Rebecca E. Forkner

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Education

1993 Bachelor of Science, Biology with Honors, *Summa cum laude*, University of Cincinnati, OH
1998 Doctor of Philosophy, Ecology, Institute of Ecology, University of Georgia

Professional Appointments

2007 – present, Assistant Professor, George Mason University, VA
2005 – 2007, Visiting Assistant Professor, Tulane University, New Orleans, LA
2004 – 2005, Post-doctoral Associate, University of South Florida, Tampa, FL
2000 – 2004, Post-doctoral Associate, University of Missouri – St. Louis, MO
1999 – 2000, Post-doctoral Associate, University of California – Riverside, CA

Additional Appoints *(involving undergraduate or graduate student mentoring)*

2008 – present, Research Associate – Smithsonian National Zoological Park, Front Royal, VA
2007 – Visiting Scientist, Chemistry Research Unit, USDA, Agricultural Research Service, Gainesville, FL
2007 – Visiting Scientist, Yanayacu Biological Station, Napo Province, Ecuador
2002 – Visiting Scientist, Miami University of Ohio, Department of Chemistry, Miami, OH
2001 – Visiting Scientist, University of Hawai`i, Mānoa, Department of Zoology, Hilo, HA
1999 – Visiting Scientist, Belize Foundation for Research and Environmental Education, Toledo District, Belize
1997 – Visiting Researcher, Pennsylvania State University, Pesticide Research Laboratory, State College, PA

*Courses Taught**

Advanced Conservation Biology[D]
Conservation Biology[D]
Community Ecology
Cultural Entomology[D,E]
Dispersal & Biodiversity[D, T]
Diversity of Life[L]
Ecological Basis of Environmental Issues[D,L]
Ecology[L]
Entomology[K]
Evolution in Health and Disease[D]
General Biology[K]
Insect Biology[D,L]
Introductory Biology[L]
Invertebrate Communities[D]
Invertebrate Zoology[D,L]
Plant Induction & Biochemistry[D]
Plant-Animal Interactions[D,L]
Population & Community Ecology[D,L]
Predator-Prey Interactions[D,L]
Reproductive Strategies[D]
Topics in Medical Entomology[D,L]
Tropical Biology[D,L]
Tropical Ecosystems[D,E]
Tropical Herpetology
Veterinary Herpetology[D,L]

* See Table 2 for course descriptions
D – Indicates I was responsible for course development
L – Course included laboratory or field component
E – General Education course
K – K–12 course
T – Employed distance learning technology

*Student Advisees**

Graduate Students

Craig Beatty, M.S. (GMU), 2011
Jonathan Witt, M.S. (GMU), 2010
Heidi Connahs, M.S. (Tulane), 2009
Genoveva Rodriguez, Ph.D. (Tulane), 2009

Undergraduate Students

Caitlin Cutler, B.S. Biology (GMU), 2012
Juraj Cech, B.S. Biology (GMU), 2009
Jon Daily, B.S. Biology, B.S. Mathematics (GMU), 2009
Anna Braum, B.S. Biology (GMU), 2009
Mrinalini Ramanan, B.S. Biology (GMU), 2009
Andrew Jenkins, B.S. Biology (GMU), 2008
Brittany Bernik, B. S. Ecology & Evolution (Tulane), 2008

High School Students

Danarubini Ramanan (Woodson High School), 2012

Graduate Committee Service

Advait Jukar, M.S. candidate (GMU), 2012 – present
Richard Groover, Ph.D. candidate (GMU), 2007 – present
Jennifer Hauk, M.S. candidate (GMU), 2008
German Perilla, M.S. candidate (GMU), 2009
Rita Malia Fincher, Ph.D. (Tulane), 2007

*In addition to these students, I have mentored a total of 104 graduate, undergraduate, and high school students outside of the classroom through participation in my field and lab research. A list of those students and the projects in which they were involved is available upon request.

Teaching-related Symposia and Workshop Participation

2008 – present, Plant-Insect Group, VA-DC-MD Consortium, George Washington University, D.C.
2011 – Canopy Biology Workshop, North Carolina State University, Raleigh, NC
2007 – Educating Women for a World in Crisis, Newcomb College Institute, Tulane University, New Orleans, LA
2001 – 2004 – Whitney and Anna Harris Conservation Forum, Missouri Botanical Gardens, St. Louis, MO
1999 – Museums, Universities and Biodiversity in the 21st Century Symposium, California Academy of Sciences & Stanford University, San Francisco, CA

Teaching-related Publications in preparation

Forkner, R. E. Insect Biology: A laboratory manual.
Forkner R. E. and C. Beck. An instructor's guide to teaching the biology of homosexuality. *In prep* for American Biology Teacher
Marquis, R. J., ., S. Passoa, J. Whitfield, J. T. Lill, J. LeCorff, **R. E. Forkner**, V. Passoa. An Illustrated Field Guide to the Immature Lepidopteran Fauna of Oaks of Missouri. *In press*, USDA Forest Service.

Student First Authored Publications (includes co-authored papers only)

Witt, J., **R. E. Forkner**, R. Kraus. 2013. Trade-offs, habitat, size, and density effects on sublethal injury in tidal freshwater *Ishnura* and *Enallagma* damselfly larvae. *Freshwater Biology*.
Puente, M., N. Darnall, and **R.E. Forkner**. 2011. Assessing integrated pest management adoption: measurement problems and policy implications. *Environmental Management* 48:1013-1023. DOI: 10.1007/s00267-011-9737-x
Rodriguez-Castaneda, G., **R. E. Forkner**, L.A. Dyer, E. Tepe, and G. Gentry. 2011. Weighing defensive and nutritive roles of ant mutualists across a tropical altitudinal gradient. *Biotropica* 43:343-350. DOI: 10.1111/j.1744-7429.2010.00700.x
Rodriguez-Castaneda, G., L. A. Dyer, G. Brehm, H. Connahs, **R. E. Forkner**, and T. Walla. 2010. Tropical forests are not flat – Geographical variation in herbivore diet breadth and diversity. *Ecology Letters* 13:1348-1357. DOI: 10.1111/j.1461-0248.2010.01525.x
Jeffries, J. M., R. J. Marquis, **R. E. Forkner**. 2006. Forest age influences oak insect herbivore community structure, richness, and density. *Ecological Applications* 16:901-912. DOI: 10.1890/1051-0761(2006)016[0901:FAIOIH]2.0.CO;2

Successful Student Research Proposals

2009 – Virginia Academy of Science. Interactions between habitat complexity, variability in predator size structure, and prey availability: implications for coexistence in intraguild predation systems. Total: $1,250 (Co – Principle Investigator with M.S. student J. Witt)
2009 – Washington Biologist's Field Club. "Interactions between habitat complexity and temporal variability in predator size structure and prey availability." Total: $2,000, (Co-Principle Investigator with M.S. student J. Witt)
2009 – George Mason University, Undergraduate Apprenticeship Program. Changes in the distribution of larval Bluet damselflies (*Enallagma* spp.) in response to tidal influences in a freshwater marsh, Total: $1,000, (Co-Principle Investigator with undergraduate A. Braum)
2009 – Garden Club of America, Ecological Restoration Program. Evaluating the ecological resilience of improved *Spartina alterniflora* in marshes exposed to riverine forcing. Funding Agency: Total: $7,943, (Co-Principle Investigator with M.S. student H. Connahs and P.I. Dr. M. Blum)
2008 – George Mason University, Undergraduate Apprenticeship Program. "Changes in autumn leaf color and leaf fall phenology in response to Gypsy moth (*Lymantria dispar*) defoliation." Total: $1,000, (Co-Principle Investigator with undergraduate M. Ramanan)
2008 – The Xerces Society for Invertebrate Conservation, Joan Mosenthal DeWind Award. "Climate change as a threat to Geometrid moths through the expansion of the home range of predatory ants along an altitudinal gradient in the North Eastern Andes of Ecuador." Total: $1,875 (with Ph.D. candidate G. Rodríguez-Castañeda)
2008 – Tulane University, Center for Latin American Studies. Graduate fellowship. "Do tropical plants 'signal for help' to natural enemies of herbivores?" $1,900 (with M.S. student H. Connahs)
2007 –Tulane University, Center for Latin American Studies, Graduate fellowship. "Investigating potential mechanisms of herbivore outbreak in tropical forests." Total: $1,450 (with M. S. student H. Connahs)

Student Research Presentations (GMU only)

Gupta, S., **R. E. Forkner**, M. Sikaroodi, and P. Gillevet. Correlations of anti-herbivore flavonoid production and rhizobium colonization of roots. 2012. Aspiring Scientists Summer Internship Symposium, George Mason University, Fairfax, VA.

Beatty, C. R. and **R. E. Forkner**. 2011. Assessing the Conservation Status of the Zebra Swallowtail, Biodiversity without Boundaries, NatureServe, Nebraska City, NE.

Rodríguez-Castañeda, G., E. Tepe, **R. E. Forkner**, and L. A. Dyer. 2009. The costs and benefits of mutualism: Evaluation of *Piper*-ant plants along an altitudinal gradient in the north-eastern Andes of Ecuador. 94th Annual Meeting, Ecological Society of America. Albuquerque, NM.

Ramanan, M. and **R. E. Forkner**. 2009. Effects of gypsy moth on abscission and leaf fall phenolics. Virginia's Collegiate Honors Council, Annual Spring Conference, George Mason University, Fairfax, VA.

Ramanan, M. and **R. E. Forkner**. 2009. Effects of gypsy moth defoliation on autumn leaf fall phenology and coloration. Colonial Academic Alliance Undergraduate Research Conference, Townsend University, Baltimore, MD.

Teaching-related Professional Society Membership

Phi Beta Kappa
Biomimicry 3.8 Institute

Community Teaching & Mentoring Service

Virginia

Contributor – National Phenology Network's Citizen Monitoring Program
Contributor – mywildlife.org Citizen Science Program

Louisiana

Faculty Mentor, Tulane University Women in Science, New Orleans, LA

Missouri

Volunteer – Junior Entomological Society, St. Louis, MO
Volunteer – Sophia M. Sachs Butterfly House, Missouri Botanical Gardens, St. Louis, MO
Judge – University City School District Elementary School Science Fair, St. Louis, MO
Certified Expert – Olivette Municipal Court, St. Louis, MO

Pennsylvania

Instructor, Entomology for Elementary and Secondary School Teachers (In service teacher training), Pennsylvania State University, State College, PA
Instructor, Bug Camp for Kids, Pennsylvania State University, State College, PA

Georgia

Instructor, Biology, Upward Bound Program, Athens, GA
Instructor, Ecosystem Ecology for Elementary School Teachers (In service teacher training), Atlanta, GA
Volunteer, Fernbank Science Center & Natural History Museum
Editor, Scientific Tools and Techniques Alumni Newsletter, Atlanta, GA

Table 1. Examples of teaching quality as reflected by student-based evaluations of selected courses taught at George Mason University between Spring 2008 and Spring 2013.*

		Overall Ratings[a]		
Semesters	**Course**	**Instructor**	**Course**	**Response Metrics[b]**
SP 2008/FA 2011	BIOL 332 – Insect Biology, Lecture	4.94/5.00	4.88/5.00	79%, 32/39
	BIOL 332 – Insect Biology, Lab	4.67/5.00	4.67/4.95	97%, 38/39
FA 2009	BIOL 331 – Invertebrate Zoology	4.89	4.56	50%, 9:18
SP 2010	BIOL 318 – Conservation Biology	4.87	4.53	52%, 15:29
SP 2012	BIOL 435 – Tropical Biology	4.81	4.23	75%, 21:28
SP2009/FA 2012	EVPP 518 – Advanced Conservation Biology	4.33/ 5.00	4.00/5.00	71%, 17:24
SP 2013	BIOL 457 – Reproductive Strategies	4.82/5.00	4.73/4.93	66%, 25:38
	Forkner, mean evaluation scores	**4.88[c]**	**4.71[c]**	**71%[c, f]**
	Department, mean evaluation scores [d, e]	4.47	4.23	
	College of Science, mean evaluation scores [d]	4.26	4.03	
	University, mean evaluation scores [d]	4.36	4.17	

* – Directed studies courses (e.g., BIOL 495 & 497, EVPP 693) are not listed because they do not receive evaluations.

a – Mean values reported. Overall ratings are scored from 1 to 5, with 5 being "excellent." Scores for classes taught more than once have scores listed for first/most recent evaluations to show any improvement.

b – Percentage of evaluations completed, number of students responding: number of students enrolled

c – Mean of all classes in all years

d – Averaged for those semesters in which I taught within those administrative units

e – As all classes were listed or cross-listed as BIOL courses, scores are from Dept. of Molecular & Microbiology only

f – Mean for paper reviews was 87%, mean for online reviews was 54%

Table 2. Breadth of student engagement as measured by course offerings, course participation, and guest lectures.*

Number	Course Description	Role†	Semester(s) taught
	Undergraduate Courses		
BIOL 103	**Introductory Biology Laboratory**: Laboratory exercises emphasizing concepts in cell, molecular, and developmental biology. 1 credit laboratory course.	Instructor	SU 1994
BIOL 307	**Ecology Laboratory**: Quantitative laboratory & field exercises, including data collection, hypothesis testing, modeling, discussion of research results, and writing scientific papers. 1 credit laboratory course.	Instructor	FA 1992, SP 1993
BIOL 318	**Conservation Biology**: Introduction to the science used to identify species in need of conservation and techniques to manage and protect organisms. 3 credit lecture course.	Instructor	SP 2010
BIOL 331	**Invertebrate Zoology**: Survey of invertebrate phyla, including morphology, phylogeny, and biology in the context of the general evolution of life. 4 credit lecture/lab course	Instructor, Coordinator	FA 2009
BIOL 332	**Insect Biology**: Survey of insects including taxonomy, morphology, physiology, behavior, ecology, and economic importance. 4 credit lecture/lab course.	Instructor, Coordinator	SP 2007, SP 2008, FA 2008, FA 2011
BIOL 345	**Plant Ecology**: Investigates interactions of plants with abiotic & biotic environment, with focus on native VA plant communities. 3 credit lecture course, with 2 required field trips	Guest Lecturer	FA 2007
BIOL 435	**Tropical Biology**: Advanced introduction to ecology of tropical ecosystems with an emphasis on evolution of endemic forest flora & fauna. Taken with BIOL 440 (Field Biology Lab) study abroad class for 4 credits.	Instructor, Coordinator	FA 2006, SP 2012
BIOL 457	**Reproductive Strategies**: Introduction to research and evolutionary theory of sex & reproduction, including the evolution of sex and gender, mate recognition, & courtship, with a focus on multi-cellular animals, but including prokaryotes, eukaryotes & plants. Requires weekly recitation as part of 3 credit lecture course.	Instructor	SP 2008, FA 2010, SP 2013
BIOL 493	**Medical Entomology**: Introduction to evolution, morphology, behavior, ecology, and epidemiology of insects of medical importance. 3 credit lecture course.	Instructor	FA 2005
BIOL 495	**Directed Studies in Biology:** Study of topic not otherwise available in curriculum. Involves combination of readings, tutorials, lectures, papers, presentations determined in consultation with instructor. **"Evolution in Health & Medicine":** Introduction to research in evolutionary medicine with focus on human genetic variation in non-infectious & degenerative diseases, **"Veterinary Herpetology"**: Investigation of biology, evolution, behavior, anatomy, and veterinary care of reptiles and amphibians. 1 to 2 credit seminar or laboratory course.	Instructor, Coordinator	SU 2008, FA 2010
BIOL 497	**Special Problems in Biology**: Lab or field research leading to a written report completed under instructor guidance. **"Topics in Medical Entomology"**: Field-based research on diversity & composition of mosquito communities with goal of improving control of disease vectors, **"Aquatic Invertebrate Communities"**: Investigation of aquatic invertebrate predator-prey interaction through classification and field survey of Odonata**. "Plant Animal Interactions":** Literature research, in combination with field & greenhouse investigation into the ecology and chemistry of bacteria-plant-insect interactions. 1 to 2 credit laboratory course.	Instructor, Coordinator	FA 2008, FA 2009, FA 2011
BIOL 435	**Natural History of Puerto Rico**: An introduction to the history, culture, and biological diversity of Puerto Rico. 3 credit lecture course with optional 1 credit study abroad field laboratory.	Guest Instructor	SP 2009
	General Education Courses		
ECOL 100	**Ecological Basis of Environmental Issues**: Field & laboratory exercises and fieldtrips examining scientific concepts forming the basis of environmental issues, including population growth, loss of diversity, resource limitation, pollution, & climate change. 1 credit laboratory course. Satisfies General Education Sustainability course requirement.	Instructor, Coordinator	FA 1993, SP 1994, FA 1994, SP 1995, FA 1995, SP 1996 FA 1996

EBIO 111	**Diversity of Life**: A survey of plants & animals emphasizing the evolution of diversity. 4 credit lecture/lab course. Satisfies General Education Science course requirement	Instructor	FA 2006, SP2007
EBIO 221	**Cultural Entomology**: Introduction to importance of insects to modern society and human evolution, including biology, ecology, behavior, and pest control, but including art, film, & culinary issues. 3 credit lecture. Satisfies General Education Science course requirement	Instructor	FA2006
EBIO 211	**Tropical Ecosystems:** General introduction to the biology, conservation, history, and indigenous human cultures of tropical environments. 3 credit lecture. Satisfies General Education Science course requirements and Latin American Studies elective requirement.	Instructor	SP2007
	Graduate Courses		
BIOL 518	**Advanced Conservation Biology**: Science-based management of threatened wildlife, habitats, and landscapes, with emphasis on current controversial theoretical debates regarding biodiversity conservation. 3 credit lecture course.	Instructor	SP 2009, FA 2012, FA 2013
BIOL 543	**Tropical Ecosystems**: Tropical terrestrial, aquatic, and marine ecosystems, emphasizing plant communities, plant-animal interactions, & role of humans in the tropics. 3 credit hour lecture, with optional 1 credit field lab in Costa Rica.	Guest Instructor	SP 2008, SP 2012
ECOL 601	**Population & Community Ecology**: Advanced study of processes of birth, death, and movement of organisms, with particular reference to population dynamics and forces that structure communities of plants & animals. 4 credit lecture/lab course.	Instructor, Coordinator	SP 1996
ECOL 647	**Community Ecology:** Advanced examination of community ecology with emphasis on diversity, stability, trophic interactions and mechanisms which affect community structure. 3 credit lecture course.	Guest Lecturer	FA 2005
EBIO	**Directed Studies in Ecology and Evolution**: Study of topic not otherwise available in curriculum. May involve combination of readings, tutorials, lectures, papers, presentations determined in consultation with instructor. **"Plant Induction & Biochemistry"**: Literature investigation of biochemical pathways, mechanisms, and evidence for induced plant defense against pathogens. 1 credit seminar course.	Instructor	FA 2006
BIOL 693	**Directed Studies in Environmental Science & Policy**: Study of topic not otherwise available in curriculum. May involve combination of readings, tutorials, lectures, papers, presentations determined in consultation with instructor. **"Dispersal and Diversity"**: Investigation of mathematics of quantifying biodiversity & dispersal with focus on experimental design & statistical analysis. **"Predator Prey Theory"**: Literature investigation into current paradigms/theories on role of predators in ecological communities, including both mammalian & invertebrate studies. **"Neotropical Herpetology"**: Investigation of field-based methods for *in situ* study & monitoring of tropical amphibians, including 14 day research trip. 1 to 2 credit lecture course.	Instructor	SU 2008, SP 2009, SU 2009

* Course syllabi and sample assignments available upon request, as are teaching evaluations from all universities.

†**Coordinator** designates courses for which I was solely responsible for acquisition of equipment and supplies, preparation and dismantling of lab or field experiments, and associated budget management. Lecturer designates courses in which I did not have a role in grading assignments.