

Carol Masters Vleck, Associate Professor

Department of Ecology, Evolution & Organismal Biology
243 Bessey Hall
Iowa State University
Ames, IA 50011
Phone: (515) 294-8646
E-mail: cvleck@iastate.edu
Web site: www.public.iastate.edu/~cvleck/

Education

B. A. (cum laude) Pomona College, Claremont, California, 1972

M. S. University of California, Los Angeles, 1974

Adviser: Dr. Nicholas Collias

Ph.D. University of California, Los Angeles, 1978

Co-Advisers: Dr. T. R. Howell and Dr. G. A. Bartholomew

Post-doctoral training

Research Associate (Postdoctoral), Department of Zoology, University of Washington, Seattle, June 1978-March 1979 (with Dr. Donald S. Farner).

Research Assistant Professor, Department of Physiology, State University of New York at Buffalo, April-August 1979 (with Dr. Hermann Rahn).

Visiting Research Fellow, Department of Zoology, University of Adelaide, South Australia. August 1979-July 1980 (with Dr. Roger Seymour and Prof. Janis Priedkalns).

Professional Experience

Associate Professor, Department of Ecology, Evolution & Organismal Biology, Iowa State University, Ames, (2003-present).

Associate Professor, Department of Zoology and Genetics, Iowa State University, Ames (2000-2003).

Assistant Professor, Department of Zoology and Genetics, Iowa State University, Ames (1994-2000).

Associate Research Professor, Department of Ecology and Evolutionary Biology, University of Arizona, Tucson (1992 -1994).

Adjunct Assistant Professor, Department of Ecology and Evolutionary Biology, University of Arizona, Tucson (1988 - 1992).

Research Associate, Department of Ecology and Evolutionary Biology, University of Arizona, Tucson (1980 -1988).

Grant Support (sole PI unless otherwise indicated)

NSF Collaborative Research: Oxidative stress, telomere dynamics and aging in a free-living organisms. C. Vleck PI, with D. Vleck and D. Winkler, Cornell University. 2008-2012, \$377,981, Pending.

NSF Doctoral Dissertation: An investigation of the evolution of telomere regulation and longevity. Mark Haussmann & C. Vleck, Formal PI, NSF IBN 0408008, 2004-2005, \$11,930.

NSF Conference: Eighth International Symposium on Avian Endocrinology, Scottsdale, AZ June 6-11, 2004. NSF IBN 0406523, 2004, \$15,000.

- NIH Avian models for aging: telomeres and oxidative damage. National Institute on Aging, C. Vleck PI, with D. Vleck & M. Haussmann. 2003-2005, \$67,215.
- NSF Doctoral Dissertation: Implications of adult incubation behavior on embryo growth and metabolism. Chris Olson & C. Vleck, Formal PI. NSF IBN 0309371, 2003-2005, \$11,882.
- NSF Undergraduate Mentoring in Environmental Biology: Environmental Endocrinology and Physiology. C. Vleck, co PI with F. Janzen (PI), D. Vleck & E. Farrar. IBN 0080194, 2000-2004, \$275,000.
- University Special Research Initiation Grant. ISU. Telomere restriction fragment length analysis to estimate age: Calibration of the telomere clock. 2001, \$15,519.
- NSF Reproductive Endocrinology of free-living Adélie Penguins at Torgersen Island, Antarctica. OPP-9317356, 1995-2001, \$292,108.
- NSF Supplement: Reproductive Endocrinology of free-living Adélie Penguins at Torgersen Island, Antarctica. NSF POWRE Program. 1998-2001, \$50,000.
- NSF-REU Supplement, Reproductive Endocrinology of free-living Adélie Penguins. 1999-2000, \$5,000.
- NSF Doctoral Dissertation: An analysis of maternal effects in the American coot: Consequences for offspring growth and survival. NSF IBN-981503, Wendy Reed & C. Vleck, Formal PI, 1998-2000, \$6,530.
- University Research Grant, ISU, Molecular methods to assess genetic relationship within family units and breeding populations in the Adélie Penguin, (*Pygoscelis adeliae*). 1996, \$12,000.
- NSF-REU Supplement, Reproductive Endocrinology of free-living Adélie Penguins, 1996, \$4,125.
- NSF Hormones and Avian Sociality. C. Vleck, PI at Arizona and ISU, NSF IBN-9211581, 1992-1997, \$149,422 (Collaborative research project with Dr. Jerram Brown, SUNY Albany, total NSF grant support for collaborative project, \$220,800).
- NSF-REU Supplement, Hormones and Avian Sociality. 1995, \$3,750.
- NSF Symposium on Development in Vertebrate Embryos: Environmental, Parental and Embryonic Interactions, Cambridge, United Kingdom. IBN-9205280, 1992, \$6,000.
- NSF Hormone Levels and Behavior in Cooperatively Breeding Harris' Hawks. BNS 86-06548, 1986 - 1988, \$20,000.
- NSF Environmental and Physiological Control of Reproduction in Desert Birds. R11-81310562, 1983 - 1984, \$55,544.
- American Philosophical Society Grant in Aid of Research, 1981.
- University of Arizona Foundation Grant in Aid of Research, 1981.
- Frank M. Chapman Grant, American Museum of National History, 1976, 1980.
- UCLA Regents Travel and Research Grant, 1977, 1978.

Publications (peer reviewed)

- Olson, C.R., **C.M. Vleck** & D.C. Adams (in review) Decoupling morphological development from growth in periodically cooled zebra finch embryos. *Journal of Morphology*.
- Christensen, D. & **C.M. Vleck** (in review). Prolactin release and response to vasoactive intestinal peptide in an opportunistic breeder, the zebra finch (*Taeniopygia guttata*). *General and Comparative Endocrinology*.
- Reed, W.L., M.E. Clark & **C.M. Vleck** (in review) Maternal effects increase within-family variation in offspring survival. *American Naturalist*.
- Vleck, C.M.**, M.F. Haussmann & D. Vleck, D. 2007. Avian senescence: underlying mechanisms. *Journal of Ornithology* DOI 10.1007/s10336-007-0186-5.

- Badyaev, A.V. & **C.M. Vleck**. 2007. Context-dependent development of sexual ornamentation: implications for a trade-off between current and future breeding efforts. *Journal of Evolutionary Biology* 20:1277-1287.
- Haussmann, M.F., D.W. Winkler, I.C.T. Nisbet, C.E. Huntington & **C.M. Vleck**. 2007. Telomerase activity is maintained throughout the lifespan of long-lived birds. *Experimental Gerontology* 42:610-618.
- Haussmann, M.F., **C.M. Vleck** & E.S. Farrar. 2007. A laboratory exercise to illustrate increased salivary cortisol in response to three stressful conditions using competitive ELISA. *Advances in Physiology Education* 31:110-115.
- Palacios, M.G., J.E. Cunnick, D.W. Winkler & **C.M. Vleck**. 2007. Immunosenescence in some but not all immune components in a free-living vertebrate, the tree swallow. *Proceedings of the Royal Society, London, B* 274:951-957.
- Olson, C.R., **C.M. Vleck** & D. Vleck. 2006. Periodic cooling of bird eggs reduces embryonic growth efficiency. *Physiological and Biochemical Zoology* 79:927-936.
- Scott, N.M., M.F. Haussmann, R.M. Elsey, P.L. Trosclair III & **C.M. Vleck**. 2006. Telomere length shortens with body length in *Alligator mississippiensis*. *Southeastern Naturalist* 5:685-692.
- Juola, F.A., M.F. Haussmann, D.C. Dearborn & **C.M. Vleck**. 2006. Telomere shortening in a long-lived marine bird: cross-sectional analysis and test of an aging tool. *Auk* 123:775-783.
- Haussmann, M.F., D.W. Winkler, C.E. Huntington, D. Vleck, C.W. Sanneman, D. Hanley & **C.M. Vleck**. 2005. Cell-mediated immunosenescence in birds. *Oecologia* 145:270-275.
- Haussmann, M.F., D.W. Winkler & **C.M. Vleck**. 2005. Longer telomeres associated with higher survival in birds. *Biology Letters* 1:212-214.
- Haussmann, M.F., D.W. Winkler, C.E. Huntington, I.C.T. Nisbet & **C.M. Vleck**. 2004. Telomerase expression is differentially regulated in birds of differing life span. *Annals NY Academy of Science* 1019:186-190.
- Haussmann, M.F., D.W. Winkler, K.M. O'Reilly, C.E. Huntington, I.C.T. Nisbet & **C.M. Vleck**. 2003. Telomeres shorten more slowly in long-lived birds and mammals than in short-lived ones. *Proceedings of the Royal Society, London, B* 270:1387-1392.
- Vleck, C.M.**, M.F. Haussmann & D. Vleck. 2003. The natural history of telomeres: Tools for aging animals and exploring the aging process. *Experimental Gerontology* 38(7):791-795.
- Haussmann, M.F., **C.M. Vleck** & I.C.T. Nisbet. 2003. Calibrating the telomere clock in common terns, *Sterna hirundo*. *Experimental Gerontology* 38(7):787-789.
- Vleck, C.M.** & J.A. Van Hook. 2002. Absence of daily rhythms of prolactin and corticosterone in Adélie penguins under continuous daylight. *Condor* 104:667-671.
- Haussmann, M.F. & **C.M. Vleck**. 2002. Telomere length provides a new technique for aging animals. *Oecologia* 130:325-328.
- Vleck, C.M.** & D. Vleck. 2002. Physiological condition and reproductive consequences in Adélie penguins. *Integrative and Comparative Biology* 42:76-83.
- Vleck, C.M.** 2001. Comparison of corticosterone and heterophil to lymphocyte ratios as indicators of stress in free-living birds. pp. 401-411. In: *Avian Endocrinology*. A. Dawson & C.M. Chaturvedi (Eds.), Narosa Publishing House, New Delhi.
- Vleck, C.M.** 2001. Hormonal control of incubation. pp. 54-62. In: *Avian Incubation: Behaviour, Environment and Evolution*. D.C. Deeming (Ed.), Oxford U. Press, Oxford.
- Reed, W.L. & **C.M. Vleck**. 2001. Functional significance of variation in egg-yolk androgens in the America coot. *Oecologia* 128:164-171.
- Vleck, C.M.**, L.L. Ross, D. Vleck, & T.L. Bucher. 2000. Prolactin and parental behavior in Adélie penguins: Effects of absence from nest, incubation length and nest failure. *Hormones and Behavior* 38:149-158.

- Vleck, C.M.**, N. Vertalino, D. Vleck, & T.L. Bucher. 2000. Stress, corticosterone, and heterophil to lymphocyte ratios in free-living Adélie Penguins. *Condor* 102:393-401.
- Vleck, C.M.**, T.L. Bucher, W.L. Reed, & A.Y. Kristmundsdottir 1999. Changes in reproductive hormones and body mass through the reproductive cycle in the Adélie Penguin (*Pygoscelis adeliae*), with associated data on courting-only individuals. pp. 1210-1223. In: Proceedings of the 22nd International Ornithological Congress. N. Adams. & R. Slotow (Eds.), University of Natal, Durban.
- Vleck, C.M.** & J.L. Brown. 1999. Testosterone and social and reproductive behaviour in *Aphelocoma* jays. *Animal Behaviour* 58:943-951.
- Vleck, C.M.** & D.J. Patrick. 1999. Effects of vasoactive intestinal peptide on prolactin secretion in three species of passerine birds. *General and Comparative Endocrinology* 113: 146-154.
- Vleck, C.M.** 1999. Avian, egg. pp. 963-971. In: *Encyclopedia of Reproduction*, Vol. 1. E. Knobil and J.D. Neill (Eds.), Academic Press, San Diego.
- Vleck, C.M.** & T.L. Bucher. 1998. Energy metabolism, gas exchange and ventilation. pp. 89-116. In: *Avian Growth and Development. Evolution within the Precocial-Altricial Spectrum*. J.M. Stark and R.E. Ricklefs (Eds.), Oxford Univ. Press, New York.
- Brown, J.L. & **C.M. Vleck**. 1998. Prolactin and helping in birds: Has natural selection strengthened helping behavior? *Behavioral Ecology* 9:541-545.
- Vleck, C.M.** & D. Vleck. 1996. Embryonic Energetics. pp. 417-460. In: *Avian Energetics and Nutritional Ecology*. C. Carey (Ed.), Chapman and Hall, NY.
- Vleck, C.M.** & S.J. Dobrott. 1993. Testosterone, antiandrogens and alloparental behavior in bobwhite quail foster fathers. *Hormones and Behavior* 27:92-107.
- Vleck, C.M.** 1993. Hormones, reproduction, and behavior in birds of the Sonoran Desert. pp. 73-86. In: *Avian Endocrinology*. P.J. Sharp (Ed.), Journal of Endocrinology, Bristol.
- Wingfield, J.C., **C.M. Vleck** & M.C. Moore. 1992. Seasonal changes of the adrenocortical response to stress in birds of the Sonoran Desert. *Journal of Experimental Zoology* 264:419-428.
- Vleck, C.M.**, N.A. Mays, J.W. Dawson & A. Goldsmith. 1991. Hormonal correlates of parental and helping behavior in cooperatively breeding Harris' Hawks (*Parabuteo unicinctus*). *Auk* 108:638-648.
- Mays, N.A., **C.M. Vleck** & J.W. Dawson. 1991. Plasma luteinizing hormone, steroid hormones, behavioral role, and nest stage in the cooperatively breeding Harris' Hawk (*Parabuteo unicinctus*). *Auk* 108:619-637.
- Vleck, C.M.** & D.F. Hoyt. 1991. Metabolism and energetics of reptilian and avian embryos. pp. 285-306. In: *Egg Incubation and its Effects in Embryonic Development in Birds and Reptiles*. M.W.J.Ferguson and D.C. Deeming (Eds.), Cambridge Univ. Press, Cambridge.
- Vleck, C.M.** 1991. Allometric scaling in avian embryonic development. pp. 39-57. In: *Avian Incubation and Embryology*. S.G. Tullett (Ed.), Butterworth, London.
- Vleck, C.M.** & D. Vleck. 1987. Metabolism and energetics of avian embryos. *Journal of Experimental Zoology Suppl.* 1:111-125.
- Seymour, R.S., D. Vleck & **C.M. Vleck**. 1987. Water relations of buried eggs of mound building birds. *Journal of Comparative Physiology* 157:413-422.
- Seymour, R.S., D. Vleck & **C.M. Vleck**. 1986. Gas exchange in the incubation mounds of megapode birds. *Journal of Comparative Physiology* 156:773-782.
- Vleck, D., Vleck, **C.M. Vleck** & D.F. Hoyt. 1985. Physiological correlates of synchronous hatching in rhea eggs (*Rhea americana*). Proceedings of the 18th International Ornithological Congress (Moscow) 18:864-872.
- Vleck, C.M.** & J. Priedkalns. 1985. Reproduction in Zebra Finches: Hormone levels and effects of dehydration. *Condor* 87:37-46.
- Vleck, C.M.** 1985. Time and energy in avian incubation. Proceedings of the 18th International Ornithological Congress (Moscow) 18:399-403

- Priedkalns, J. & **C. Vleck**. 1985. Effect of environmental factors on testicular size and activity in the Zebra Finch. pp. 265-268. In: Current Trends in Comparative Endocrinology. B. Lofts and W.N. Holmes (Eds.), Hong Kong University Press, Hong Kong.
- Vleck, D., **C.M. Vleck** & R.S. Seymour. 1984. Energetics of embryonic development in the megapode birds, Mallee Fowl (*Leipoa ocellata*) and Brush Turkey (*Alectura lathami*). *Physiological Zoology* 57:444-456.
- Priedkalns, J., A. Oksche, **C. Vleck** & R.K. Bennett. 1984. The response of the hypothalamo-gonadal system to environmental factors in the Zebra Finch, *Poephila guttata castanotis*. *Cell and Tissue Research* 238:23-35.
- Vleck, C.M.**, D. Vleck, C. Paganelli & H. Rahn. 1983. Nest microclimate, water-vapor conductance and water loss in heron and tern eggs. *Auk* 100:76-83.
- Bartholomew, G.A., **C.M. Vleck** & T.L. Bucher. 1983. Energy metabolism and nocturnal hypothermia in two tropical passerine frugivores, *Manacus vittelinus* and *Pipra mentalis*. *Physiological Zoology* 56:370-379.
- Carey, C., E.L. Thompson, **C.M. Vleck** & F.C. James. 1982. Avian reproduction over an altitudinal gradient: incubation period, hatchling mass, and embryonic oxygen consumption. *Auk* 99:710-718.
- Wingfield, J.C., **C.M. Vleck** & D.S. Farner. 1981. Effects of day length and reproductive state on diel rhythms of luteinizing hormone levels in the plasma of White-crowned Sparrows, *Zonotrichia leucophrys gambelii*. *Journal of Experimental Zoology* 217:261-264.
- Vleck, C.M.** 1981. Energetic cost of incubation in the Zebra Finch, *Poephila guttata*. *Condor* 83:229-237.
- Bartholomew, G.A., D. Vleck & **C.M. Vleck**. 1981. Instantaneous measurement of oxygen consumption during pre-flight warm-up and post-flight cooling in sphingid and saturniid moths. *Journal of Experimental Biology* 90:17-32.
- Vleck, C.M.** 1981. Hummingbird incubation: female attentiveness and egg temperature. *Oecologia* 51:199-205.
- Vleck, D., **C.M. Vleck** & D.F. Hoyt. 1980. Metabolism of avian embryos: Ontogeny of oxygen consumption in the rhea and emu. *Physiological Zoology* 53:125-135.
- Vleck, C.M.**, D. Vleck & D.F. Hoyt. 1980. Patterns of metabolism and growth in avian embryos. *American Zoologist* 20:405-416.
- Vleck, C.M.** & G.J. Kenagy. 1980. Embryonic metabolism of the Fork-tailed Storm-petrel: physiological patterns during prolonged and interrupted incubation. *Physiological Zoology* 53:32-42.
- Vleck, C.M.**, D.F. Hoyt & D. Vleck. 1979. Metabolism of avian embryos: patterns in altricial and precocial birds. *Physiological Zoology* 52:363-377.
- Vleck, C.M.** & D. Vleck. 1979. Metabolic rate of five tropical bird species. *Condor* 81:89-91.
- Hoyt, D.F., D. Vleck & **C.M. Vleck**. 1978. Metabolism of embryos: Ontogeny and temperature effects in the Ostrich. *Condor* 80:265-271.
- Hoyt, D.F., **C.M. Vleck** & D. Vleck. 1978. Metabolism of avian embryos: Comparative Ontogeny. pp. 237-238. In: *Respiratory Function in Birds, Adult and Embryonic*. J. Piiper (Ed.), Springer-Verlag, Berlin.

Publications (non-peer-reviewed)

- Palacios, M.G., **C.M. Vleck** & D. Vleck. 2006 Comparison of immune structure and function of nestling and adult tree swallows. Iowa State University, Horticulture Research Station 2006 Annual Progress Report. Page 68—69.
- Vleck, C. M.** & T.L. Bucher. 1998. Reproductive endocrinology of free-living Adélie penguins at Torgersen Island, Antarctica. *Antarctic Journal of the United States* 32:105-107.
- Bucher, T.L. & **C.M. Vleck**. 1998. Patterns of nest attendance and relief in Adélie penguins, *Pygoscelis adeliae*. *Antarctic Journal of the United States* 32:103-104.

Vleck, C.M. & A. Ar. 1994. Forward to Symposium Proceedings: Development in vertebrate embryos: Environmental, parental and embryonic interactions. *Israel Journal of Zoology* 40:291-292.

Vleck, C.M. 1991. In Memoriam: Hermann Rahn, 1912-1990. *Auk* 109:191-192.

Book Reviews

Vleck, C.M. 1999. Review of [Swallow Summer. Charles R. Brown. University of Nebraska Press, Lincoln and London. 371 pp. 1998] *Quarterly Review of Biology* 74:337.

Vleck, C.M. 1987. Review of [Physiological Strategies in Avian Biology. J.G. Phillips, P.J. Butler, & P.J. Sharp, Chapman & Hall, New York. 218 pp. 1985] *Ecology* 68:114.

Vleck, C.M. 1983. Review of [Avian Incubation-Egg Temperature, Nest Humidity, and Behavioral Thermoregulation in a Hot Environment. G.S. Grant. Ornithological Monographs No. 30. AOU, Washington, D.C. 75 pp. 1982] *BioScience* 34(2):114.

Professional Presentation

Invited Symposia Speaker/Workshop participant

- 2007 **Vleck, C.M.** A previous graduate student's tribute to George Bartholomew. UCLA Celebration in honor of the life of Dr. George A Bartholomew, one of four invited speakers, UCLA, May, 2007.
- 2006 **Vleck, C.M.**, M. Haussmann & D Vleck, Avian Senescence - mechanisms. Keynote speaker for a symposium on Avian Senescence, International Ornithological Congress, and co-organizer of the symposium with P. Monaghan, Hamburg, Germany, August, 2006.
- Vleck, C.M.**. Mechanisms of senescence in birds. American Physiological Society Comparative Physiology 2006 - Integrating Diversity, Symposium on Comparative Biology of Aging in Long-lived Animals. Virginia Beach, VA, October, 2006.
- Palacios, M.G., **C.M. Vleck**, D. Vleck, & J.E. Cunnick. Comparison of immune structure and function of nestling and adult tree swallows: patterns and processes. North American Ornithological Conference, Veracruz Mexico, Symposium on Swallows of the Americas, October, 2006.
- Badyaev, A.V., & **C.M. Vleck**. Resolution of a trade-off between current reproduction and future sexual ornamentation: a novel physiological mechanism. North American Ornithological Conference, Veracruz Mexico, Symposium on Sexual Selection, October, 2006.
- 2005 Workshop on "Maternal Effects" arranged by NSF Research Collaboration Network on the Integration of Ecology and Endocrinology of Reproduction in Birds, NSERC E-Bird Canada, and European Science Foundation, E-Bird Europe, Seattle, WA, Sept, 2005.
- 2004 Olson, C.R. & **C.M. Vleck**. Effects of egg neglect on embryonic development — consequences of a classic case of parent-offspring conflict. Cooper Ornithological Society Symposium on Physiology and Endocrinology and co-organizer of the symposium with Blair Wolf, La Crosse, WI, May, 2004.
- Vleck, C.M.** Between a rock and a cold spot: reproductive behavior of female penguins in the Antarctic. 8th International Symposium On Avian Endocrinology, Session on Hormones and Female Reproductive Strategies, Scottsdale, AZ, June, 2004.
- Workshop on "Tradeoffs and constraints" arranged by NSF funded Research Collaboration Network on the Integration of Ecology and Endocrinology of Reproduction in Birds, NSERC E-Bird Canada, and European Science Foundation, E-Bird Europe, Wageningen, Netherlands, October, 2004.

- 2003 **Vleck, C.M.** Comparative biology of aging in birds — use of long-lived models. 11th Annual Summer Training Course in Experimental Aging Research, Buck Institute, Novato, CA, June, 2003.
- Vleck, C.M.** The natural history of telomeres: tools for aging animals and exploring the aging process. Symposium on Organisms with Slow Aging (SOSA-2), Univ. of Southern California, January, 2003.
- 2002 National Academy of Sciences, Frontiers in Polar Biology Workshop, (rapporteur and workshop participant), Tahoe City, California, September, 2002.
- Vleck, C.M.** Human disturbance in Adélie penguin colonies: corticosterone response. Waterbird Society, Human Disturbance Symposium, La Crosse, Wisconsin, November, 2002.
- Vleck, C.M.** Control of parental care in an extreme environment: Antarctic penguins. Society for Behavioral Neuroendocrinology. Symposium on Hormonal and Social Influences on Parental Care. Univ. of Massachusetts, June, 2002.
- 2001 Reed, W.L. & **C.M. Vleck.** Experimental approaches to detecting the significance of maternal effects: Egg size effects in the American coot. International Ethology Conference, Round Table Discussion on Non-genetical Inheritance. Tubingen, Germany, August, 2001.
- Vleck, C.M. & D. Vleck.** Physiological condition and reproductive consequences in Adélie penguins. Society for Comparative and Integrative Biology. Symposium on Taking Physiology to the Field: Advances in Investigating Physiological Function in Free-living Vertebrates. Chicago, January, 2001.
- 2000 **Vleck, C.M.** Comparison of corticosterone and heterophil to lymphocyte ratios as indicators of stress in free-living birds. 7th International Symposium on Avian Endocrinology and co-organizer with J. Cockrem of invited session on Conservation Endocrinology, Varanasi, India, February, 2000.
- Reed, W.L. & **C.M. Vleck.** Intraspecific variation in American coot eggs: Size, composition, and hormonal contributions to offspring survival. 7th International Symposium on Avian Endocrinology. Invited session on “Maternal Investment in Eggs”, Varanasi, India, February, 2000.
- 1998 **Vleck, C.M.** Hormonal control of incubation/brooding behavior: lessons from wild birds”, Plenary speaker, European Poultry Conference. Jerusalem, Israel.
- Vleck, C.M. & T. Bucher.** Reproductive endocrinology of the Adélie penguin *Pygoscelis adeliae*. 22nd International Ornithological Congress. Symposium on Environmental/Ecological Endocrinology, Durban, South Africa, August 1998.
- 1996 6th International Symposium on Avian Endocrinology, Lake Louise, Canada.
- 1994 21st International Ornithological Congress, Two Symposia on Evolution of Avian Ontogenies and on Endocrine Adaptations to the Environment, Austria.
- Joint Cooper Ornithological Society/American Ornithologist's Union Workshop for Women in Ornithology, Missoula Montana.
- 1993 American Ornithologists' Union, Symposium on Avian Energetics, Fairbanks, Alaska, June, 2003.
- 1992 5th International Symposium on Avian Endocrinology, Invited Session on Field Endocrinology, Edinburgh Scotland.
- Joint meeting of Society of Experimental Biology, Canadian Society of Zoology, American Society of Zoology and American Physiological Society, Co-organizer of symposium on Development in Vertebrate Embryos: Environmental, Parental, and Embryonic Interactions, Cambridge, England.
- 1991 Symposium on Behavioral Endocrinology: Studies in the Field. Animal Behavior Society Meeting, Univ. of North Carolina.
- 1990 Symposium on Granivorous Birds in Arid Ecosystems, 20th International Ornithological Congress, Christchurch, New Zealand.

- 1989 Poultry Science Symposium on Avian Incubation and Embryology, West of Scotland College, Ayr, Scotland.
International Conference on Physical Influences on Embryonic Development in Birds and Reptiles, University of Manchester, England.
- 1986 Symposium on Behavioral Adaptations of Desert Animals, Animal Behavior Society, University of Arizona, Tucson.
Satellite Symposium on Development of the Avian Embryo, (Invited Overview), International Union of Physiological Scientists, Victoria, British Columbia, 1986.
- 1984 2nd Annual Meeting of Visiting Professorships for Women Awardees, National Science Foundation, Washington D.C.
3rd International Symposium on Avian Endocrinology, Rutgers, University.
- 1982 Symposium on Energetics and Time Budgets of Free-living Birds, 18th International Ornithological Congress, Moscow, USSR.
- 1979 Symposium on the Avian Egg, American Society of Zoologists, Tampa, FL.

Invited Lecture

- 2006 University of Montana, Division of Biological Sciences
- 2005 Wooster College, 8th bi-ennial Ralph Schreiber Memorial Pelican Lecture, Biology Department
Ohio State University, Department of Evolution, Ecology, and Organismal Biology
Gerontology Program Colloquium, ISU
- 2004 Iowa State University, Dept of EEO Biology
- 2003 Arizona State University, Organismal, Integrative and Systems Biology
North Dakota State University, Dept of Biological Sciences
Osborn Club, Iowa State University
- 2002 Grinnell College, Grinnell, Iowa
- 2001 American Association of Laboratory Animal Scientists, Annual Meeting
Morningside College, Sioux City, Iowa
- 2000 University of Nebraska, Omaha, Department of Biology
- 1999 Delta Waterfowl and Wetlands Research Station, Manitoba, Canada
ISU Department of Zoology and Genetics
ISU Department of Zoology and Genetics, Summer Internship Program
- 1998 University of Tel Aviv, Department of Zoology, Tel Aviv, Israel
Ben Gurion University of the Negev, Jacob Blaustein Institute for Desert Research, Israel
ISU Program for Women in Science and Engineering, Poster Session Keynote Speaker
ISU Department of Zoology and Genetics, Summer Internship Program
- 1997 Delta Waterfowl and Wetlands Research Station, Manitoba, Canada
- 1996 ISU, Department of Zoology and Genetics
ISU, College of Veterinary Medicine
University of Arizona, Department of Ecology and Evolutionary Biology
- 1995 Palmer Research Station of the National Science Foundation, Antarctica,
Lakeside Laboratory, Milford, IA.
ISU, H. Hugh Duke's Club
ISU, Department of Animal Ecology
- 1994 Western Field Ornithologists, Invited speaker for annual meeting, Tucson, AZ
- 1993 University of California, Riverside
- 1992 University of Tulsa
University of Nevada, Reno

Utah State University
 Northern Arizona University
 University of Missouri, St. Louis
 1991 University of California, Irvine
 1990 University of Chicago
 1989 Boise State University and World Center for Birds of Prey
 1988 Ohio State University
 University of Washington, Seattle
 1984 Rockefeller University Field Research Station, Millbrook, NY
 1980 Arizona State University, Tempe
 1979 University of Adelaide, South Australia
 Cornell University
 Harvard University, Concord Field Station
 1978 University of Washington, Seattle,
 1977 Smithsonian Tropical Research Institute, Barro Colorado Island, Panama
 University of California, Davis
 University of California, Riverside

Teaching Service (Iowa State University, Ames)

Lecture Courses:

Course	Title	Units	Year
Biol 336X	Ecological and Evolutionary Animal Physiology	3	2006-07
Zool 454/545; Biol 434/EEOB 534	General and Comparative Endocrinology	3/4	1998-2007
EEB 585	EEB Extended field trip (team taught)	2	2006
Biol 155/156	Human Biology and Laboratory	4	2004
Zool 255	Intermediate Anatomy and Physiology	3	2002
Zool 255	Intermediate Physiology	3	1999-2001
Zool 355	Principles of Physiology	5	1995-97, 1999
Zool 507	Advanced Animal Behavior	2	1998
Aecl 514	Evolutionary Ecology	3	1997
Biol 202	Principles of Biology	3	1994

Seminar Courses:

Course	Title	Units	Year
EEB 698	Graduate Seminar in Evolution of Life Histories	1	2005
Biology 394 A, B	Undergraduate Fieldtrips in Biology – Antarctica	3	1999, 2004
Zool 690D	Seminars on Biochemical & Physiological Adaptation	1	94-95, 97-98, 2000-02
Zool 492	Undergraduate Seminar in Environmental Biology	1	2001-2004
Zool 696E	Seminar in Biology of Populations and Organisms	1	1997-99, 2003
Zool 590	Seminar in Behavioral and Field Endocrinology	2	1996
Zool 696G	Animal Behavior Research Seminar	1	1994-2001

Teaching Service, (University of Arizona, Tucson)

Ornithology (Ecol 484/585), Spring, 1993
 Graduate Seminar in Physiological Ecology (Ecol 596E) team-taught, 1987, 1989, 1991, 1993, 1994
 Introductory Biology (Ecol 182), team taught, Spring 1991
 Physiology Laboratory (Ecol 466/566), team taught, Spring 1990, 1991
 Vertebrate Physiology (Ecol 437), Fall 1989, 1990, 1991; Summer Session 1990, 1991
 Graduate Seminar in Vertebrate Reproductive Biology (Ecol 596 GX), Fall 1983
 Human Physiology Lecture (Ecol 464 AR and 464 BR), 1981-1982, 1985-1987, 1988-1989
 Human Physiology Laboratory (Ecol 464 AL and 464 BL), 1981-1982, 1985-1987, 1988-1989

Graduate Students (Iowa State University, Ames)**Ph.D. Program of Study Committee Chair:**

Wendy Reed (Dissertation: Intraspecific patterns of variation in egg size: consequences for fitness) awarded Spring, 2000
 Mark Haussmann (Dissertation: The evolution of avian lifespan: an examination of telomere dynamics and immunosenescence) awarded Spring, 2005
 Chris Olson, (Dissertation: Behavioral-induced periodic cooling of avian embryos) awarded Fall, 2006
 Debora Christensen, expected, Summer 2007
 Maria Gabriela Palacios, entered Fall, 2003

M.S. Program of Study Committee Chair:

Lori Ross, (Thesis: The effects of an incubation manipulation on prolactin secretion in Adelie penguins (*Pygoscelis adeliae*), awarded Fall, 1997
 Wei Liu, (Thesis: DNA oxidative damage in birds: measuring, analyzing and comparing), awarded Fall, 2004
 Christopher Guyer, M.S. Interdisciplinary Graduate Studies, awarded Spring, 2006
 Rebecca Parsons, entered Fall, 2006

B.S./M.S. Program of Study Committee

David Robinson, completed, 1995

Ph.D. Program of Study Committee:

Claudia Ceballos, EEB
 Amanda Sparkman, EEB
 Brian Olechnowski, EEB
 David Miller, EEB
 Dan Barton, University of Montana
 Ron Sarno, Animal Ecology, awarded Spring, 1997
 Linda Gucciardo, EEB, awarded Spring, 1999
 Carrie Morjan, IG, awarded Spring, 2002

M.S. Program of Study committee:

Paul Skrade, Animal Ecology
 Natasha Drufke Animal Ecology, awarded Spring, 2000
 Julie Young, Ecology and Evolutionary Biology, awarded Fall, 2000
 Rachael Dault, Ecology and Evolutionary Biology, awarded 2001

Satish Kumar Vemula, Computer Science, awarded 2003
 Cheng-Yu Yao, Biomedical Sciences, ISU, awarded 2004
 Tim Weesner, M.S. Interdisciplinary Graduate Studies, awarded Spring, 2006

Postdoctoral Associates (Iowa State University, Ames)

Dr. Theresa Bucher, 1994-1996
 Dr. Tamara Ross, 1998-1999

Graduate Committees (University of Arizona)

Between 1981 and 1994, I served on 4 PhD Committees and 6 MS Committees, University of Arizona, I was an outside reviewer for 1 Master's thesis, University of Adelaide, South Australia 1987.

Student Internship Projects (Iowa State University, Ames)

Molly Staley, 2007. Telomere analysis in birds. ISU Honors Program Freshman Research.
 Becky Parsons, 2006. Effects of handicapping on flight performance and oxidative damage in zebra finches.
 Amanda Chamberlin, 2005. Aging in zebra finches (*Taeniopygia guttata*): a study in histopathology. Vet Med Summer Scholars Program.
 Becky Parsons, 2005. Corticosterone and predation in wild populations of *Rana catesbeiana* tadpoles.
 Kelsey Dalton, 2005. Reproductive success in novice and experienced zebra finches. Honors project in Animal Ecology.
 Nicole Scott, 2002-5. Telomeres in American alligator effect of age and body size. UMEB Participant and Honors Project in Zoology & Genetics.
 Carrie Sanneman, 2003. Aging and DHEA in birds. UMEB Participant.
 Amber Cribbs, 2002-2004. Change in corticosterone stress response over the annual cycle in house sparrows. UMEB Participant.
 Erin Mehling, Summer 2002. Breeding biology of tree swallows. UMEB Participant.
 Jill Hunt, Summer 2001. Physiology of migrating warblers. UMEB Participant.
 Sara Kaiser, Spring, 2001. Physiology of migrating warblers. UMEB Participant.
 Rebecca Jansma, Spring 2001. Physiology of migrating warblers. UMEB Participant.
 Karen Osborne, Fall 2000. Glycerol and triglyceride levels in migratory warblers.
 Sara Brenner, 2000. Telomere restriction fragment analysis in zebra finches. NSF REU participant.
 Uzo Obikeze, 1999. Physiological responses of Adélie penguins to fasting. NSF REU participant.
 Nicole Vertalino, 1998. Comparisons of corticosterone and heterophil/lymphocyte ratios as a measure of stress in free-living birds. ISU Program for Women in Science and Engineering.
 Tonia Schwartz, 1998. Analysis of DNA for sex-determination in jays and penguins. Undergraduate Research Assistantship Program.
 Tony Olson, 1997. Effects of varying pH exposure on corticosterone levels in *Xenopus laevis*.
 Elizabeth Fettkether, 1997. Effects of handling stress on Adélie penguins.
 Laurie Weaver, 1997. The effects of fasting on blood chemistry in Adélie penguins.
 Sandy McGraw, 1996. Reproductive endocrinology and behavior of cooperatively breeding Mexican jays in Arizona. NSF REU participant.
 Dan Patrick, 1996. The effects of VIP and anti-VIP on prolactin secretion in blue jays. ISU Department of Zoology & Genetics Undergraduate Summer Internship program.

- Valissitie Heeren, 1996. Protein and lipid utilization during the breeding fast in Adélie penguins, *Pygoscelis adeliae*. NSF REU participant & Program for Women in Science and Engineering.
- Anna Keyte, 1996. Corticosteroid-binding globulin in Adélie penguins at different stages of the reproductive cycle. High School Summer Internship Program, Program for Women in Science and Engineering.
- Khodejah Chester, 1995. Isolation of DNA from avian blood samples. Undergraduate Summer Intern, Research Careers for Minority Scholars Program.
- John Adams, 1995. Control of reproductive behavior in Arizona scrub jays. NSF REU participant.
- Nikki Rathbun, 1995. The effects of serotonin depletion on the behavior of Mexican Jays. High School Summer Internship Program, Program for Women in Science and Engineering.

Service to Professional Societies

- International Ornithological Congress, Chair of Scientific Program Committee for 2010 Brazil meeting
- NSF Research Coordination Network on Integrating Ecology and Endocrinology in Avian Reproduction, Steering Committee, 2004-2006
- Sigma Xi, ISU Chapter Nominating Committee, 2007-08
- Society for Integrative and Comparative Biology, Chair of Nominating Committee, 2004
- International Society for Avian Endocrinology, International Committee, 1997-2004
- American Ornithologists' Union, Brewster and Coues Awards Committee, 1982, 2000, 2001-02
- American Ornithologists' Union, Elected Council Member, 1997-2000
- American Ornithologists' Union, Wetmore and Van Tyne Student Research Awards committee, American Ornithological Union, 1984-1988, Chair, 1987-1988
- Cooper Ornithological Society Harry R. Painton Award Committee, Chair, 1998-1999.
- Cooper Ornithological Society Joseph Grinnell Student Research Award Committee, Chair 1999-2001.
- Cooper Ornithological Society, Board of Directors, 1991-1994; Publication Committee Chair, 1993-1995.
- Pomona College Alumni Admissions Committee, 1988-1995
- American Society of Naturalists, Treasurer, 1993-1995, Advisory Board 1995-1998.
- American Museum, Southwestern Research Station Scientific Advisory Committee, 1994-1996
- American Society of Zoologists, Program Office, Division of Ecology, 1986-1989

Professional service: Reviewing

- Editorial Review Board for *Oecologia*, 2003-present
- Editorial Review Board for *Physiological Zoology*, 1986-1990
- Swarthmore College, External examiner for Honors Program, 2006
- National Institute of Health, National Institute on Aging, Review Panel, 2003
- National Science Foundation Antarctic Biology and Medicine Panel, 2005
- National Science Foundation Ecological and Evolutionary Physiology Doctoral Dissertation Improvement Grant Panel, 1999, 2002
- National Science Foundation, Ecological and Evolutionary Physiology Panel, 1997, 1998, 2001
- National Science Foundation, Integrative Research Challenges in Environmental Biology Panel, 2000
- National Science Foundation, Young Investigator Awards Panel, 1994
- Journal Reviewer (since 2000): *Advances in Physiological Education*, *Aging Cell*, *American J. Primatology*, *American Zoology*, *Animal Behavior*, *Auk*, *Behavioral Ecology & Sociobiology*, *Behavioral Ecology*, *Condor*, *Conservation Biology*, *Evolutionary Ecology Research*, *Encyclopedia of Gerontology*, *Experimental Gerontology*, *General & Comparative*

Endocrinology, Hormones & Behavior, Ibis, J. Animal Ecology, J. Comparative Physiology, J. Experimental Biology, J. Field Ornithology, J. Raptor Biology, Molecular Ecology, Oecologia, Oikos, Physiology & Behavior, Physiological & Biochemical Zoology, Polar Biology, Proceedings of the Royal Society, London, Wilson's Bulletin, Philosophical Transactions of the Royal Society, London

Grant Proposal Reviewer (since 2000): National Science Foundation, Australian Research Council, National Environmental Research Council, Antarctica, New Zealand, the California Pacific Medical Center, New Zealand McCarthy Fellowship program, and ISU

External Reviewer for Promotion and Tenure Decisions: Indiana University, Wake Forest University, Arizona State University, Colorado State University, University of California, Davis, University of Minnesota, Colorado State University, Kalamazoo College, State University of New York, Syracuse, Colgate University.

External Reviewer Thesis/Dissertation: Massey University, New Zealand, University of Hong Kong, University of Adelaide.

University Service (Iowa State University)

University level

Interdepartmental Graduate Program in Ecology and Evolutionary Biology

Program Chair and DOGE, 2003-2006

Supervisory Committee, 1998-2002

Spring Competitive Fellowship Committee, 2001-02

Nominations Committee, 2006

ISU Graduate Council, 2005 -2007,

Subcommittees on Postdoctoral Policies and Graduate Stipends, Programs of Study

Ad hoc committee on University policy on graduate student tuition scholarships, 2007

ISU Institutional Animal Care and Use Committee, 2006 - 2009

Preparing Future Faculty Program, 2002 (Mentor for Rob Fletcher, NREM)

Shared Leadership for Institutional Change Program, 2002

Departmental level

Department of Ecology, Evolution and Organismal Biology

Executive Committee, 2005-2007

Faculty Search Committee, Ecol. & Evol of Organisms, Chair, 2006

Post-tenure Review Committee, 2006

Special Review Committee and Faculty Mentor (Jeanne Serb) 2005-07

Special Review Committee (Dean Adams, Anne Bronikowski,) 2005-07

Steering Committee, 2002-03

Science II Teaching Space, EEOB representative, 2005-2007

Facilities Committee, 2003-05

Resources Committee, Biological Sciences Reorganization, 2002-03

Evolutionary Biologist Search Committee, 2002-03

Department of Zoology and Genetics

Faculty Development Committee, 2000-03

Peer Teaching Review Committee, 2001-02

Human Relations and Diversity Committee, 2000-01

Curriculum Committee, 1994-2000
 Integrative Biologist Faculty Search Committee, 1995-1996

Biology Program

Review Committee for Biology 312 (Ecology), 1994-95
 BEST Learning Community, Freshman mentor, 1997

University Service, (University of Arizona)

University of Arizona Prehealth Professions Committee, 1986-1988
 University of Arizona Women in Science and Engineering Annual Science Career Workshop, 1983, 1984, 1986
 University of Arizona Undergraduate Faculty Dialogue Program, 1982-1984
 James R. Silliman Memorial Research Grants Committee, 1991-1994

Community Service (Iowa State University)

2007 ISU Beta Beta Beta National Biological Honor Society guest lecture, March, 2007
 2006 ISU Women's World Club, guest speaker, January, 2006
 Des Moines Westminster Presbyterian Church Lunch Group, guest speaker, February, 2006
 2005 ISU Marine Biology Club, guest speaker, April, 2005
 Reiman Gardens, ISU, speaker in Global Garden Lecture Series: The Antarctic Landscape, Feb, 2005
 2004 Fisheries and Wildlife Biology Club, ISU, guest speaker, October, 2004
 2003 Iowa Western Community College Equity Seminar, Keynote Speaker. March, 2003.
 2003 WINGS - Young women investigating science & mathematics, Briar Cliff University, Morningside College & Western Iowa Tech Community College, Keynote Speaker. Sioux City, IA Convention Center, April, 2002.
 Biology/Zoology/Genetics Club, ISU, 2002
 2001 ISU Child Development Lab, guest speaker, February, 2001
 2000 ISU Biology Interest Group, Fall, guest speaker, 2000
 1998 Program for Women and Science, Summer High School Internship, Keynote Speaker, July, 1998
 Ballard West Elementary School, guest speaker, January, 1998
 ISU Women's Club Nature Division meeting, guest speaker, January, 1998
 1997 Big Bluestem Audubon Society, guest speaker, April, 1997
 Ames Middle School Extended Learning Program, guest speaker, May, 1997
 Jewel Public Library Summer Reading Program, guest speaker, June, 1997
 1996 Iowa Public Television K-12 Distance Learning on the Iowa Communications Network, Demonstration Learning Session on Antarctic Biology, October, 1996
 Como Park Zoological Society, Saint Paul, MN, Annual meeting guest lecture, 1996
 Association for Women in Science, ISU, Keynote Speaker for Program for Women in Science, Career Conference for middle school girls, October, 1996
 Public School Talks: Sawyer Elementary School, Ames IA; Sunnyside High School, Tucson, AZ; and Cholla Elementary School, Casa Grande, AZ
 1995 Association for Women in Science, Panel discussion participant, Paths of Women in Science, April, 1995.

Awards and recognition

Ecology, Evolution & Organismal Biology Department Award of Merit for Exceptional Contributions to Teaching, 2007

LAS College Sesquicentennial project "150 fascinating people of LAS", 2007

National Postdoc Leadership Mentoring Project Participant, Sloan Foundation, 2007

First author on one of 80 most cited papers in Physiological Zoology, on the 80th Anniversary of the journal, 2006

Wooster College, Presenter of the Ralph Shreiber Bi-ennial Pelican Lecture, 2005

Interviewed for BBC Natural History Unit on Animal Behavior and Aging, 2005

American Ornithologist's Union Vice President Nominee, 2005

ISU Team Member to CIRTLL Workshop on Achieving Diversity in STEM Disciplines, Univ. of Wisconsin, Madison, 2005

Margaret Ellen White Graduate Faculty Award, Finalist 2004

Discover Magazine 100 Top Science Stories of 2003

Shared Leadership for Institutional Change, invited participant, 2002

American Ornithologists' Union, Elected member, 1987, Elected Fellow, 1993

Cooper Ornithological Society, A. Brazier Howell Award, 1977

Cooper Ornithological Society, Frances F. Roberts Award, 1978

UCLA Association of Academic Women, Graduate Woman of the Year, 1978

8/2007