–Nov 13-20
- 2005. Unsung Hero–outstanding contributor to undergraduate education
- 1998. Outstanding Graduate Student Instructor Award

Research

- 1999-2002. USGS and National Park Service Research Award: The effects of introduced trout on native Mountain Yellow-legged Frogs in Sequoia and Kings Canyon National Park, *with M. Power and D. Wake*. $106,000
- 2000. Graduate Fellowship – Museum of Vertebrate Zoology
- 1999: Integrative Biology Research Fellowship – U.C. Berkeley
- 1999. Seed Grant Program Award – Declining Amphibian Population Task Force / The World Conservation Union / Species Survival Commission
- 1998. Sigma Xi Student Grant-in-aid Award – Berkeley Chapter
- 1998. Theodore Roosevelt Memorial Award – American Museum of Natural History
- 1998. Wilhelm L.F. Martens Fund Award – Museum of Vertebrate Zoology
- 1997. Gompertz Award – Museum of Vertebrate Zoology and Department of Integrative Biology
- 1997. Mildred E. Mathias Award – U.C. Natural Reserve System

Scientific Meetings

- 2002 Honorable Mention, American Society of Ichthyologists and Herpetologists: Stoye Award in Conservation
- 2002 Best Student Paper, Society for Integrative and Comparative Biology,

Division of Ecology and Evolution.
- 2001 Carl Hubbs Best Student Paper, Desert Fishes Council

Publications

In Press

Vredenburg, V.T., R. Bingham, R. Knapp, J.A.T. Morgan, C. Moritz, and D. Wake. Concordant molecular and phenotypic data delineate new taxonomy and conservation priorities for the endangered mountain yellow-legged frog (Ranidae: *Rana muscosa*). *Journal of Zoology*.

Knapp, R.A., D.M. Boiano, and V.T. **Vredenburg**. Recovery of a declining amphibian (mountain yellow-legged frog, *Rana muscosa*) following removal of nonnative fish. *Biological Conservation*.

Vredenburg, V.T. and D.B. Wake. Global Declines of Amphibians. Encyclopedia of Biodiversity. Eslevier Press.

Vredenburg, V.T., M. Koo, and D.B. Wake. Declines of amphibians in California. *In* Hoffman, M. (Ed.), *Threatened Amphibians of the World.* Lynx Ediciones, Barcelona, Spain.

Published

Rollins-Smith, L.A., D.C. Woodhams, L.K. Reinert, V.T. **Vredenburg**, C.J. Briggs, P.F. Nielsen, and J.M. Conlon. 2006. Antimicrobial Peptide Defenses of the Mountain Yellow-Legged Frog (*Rana muscosa*). *Developmental & Comparative Immunology* 30(9): 831-842.

Rachowicz, L.J., R.A. Knapp, J.A.T. Morgan, M.J. Stice, V.T. **Vredenburg**, J.M. Parker and C.J. Briggs. 2006. Emerging infectious disease as a proximate cause of amphibian mass mortality. *Ecology* 87(7): 1671-1683.

Briggs, C., V.T. **Vredenburg**, R.A. Knapp, and L.J. Rachowicz. 2005. Investigating the population-level effects of chytridiomycosis, a fungal disease of amphibians. *Ecology* 86(12):3149-3159.

Rachowicz, L.J, J.M. Hero, J.A.T. Morgan, V.T. **Vredenburg**, J. Taylor, C.J. Briggs. 2005. The novel and endemic pathogen hypothesis: explanations for the origin of an emerging infectious disease of wildlife. *Conservation Biology* 19(5):1441-1448.

Vredenburg, V.T. 2004. Reversing introduced species effects: Experimental removal of introduced fish leads to rapid recovery of declining frog. *Proceedings of the National Academy of Sciences* 101(20):7646-7650.

Rachowicz, L.J. and V.T. **Vredenburg**. 2004. Transmission of *Batrachochytrium dendrobatidis* within and between amphibian life stages. *Diseases of Aquatic Organisms* 61:75-83.

Macey, JR. J. Stasburg, J. Brisson, V.T. **Vredenburg**, M. Jennings, and A. Larson. 2001. Molecular phylogenetics of western North American frogs of the *Rana boylii* species group. Molecular Phylogenetics and Evolution 19(1):131-143.

Vredenburg, V.T., T. Tunstall, H. Nguyen, J. Romansic and S. Schoville. 2001. *Hydromantes platycephalus* (Mt. Lyell salamander). Herpetological Review 32:178.

Vredenburg, V.T., and A.P. Summers. 2001. Field Identification of chytridiomycosis in *Rana muscosa*. Herpetological Review 32:151-152.

Vredenburg, V.T. 2000. Natural History Notes: *Rana muscosa* (mountain yellow-legged frog), conspecific egg predation. Herpetological Review 31:170-171.

Vredenburg, V. T., Y. Wang, and G. Fellers. 2000. Scientific meeting raises awareness of amphibian decline in Asia. FrogLog 42:2.

Knapp, R. A., V. T. **Vredenburg**, and K. M. Matthews. 1998. Effects of stream channel morphology on golden trout spawning habitat and recruitment. Ecological Applications 8(4):1104-1117.

Knapp, R.A., and V.T. **Vredenburg.** 1996. A field comparison of the substrate composition of golden trout redds using two sampling techniques. North American Journal of Fisheries Management 16:674-681.

Knapp, R.A., and V.T. **Vredenburg**. 1996. Spawning by California golden trout: characteristics of spawning fish, seasonal and daily timing, redd characteristics, and microhabitat preferences. Transactions of the North American Fisheries Society. 125(4):519-531.

Knapp, R.A., P.C. Sikkel, and V.T. **Vredenburg**. 1995. Age of clutches in nests and the with-in nest spawning-site preferences of three damselfish species (Pomacentridae). Copeia(1), pp. 78-88.

Book Chapters

Vredenburg, V.T., G. Fellers, and C. Davidson. 2005. The mountain yellow-legged frog (*Rana muscosa*). *In* Lannoo, M.J. (Ed.), Status and Conservation of U.S. Amphibians. University of California Press, Berkeley, California, USA, pp. 563-566.

Manuscripts In Review

Finlay, J.C. and V.T. **Vredenburg**. Introduced trout sever trophic connections between lakes and watersheds: consequences for a declining montane frog. *Ecology.*

Vredenburg, V.T., L.M. Chan, J.M. Romansic, and T. Tunstall. A field test of the effects of UV-B radiation on three high elevation amphibians in California. *Copeia* (accepted pending revision).

Vredenburg, V.T. *Rana muscosa* (Anura: Ranidae) larvae detect and respond to chemical cues from native but not introduced predators.

Vredenburg, V.T. Choice of oviposition site by the mountain yellow-legged frog (*Rana muscosa*): effects of introduced trout.

Reviewer for:

Proceedings of the National Academy of Sciences
Public Library of Science Biology
Journal of Animal Ecology
Conservation Biology
Herpetologica
Journal of Herpetology
Diseases of Aquatic Organisms
The Herpetological Journal

Undergraduate advisees

- John Romansic graduate student, Oregon State University, advisor: A. Blaustein.
- Lauren Chan, graduate student, Cornell University, advisor: K. Zamudio.
- Sean Schoville, graduate student, UC Berkeley, advisor: G. Roderick.
- TateTunstall, graduate student UC Berkeley, advisor: C. Briggs.
- Hien Nguyen, law student, Boalt School of Law, UC Berkeley.
- Kevin Gin, undergraduate UC Berkeley: project title, "The relationship between nematode parasite load and prevalence of *Batrachochytrium dendrobatidis* in the Mountain Yellow-legged Frog, *Rana muscosa*."
- Yvonne Pham, undergraduate UC Berkeley: project title, "Searching museum specimens for the first case of chytridiomycosis in *Rana muscosa*."
- Rebecca Wong, undergraduate UC Berkeley: project title, "Does behavior play a role in infection outcome of *Rana muscosa*?"
- Shelly Lyser, undergraduate UC Berkeley: project title, "The effect of temperature on chytridiomycosis load in *Rana muscosa* tadpoles."

Invited presentations/lectures

- 2006. Yosemite National Park. Recovery plan for the Mountain Yellow-legged Frog, January 26, 2006
- 2005. National Science Foundation, Frontiers in Integrative Biological Research: When is disease a force in extinction? Arizona State University
- 2005. 4th World Congress of Herpetology, Stellenboch, South Africa
- 2002. Mixing Faunas: An Overview of Introduced Non-Indigenous Fishes, Amphibians, and Reptiles; American Society of Ichthyologists and Herpetologists, Kansas City

Departmental Seminars

- 2005. Department of Ecology and Evolution. University of California Santa Cruz; February 9, 2005

- 2002. Department of Ecology and Evolutionary Biology; University of Connecticut

Courses-UC Berkeley
Department of Environmental Science and Policy Management

- 2003. Senior thesis course on environmental sciences, ESPM 199; Endangered frog threatened by government agencies: what can a graduate student do to help a frog survive? Professor Wayne Sousa

Department of Integrative Biology

- 1999. Population and Community Ecology, IB 153. Island biogeography and the birth of metapopulation biology. Professors Mary Power and Cherie Briggs
- 2000. Herpetology; IB 175. Metapopulation ecology in amphibians and reptiles. Professor Javier Rodrigues

Courses-Harvard University

- 2002. Biodiversity in Crisis: Worldwide Amphibian Decline and Extinctions; Biology 269

Symposium Organizer
2000. Declining Amphibians; 4th Asian Herpetological Conference; Chengdu, China

2005. Declining Amphibian Population Task Force: California and Nevada chapter meeting in Berkeley, California

References:

1. **David B. Wake,**Professor of the Graduate School; Email: wakelab@berkeley.edu; Department of Integrative Biology; 3060 Valley Life Sciences Bldg #3140; Berkeley, CA 94720-3140, USA; Office phone: 1-510-642-3059

2. **Mary E. Power,** Professor; Email: mepower@berkeley.edu; Department of Integrative Biology; 3060 Valley Life Sciences Bldg #3140; Berkeley, CA 94720-3140, USA; Office phone: 1-510-643-7776.

3. **Cheryl J. Briggs,** Associate Professor**;** Email: cbriggs@berkeley.edu; Department of Integrative Biology; 3060 Valley Life Sciences Bldg #3140; Berkeley, CA 94720-3140, USA; Office phone: 1-510-643-3889.