

EMILIE M GRAY

Curriculum Vitae

Associate Professor, Organismal Biology & Ecology
Colorado College
Colorado Springs, CO

Languages: English, French
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EDUCATION

- 2005 Ph.D. Ecology & Evolutionary Biology. University of California, Irvine, CA, USA.
1999 M.S. Environmental Studies. French Institute for Research and Development (IRD), Orleans, and National Agronomic Institute (INA-PG), Paris, France.
1998 B.S. Population and Ecosystem Biology. University of Rennes, France.

ACADEMIC APPOINTMENTS

- 2009-present Associate Professor, Dept of Organismal Biology & Ecology, Colorado College (Assistant rank 2009-2015).
Teaching: Biology of Animals, Ecology, Comparative Animal Physiology, Biodiversity and Conservation, Winter Ecology, Ecology and Coral Reef Biology of Belize, Medical Entomology
Mentored student research: help students develop and carry out independent research projects in the lab or the field. Topics vary from conservation biology to insect ecology and thermal physiology (have mentored over 50 students so far, including 15 senior thesis students)
- 2007 Lecturer, Organization for Tropical Studies (OTS), South Africa.
Teaching: Statistical Methods, Conservation Biology and Ecology.
Mentored student research: diverse ecological field projects.
- 2000-2005 Teaching Assistant, University of California, Irvine.
Teaching assistant/lab instructor: Limnology & Freshwater Biology, Restoration Ecology, Insect Physiology, Human Anatomy, Human Physiology.

RESEARCH POSITIONS

- 2007-2009 Post-Doctoral Research Associate, Eck Center for Global Health, Department of Biological Sciences, University of Notre Dame, IN.
- 2005-2006 Post-Doctoral Research Associate, Department of Zoology, University of Stellenbosch, South Africa.
- 1999-2002 Research Assistant, University of California, Irvine. Restoration of wetland and coastal sage scrub habitat, biological monitoring following restoration.

- 1999 Research Assistant, CIAPOL (Ivorian Anti-Pollution Center), Abidjan, Ivory Coast.
- 1998 Research Assistant, French electric company (EDF). Impacts of dams on brown trout populations in the Pyrénées, France.

PUBLICATIONS (* undergraduate coauthor)

- Amer, K.*, K. Saavedra-Rodriguez, W.C. Black IV and E.M. Gray, 2021. Effect of selection for pyrethroid resistance on abiotic stress tolerance in *Aedes aegypti* from Merida, Yucatan, Mexico. **Insects** 12, 124. <https://doi.org/10.3390/>
- Heinrich, E.C., E.M. Gray, A. Ossher, S. Meigher*, F. Grun and T.J. Bradley, 2017. Aerobic function in mitochondria persists beyond death by heat stress in insects. **Journal of Thermal Biology** 69: 267-274.
- Gray, E.M., 2013. Thermal acclimation in a complex life cycle: the effects of larval and adult thermal conditions on metabolic rate and heat resistance in *Culex pipiens* (Diptera: Culicidae). **Journal of Insect Physiology** 59: 1001-1007.
- Vorhees, A.S., E.M. Gray and T.J. Bradley, 2013. Thermal resistance and performance correlate with climate in populations of a widespread mosquito. **Physiological and Biochemical Zoology** 86(1): 73-81.
- Fouet, C., E.M. Gray, N.J. Besansky and C. Costantini, 2012. Adaptation to aridity in the malaria mosquito *Anopheles gambiae*: Chromosomal inversion polymorphism and body size influence resistance to desiccation. **PLoS ONE** 7(4): e34841.
- Gray, E.M., K.A.C. Rocca*, C. Costantini and N.J. Besansky, 2009. Inversion 2La is associated with enhanced desiccation resistance in *Anopheles gambiae*. **Malaria Journal** 8: 215.
- Rocca*, K.A.C., E.M. Gray, C. Costantini and N.J. Besansky, 2009. 2La chromosomal inversion enhances thermal tolerance of *Anopheles gambiae* larvae. **Malaria Journal** 8: 147.
- Gray, E.M., and S.L. Chown, 2008. Bias, precision and accuracy in the estimation of cuticular and respiratory water loss: a case study from a highly variable cockroach, *Perisphaeria* sp. **Journal of Insect Physiology** 54(1): 169-179.
- Gray, E.M., and T.J. Bradley, 2006. Evidence from Mosquitoes Suggests that Cyclic Gas Exchange and Discontinuous Gas Exchange are Two Manifestations of a Single Respiratory Pattern. **Journal of Experimental Biology** 207: 1603-1611.
- Gray, E.M., and T.J. Bradley, 2006. Malarial infection in *Aedes aegypti*: effects on feeding, fecundity and metabolic rate. **Parasitology** 132: 1-8.
- Gray, E.M., and T.J. Bradley, 2005. Physiology of Desiccation Resistance in *Anopheles gambiae* and *Anopheles arabiensis*. **American Journal of Tropical Medicine and Hygiene** 73(3): 553-559.
- Gray, E.M., and T.J. Bradley. 2003. Metabolic Rate in Female *Culex tarsalis* (Diptera: Culicidae): Age, Size, Activity and Feeding Effects. **Journal of Medical Entomology** 40(6): 903-911.
- Gray, E.M. 1999. Urban Pollution of the Ebrié lagoon, Abidjan, Cote d'Ivoire. Masters Thesis (unpublished, French).

CONFERENCE PRESENTATIONS, INVITED SEMINARS (* undergraduate coauthor)

- 2019 University of Colorado, Denver Integrative Biology Department invited seminar. Using the yellow fever mosquito (*Aedes aegypti*) as a model for examining fitness trade-offs in the evolution of insecticide resistance.
- 2017 Entomological Society of America Annual Conference, Denver, CO. Tripathi*, S., Rasmussen*, S., Saavedra-Rodriguez, K., Black, W.C. IV and E.M. Gray. Fitness Impacts of Insecticide Resistance in the mosquito *Aedes aegypti*.
- 2016 Aficionados luncheon Seminar series, Colorado College. The Salton Sea: Introducing students to the Liberal Arts through a place-based study.
- 2014 Faculty luncheon Seminar series, Colorado College. Species survival in a changing world.
- 2014 University of Denver Biology Department Seminar series. Mosquitoes and climate change: the roles of genetic adaptation and phenotypic plasticity.
- 2014 SICB Annual Meeting. Austin, TX. Hoffman*, J., Sylla, M. and E.M. Gray. Effects of desiccation stress on gene expression in the mosquito *Aedes aegypti*.
- 2013 Natural Sciences Seminar series, Colorado College. Species survival and climate change: the case of mosquitoes.
- 2012 Aficionados luncheon Seminar series, Colorado College. *Culex tarsalis*: how do broadly distributed species respond to climate change?
- 2012 SICB Annual Meeting. Charleston, NC. Wise*, K.L. and E.M. Gray. Thermal acclimation affects the aerobic scope of Madagascar hissing cockroaches (*Gromphadorhina portentosa*).
- 2011 SICB Annual Meeting. Salt Lake City, UT. Gray, E.M. and C.M. Bowen*. Thermal and water balance physiology of mountain pine beetles.
- 2009 SICB Annual Meeting. Boston, MA. Gray, E.M., K.A.C. Rocca* and N.J. Besansky. Chromosomal inversion effects on aridity tolerance in the mosquito *Anopheles gambiae*.
- 2005 SICB Annual Meeting. San Diego, CA. Gray, E.M. and T.J. Bradley. Water Balance in two Tropical Mosquitoes, *Anopheles gambiae* and *An. arabiensis*.
- 2004 ASTMH Annual Meeting. Miami, FL. Gray, E.M. and T.J. Bradley. Physiological basis of Desiccation Resistance in *Anopheles gambiae* and *An. arabiensis*.
- 2004 SICB Annual Meeting. New Orleans, LA. Gray, E.M. and T.J. Bradley. Malarial Infection in *Aedes aegypti*: effect on energy balance and metabolism.
- 2003 SICB Annual Meeting. Philadelphia, PA. Gray, E.M. and T.J. Bradley. Metabolic and Energetic Effects of Malarial Infection in *Aedes aegypti*.
- 2002 SICB Annual Meeting. Toronto, ON. Gray, E.M. and T.J. Bradley. Metabolic Rate in Female Mosquitoes: Age, Size, Activity and Feeding Effects.
- 2002 APS Annual Meeting. San Diego, CA. Gray, E.M. and T.J. Bradley. Metabolic Rate in Female *Culex tarsalis*: Effects of Age, Size, Activity and Feeding.

FELLOWSHIPS AND GRANTS

- Colorado College Faculty-Student Collaborative Grant for Summer Research (2013, 2018)
- Colorado College OBE Robert Hevey Funds (2018)
- Colorado College Natural Sciences Division Summer Research Grant (2010-2018)
- Colorado College Hulbert Center for Southwest Studies Jackson Fellows Award for Summer Research (2010-2014)
- Graduate Assistance in Areas of National Need (GAANN) Research and Travel Grant. Department of Education and Department of Ecology & Evolutionary Biology, University of California, Irvine (2003-2004)
- Graduate Assistance in Areas of National Need (GAANN) Fellowship. Department of Education and Department of Ecology & Evolutionary Biology, University of California, Irvine (2003-2005)
- Conference Travel Grant. Biological Sciences Dean's Office, University of California, Irvine (2003-2004)
- Ecology & Evolutionary Biology Summer Fellowship. Department of Ecology & Evolutionary Biology, University of California, Irvine (2001-2003)
- Research Travel Grant. National Agronomic Institute of Paris (INA-PG), France (1999)

ACADEMIC SERVICE

- Diversity and Equity Advisory Board (2020-present)
- Hiring Committee, tenure track faculty, Mathematics & Computer Science department at Colorado College (fall 2020)
- Hiring Committee, tenure track faculty, Human Biology & Kinesiology department at Colorado College (fall 2020)
- Faculty Executive Committee, Budget Subcommittee at Colorado College (elected position, 2018-2020). CHAIR of Budget Subcommittee in 2019-20
- Collaborative for Community Engagement Steering committee, spring 2018
- Natural Science Executive Committee at Colorado College (elected position, 2014-2018, except 2015-2016 for sabbatical). CHAIR in 2017-18
- Faculty Advancement Advisory Committee at Colorado College (2012-2014)
- Campus Sustainability Council at Colorado College (2011-2015)
- Curriculum Committee at Colorado College (2010-2012)
- Hiring Committee, tenure track faculty, Chemistry department at Colorado College (fall 2011)
- Hiring Committee, new Director of International Programs at Colorado College (spring 2011)

Biology Seminar Series Organizing Committee at Colorado College (Fall 2009-present)
Reviewer of Barnes Scholarship applications at Colorado College (2012, 2014, 2016, 2017)
Academic advisor at Colorado College (fall 2010-present) for 30 students per year on average
Admissions Office Open House participant at Colorado College (fall 2009-present).
Annual Departmental Retreats organizer, department of Ecology & Evolutionary Biology,
University of California, Irvine (2001, 2004).
Graduate Student Representative for faculty meetings, department of Ecology & Evolutionary
Biology, University of California, Irvine (2003-2004).

SCHOLARLY SERVICE

Subject editor for the Bulletin of Entomological Research (2016-18).
Service on National Science Foundation grant proposal advisory panel.
Reviewer for the National Research Foundation (South African equivalent of NSF).
Reviewer for articles for various journals (Comparative Biochemistry and Physiology, Journal of
Entomology and Nematology, Journal of Evolutionary Biology, Journal of Insect Physiology,
Physiological and Biochemical Zoology, Scientific Reports, PLoS ONE, Thermal Biology,
Environment Systems and Decisions).
External reviewer for tenure and promotion of 5 colleagues in other colleges/universities.

PROFESSIONAL AFFILIATIONS

ESA (Entomological Society of America)
SICB (Society for Integrative and Comparative Biology)

COMMUNITY SERVICE

Colorado Springs Cool Science Festival contributor (2014, 1016)
BioBlitz (Insecta) in Colorado Springs, summer 2017
Board of Directors, Rocky Mountain Field Institute (2013-2017)
Led cheesemaking workshops for GlobeMed fundraisers at Colorado College
Offer free yoga for faculty and staff at Colorado College