

Meredith A. Barrett, PhD

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Research Interests: environmental determinants of health, environmental drivers of infectious and chronic disease, environmental change and health, geospatial approaches to health, green space and health, One Health, transdisciplinary approaches to health, sustainable and healthy built environments

E D U C A T I O N

DUKE UNIVERSITY, Durham, NC September 2006 – May 2011
PhD in Ecology with Minor in Global Health and Geospatial Analysis. Advised by Dr. Anne Yoder

WESLEYAN UNIVERSITY, Middletown, CT September 1999 – May 2003
BA in Earth & Environmental Sciences, *Phi Beta Kappa*

S E L E C T E D H O N O R S

Robert Wood Johnson Foundation Health & Society Scholar (2011-2013)
Dean's Award for Outstanding Student Research Paper, Nicholas School of the Environment (2011)
National Science Foundation Graduate Research Fellow (2007-2010)
National Science Foundation Research Experience for Undergraduates Fellow (2003)
Exceptional Student Presentation Award, London EcoHealth Conference (2010)
Presidential Management Fellows Finalist (2011)
Phi Beta Kappa (2003)
Visiting Scholar at the International Union for the Conservation of Nature (2010)
Duke University Graduate Board of Visitors Liaison for the Dean of the Graduate School (2011)
Honorable Mention, Emory Global Health Case Competition (2010)
NCAA All-American Scholar-Athlete (2001)
New England Division III Champion, 5 School Track & Field Records, Track Team Captain (2001)
Bank of America Award for Math (1998)

R E S E A R C H & A N A L Y S I S

VICE PRESIDENT OF SCIENCE & RESEARCH Starting September 2013
Asthmapolis San Francisco, CA

- Developing a research program, including cultivating academic research partnerships, using internal research to improve efficacy, spearheading grant funding, and disseminating research through publications and presentations.

COLLABORATING DATA SCIENTIST September 2012- August 2013
Asthmapolis San Francisco, CA

- Collaborated with Asthmapolis to leverage spatial and temporal asthma data generated by a novel health technology sensor
- Presented at local conferences and developed research partnerships
- Research collaboration featured in *The Washington Post*

CO-INVESTIGATOR September 2011- August 2013
Robert Wood Johnson Foundation Health & Society Scholars

University of California San Francisco Center for Health & Community; UC Berkeley School of Public Health

- Analyzed spatial and temporal patterns of asthma hotspots using novel health technology sensor

- Secured \$12,182 pilot funding to launch project

PROJECT DIRECTOR

Lemur Health and Conservation Project

Research & Project Management

September 2006 – August 2011

Madagascar and Duke University

- Designed and implemented a 5-year study to assess environmental and anthropogenic impacts on lemur health patterns.
- Secured \$37,000 to fund research, supplies, laboratory analyses, and Malagasy student sponsorship.
- Collaborated with Malagasy scientists, veterinarians and conservation organizations.
- Supervised 10 field assistants to ensure data accuracy and consistency.
- Advised Malagasy students and Duke undergraduates in statistical and field methodologies.
- Wrote active blog about lemur health and conservation and interfaced with reporters from BBC, *Fortune*, *National Geographic*, *Science News* and *Climate Wire*.

CONSULTING BIOLOGIST

Bioko Biodiversity Protection Program

January – June 2006

Malabo, Equatorial Guinea

- Managed a team of local researchers to evaluate health and conservation risks due to rise in bushmeat consumption. Conducted surveys to assess decline in 5 endangered primate populations.
- Cultivated relationships with funders and local Ministry of the Environment to boost research opportunities.

DATA ANALYST

U.S. Fish & Wildlife Service

September – November 2005

Alaska Maritime National Wildlife Refuge, Homer, AK

- Analyzed 7 years of remote field camp data to assess shifts in ocean productivity.
- Created a user-friendly data management system to improve data accessibility and integration.

BIOLOGICAL SCIENCE TECHNICIAN

U.S. Fish & Wildlife Service

May – September 2005

Alaska Maritime National Wildlife Refuge, Homer, AK

- Collected detailed seabird ecology data for long-term, multi-agency ocean productivity study that informed management decisions.
- Lived in a remote field camp in the Aleutian Islands (with 4 other researchers and 4 million seabirds).

WILDLIFE FIELD RESEARCHER

Department of Natural Resources

January – April 2005

Grand Rapids, MN

- Monitored health, survival, diet and reproductive success of white-tailed deer.
- Facilitated communication between team of technicians and project supervisor to improve data collection, share results and troubleshoot problems.

BIOLOGICAL FIELD RESEARCHER

NSF Research Experience for Undergraduates

June – September 2003

Kigoma, Tanzania

- Collaborated with international researchers to design and implement a study examining how anthropogenic disturbance affects the distribution of endemic snails in Lake Tanganyika. Assessed populations underwater while Scuba diving.

CONSERVATION RESEARCH ASSISTANT

Fundación Jatun Sacha

February – May 2002

Ecuador

- Assisted conservation research projects to assess population status and behavioral ecology of howler monkeys and Andean spectacled bear populations under threat from logging and development.

L E A D E R S H I P & S E R V I C E

COLLABORATING SCIENTIST October 2011 - 2012
Environmental Protection Agency, Office of Research and Development RTP, NC
Provided input on environmental and social determinants of health and Health Impact Assessment to a Senior Sustainability Advisor at the EPA.

ONE HEALTH COLLABORATIVE STEERING COMMITTEE October 2010 – present
Triangle Global Health Consortium RTP, NC
Collaborate with diverse group of professionals to create One Health programming and interdisciplinary networks across North Carolina.

GUEST ASSOCIATE EDITOR August 2010 – present
One Health Newsletter Division of Environmental Health, Florida
Expanded environmental disciplinary representation in the official newsletter of the One Health Initiative.

EXECUTIVE COMMITTEE MEMBER & COORDINATOR September 2009 – present
International Association for Ecology and Health
Consulted with Executive Board to select candidates for the *EcoHealth* journal Editorial Group. Enhanced student involvement by developing student-driven section in the *EcoHealth* journal.

COORDINATOR & FOUNDING MEMBER September 2006 – June 2011
Global Health Working Group Duke University Center for International Studies, NC
Cultivated interdisciplinary discussion group of more than 230 members from over 10 academic disciplines.

ADVISOR August 2009 – June 2011
Duke Global Health Institute Student Advisory Board Duke University, NC
Provided input on educational programming and student opportunities.

PRESIDENT & COURSE ORGANIZER July 2009 – June 2011
Nicholas Institute Graduate Liaisons Nicholas Institute for Environmental Policy Solutions, NC
Reconvened graduate student group to interface with the Nicholas Institute, providing students with opportunities to translate science into policy. Designed and implemented a course on policy communication with Directors of the Institute.

EXECUTIVE BOARD MEMBER & DEVELOPMENT LEADER March 2008 – June 2011
Eno River Association Durham, NC
Served as Executive Secretary and Board Member for the longest-running land trust in North Carolina.

VISITING SCHOLAR June – August 2010
International Union for Conservation of Nature Gland, Switzerland
Engaged with policymakers to address logging of endangered rosewood species in Madagascar and contributed to the international trade protection process.

DIRECTOR October 2007 – September 2009
Duke University Program in Ecology Seminar Series Duke University, NC
Coordinated speakers for the Nicholas School's largest weekly seminar (over 80 people in regular attendance), an integral event for stimulating scientific discourse and developing community.

G R A N T S

Total research and stipend support grant funds raised since 2006: \$195,452

Selected grants:

[Complete list available upon request]

Robert Wood Johnson Foundation Pilot Research Grant (\$12,182)	December 2011
NSF Graduate Research Fellowship (\$121,000)	2007 – 2010
Saint Louis Zoo Field Research for Conservation (\$9,737)	2007 – 2010
Duke University Graduate School Dissertation Research Award (\$1,200)	January 2010
GlaxoSmithKline Global Health Graduate Research Award (\$4,865)	March 2008
DUCIS Graduate Award for Research and Training in Global Health (\$2,000)	April 2007
SIDG Lazar Fellow International Research Award (\$1,000)	April 2007

P U B L I C A T I O N S

Barrett MA,* Humblet O,* Hiatt RA, Adler NE. Big Data and disease prevention: from Quantified Self to Quantified Communities. *In press at Big Data*.

* contributed equally

Barrett MA, Brown JL, Yoder AD. Protection for trade of precious rosewood (commentary). *Nature* 499: 29.

Barrett, MA and Osofsky, SA. 2013. One Health: The Interdependence of People, Other Species, and The Planet, in *Jekel's Epidemiology, Biostatistics, Public Health, & Preventive Medicine*, 4th edition. Jekel JF, Katz DL, Elmore JG, Wild DMG, eds. Elsevier Inc. Philadelphia, PA.

*Covered in media by *One Health Initiative, One Health Newsletter, WorldVet and the Wildlife Conservation Society*

***Barrett, MA,** Brown, JL, Junge RE and Yoder AD. 2013. Climate change, predictive modeling and lemur health: assessing impacts of changing climate on health and conservation in Madagascar. *Biological Conservation* 157: 409-422.

*Covered in media by *Science News, Science Images of the Week, The Columbia Journalist and National Science Foundation*

Van Sickle D, Maenner M, **Barrett, MA** and Marcus JE. 2013. Monitoring and Improving Compliance and Asthma Control: Mapping Inhaler Use for Feedback to Patients, Physicians and Payers. *Respiratory Drug Delivery Europe*.

Gargano LM, Gallagher PF, **Barrett MA,** Howell K, Woods C and Hughes JM. 2013. Issues in the development of a research and education framework for One Health. *Emerging Infectious Diseases (eprint)*.

Zinsstag, J, **MA Barrett,** et al. 2012. Convergence of Ecohealth and One Health. *EcoHealth* 9, 371–373.

Hahn, MB, **Barrett, MA.** and Horwitz, P. 2012. Student Dialogues: EcoHealth offers a disciplinary home to the interdisciplinary student. *EcoHealth* 9, 241–242.

Barrett, MA, LM Gottlieb, PA Braveman, RA Hiatt and NE Adler. 2012. Health is more than health care: Pre-med curricula should incorporate the social determinants of health. *Science* (commentary).

*RE Junge, **MA Barrett** and AD Yoder. 2011. Effects of anthropogenic disturbance on Indri (*Indri indri*) health in Madagascar. *American Journal of Primatology* 73: 6: 1-11.

*Featured article

Duke University Global Health Working Group (**MA Barrett** was coordinator). 2011. Health benefits of policies to mitigate climate change. *The Lancet* 377: 9770: 996.

Crowley, BE, Thorén S, Rasoazanabary E, **Barrett MA**, Zohdy S, Blanco MB, McGoogan KC, Arrigo-Nelson SJ, Irwin MT, Vogel ER, Wright PC, Radespiel U, Godfrey LR and Dominy NJ. 2011. Explaining geographical variation in the isotope composition of mouse lemurs (*Microcebus*). *Journal of Biogeography*.

* **Barrett, MA**, Brown, JL, Morikawa, MK, Labat, JN, and Yoder, AD 2010. CITES designation for endangered rosewood in Madagascar. *Science* 328: 1109 - 1110.

* ***Won Dean's Award for Outstanding PhD Student Research Manuscript***

**Covered in media by Science, The New York Times, BBC, Fortune, Climate Wire, Nat Geo Watch, Mongabay, Africa Science News, Physorg, and Duke Office of News and Communication*

Barrett, MA, Bouley TA, Stoertz AH, and Stoertz RW. 2010. Integrating a One Health approach in education to address global health and sustainability challenges. *Frontiers in Ecology and the Environment* 9: 239–245.

**Covered in media by the Duke Global Health Institute and the One Health Newsletter*

Barrett, MA and Ratsimbazafy, J. 2009. Luxury bushmeat trade threatens lemur conservation. *Nature* 461: 470.

Barrett, MA, Morano S, DelGiudice GD, and Fieberg J. 2008. Translating bait preference to capture success of Northern white-tailed deer. *Journal of Wildlife Management* 72: 555-560.

Manuscripts in Review

Yoder AD, Chan L, dos Reis M, Larsen PA, Campbell CR, Rasolarison R, **Barrett MA**, Roos C, Kappeler P, Bielawski J and Yang Z. Ancient Gene Duplication and other Surprising Patterns of Allelic Diversity of V1R genes in Toothcombed Primates (suborder Strepsirrhini).

Barrett, MA and Bouley, TA. Health and the environment: A call for enhanced integration of environmental data, drivers and disciplines in the development of One Health. *In review*.

Barrett, MA, Miller D, and Frumkin H. Parks and health: aligning incentives to innovate on chronic disease prevention. *In review*.

Manuscripts In Preparation

Harris NC, **Barrett MA**, Junge RE, Faulkner CT, and Yoder AD. Lemurs, parasites, and parks: spatial variation in biotic interactions across Madagascar. *In prep*.

Barrett, MA, Brown, JL, Junge RE and Yoder AD. Predicting risk of disease transmission among lemurs, humans and domestic animals in Madagascar due to environmental change: A geospatial approach to One Health. *In prep*.

Nunziata, SO, Wallenhorst, P, **Barrett MA**, Junge RE, Yoder AD, Weisrock DW. Population and conservation genetics in an endangered lemur, *Indri indri*, across three forest reserves in Madagascar. *In prep*.

Black, D, Chan L, **Barrett MA**, Yoder AD. Genetic assessment of putative *Microcebus* hybrid individuals at Kirindy-Mitea. *In prep*.

Barrett, MA, Sackey-Harris, M and Stroud, C. (Eds.) Applications of the One Health Approach to Current Health and Sustainability Challenges: An Educational Resource. Duke University, University of North Carolina and North Carolina State University Libraries.

PROFESSIONAL REPORTS

Andersen, EM and **Barrett, MA**. 2005. Biological Monitoring at Buldir Island, Alaska in 2005: Summary Appendices. *USFWS Administrative Report*. AMNWR 09/05. Homer, AK. 135 pp.

Barrett, MA, Andersen EM, Murphy MA, and Sapora SF. 2005. Biological monitoring at Buldir Island, Alaska in 2004: Summary appendices. *U.S. Fish and Wildl. Serv. Rep. AMNWR 05/19*. Homer, Alaska. 126 pp.

Murphy, NM, Williams JC, Andersen EM, and **Barrett MA**. 2005. Biological Monitoring at Buldir Island, Alaska in 2003: Summary appendices. *U.S. Fish and Wildl. Serv. Rep. AMNWR 05/17*. Homer, Alaska. 125 pp.

OUTREACH PUBLICATIONS

Barrett, MA and Marcus JE. 2013. The Geography of Asthma Risk. *Huffington Post*.

Barrett, MA. 2013. Place matters: Social determinants of health. Health Begins Blog.

Barrett, MA. 2013. Addressing social determinants of health with geomedicine. Health Begins Blog.

Barrett, MA, Stoertz AH and Bouley TA. 2010. Why the environment and environmental change matter to One Health. *One Health Newsletter* 3: 4 Fall 2010.

**Covered in media by One Health Initiative, WorldVet News and other veterinary organizations*

Barrett, MA, Bouley TA, Stoertz AH, and Stoertz RW. 2010. Integrating a One Health approach in education to address global health and sustainability challenges. *One Health Newsletter* 3: 3, Summer 2010.

Barrett, MA and Junge, RE. 2012. Lemur disease ecology: linking ecosystem viability and conservation in Madagascar. *One Health Newsletter*.

Barrett, MA. 6 web-based publications for *Talking Science*, January to April 2009.

Barrett, MA. "Biofuels: Don't bet the farm on corn-based fuels." *The Herald-Sun*. 16 May 2008.

Barrett, MA. 2004. A new place to bird in Big Sur? *Audubon Society Sanderling* 62: 5.

P R E S E N T A T I O N S

Invited Lectures and Presentations

- 2013 SOCAP panels on disruptive investing in health and health technology. Social Capital Markets, San Francisco, CA.
- 2013 Lecture on geospatial analysis for health. San Francisco General Hospital Residents, San Francisco, CA.
- 2013 Presentation on research to Asthmapolis team, Madison, WI.
- 2013 UC Course lecture for University of California Global Health Institute multi-campus course on One Health. UC Davis, CA.
- 2013 Plenary Panel on Species-Spanning Medicine with Barbara Natterson-Horowitz. University of California Global Health Institute, UC Riverside, CA.
- 2012 Conference on conservation, ethics and resources in Madagascar. Duke Lemur Center and the Kenan Institute for Ethics, Duke University, NC.
- 2012 Course lecture for University of California Davis and UC Riverside joint course on One Health. UC Davis, CA.
- 2011 Global Grand Rounds Discussion Panel for the Students for One Health and the King Hall Health Law Association at UC Davis, CA.
- 2011 One Health Intellectual Exchange Group of the Triangle Global Health Consortium. Research Triangle Park, North Carolina.
- 2011 Guest lecture for Ecology and Evolution of Infectious Diseases Course, Duke University.
- 2010 IUCN, Gland, Switzerland.
- 2010 Guest lecture for Ecology and Evolution of Infectious Diseases Course, Duke University.
- 2010 Behavioral, Community and Population Ecology Seminar Series, Duke University, Durham, NC.
- 2009 New Hope Audubon Society. Durham, NC.
- 2009 St. Louis Zoological Park. St. Louis, MO.
- 2009 Science Online Conference, Sigma Xi, Research Triangle Park, NC.

- 2008 SIDG Seminar Series. Duke University, Durham, NC.
- 2007 Duke Lemur Center Seminar Series, Duke University, Durham, NC.
- 2006 Exxon Mobil, Inc. Presentation for the Educational Training Program.
- 2005 Alaska Maritime National Wildlife Refuge. Fish and Wildlife Headquarters, Homer, AK.

Seminar and Conference Presentations

- 2013 Robert Wood Johnson Foundation Health & Society Scholars Annual Meeting. Coronado, CA.
- 2012 International Association for Ecology and Health, Kunming, China.
- 2012 University of California San Francisco.
- 2012 Robert Wood Johnson Foundation Health & Society Scholars Annual Meeting, Princeton, NJ.
- 2011 University of California, Berkeley.
- 2011 Robert Wood Johnson Health and Society Scholars Seminar Series, UC San Francisco.
- 2011 Defense presentation and public seminar, Duke University, Durham, NC.
- 2010 International Association for Ecology and Health Conference, London, England.
**Awarded "Exceptional Student Presentation" Award*
- 2010 Graduate Afternoon Seminar Series, Duke University, Durham, NC.
- 2009 Ecological Society of America Annual Conference. Albuquerque, NM.
- 2009 Ecology and Evolution of Infectious Diseases Conference. Athens, GA.
- 2009 Poster presentation at the American Museum of Natural History, Center for Biodiversity and Conservation Spring Symposium. New York, New York.
- 2003 University of Dar es Salaam, Tanzania.

M E N T O R I N G & T E A C H I N G

- M E N T O R I N G** 2003 - 2011
- Women and Mathematics Network** Durham, NC
- Mentored 5 young women from underrepresented communities to maintain their interest in science and math.
- Nicholas School Women's Mentoring Series** Duke University, Durham, NC
- Facilitated mentoring events for female graduate students and faculty to build community and collaboration.
- Department of Primatology & Biological Anthropology** University of Antananarivo, Madagascar
- Mentored Malagasy graduate student in field techniques, methodological design, research implementation and scientific writing.
- Duke University Department of Biology** Durham, NC
- Designed a collaborative project and coauthored a paper with Duke undergraduate.
- Cameron Park Elementary School** Hillsborough, NC
- Led environmental education programming to raise awareness about water quality and conservation.
- Action Science Kids** Middletown, CT
- Designed interactive science experiments with 5th grade students in public schools.

COURSE DESIGNER & INSTRUCTOR October 2010 - June 2011

Triangle Global Health Consortium's One Health Collaborative RTP, NC

Collaborated with faculty at Duke, UNC and NC State to design and coordinate interdisciplinary One Health course for graduate students from over 10 disciplines.

- TEACHING ASSISTANT & LAB INSTRUCTOR** September 2006 - 2007, Fall 2010
- Duke University Department of Biology and Nicholas School of the Environment** Durham, NC
- Developed course material, mentored students, facilitated discussion sessions to encourage student engagement and led laboratory sections to provide hands-on experience.

- Courses: AIDS & Emerging Diseases; Comparative Animal Physiology, Environmental Science and Policy, One Health: Philosophy and Practice

EDUCATION COORDINATOR ASSISTANT

February – December 2004

Ventana Wilderness Society

Salinas, CA

- Led leadership development backpacking trips for young adults from the juvenile correction system.
- Developed environmental education courses for middle school children.
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C O M M U N I C A T I O N & O U T R E A C H

SCIENCE COMMUNICATION

January 2011 – present

Huffington Post

- Submitted content on geomedicine and the geography of asthma risk

Health Begins Blog

- Contributed content on social determinants of health, spatial epidemiology and geomedicine.

Asthmapolis Blog

- Contributed content on health technology, public health research and asthma.

Exploring One Health Through Education Blog

- Created blog for sharing news, content and research for the One Health Collaborative.

TalkingScience.org, Science Friday Initiative

- Contributed stories, photos and videos on topics of scientific field research to web-based science communication program, a partner to NPR's *Science Friday* program, to raise awareness about wildlife health issues.

National Science Foundation Graduate Research Fellows

- Highlighted by NSF for outstanding research, mentoring, outreach and publication success during Graduate Research Fellowship.

Lemur Health and Conservation Blog (Duke Office of News and Communication)

- Shared videos, pictures and stories while working in Madagascar to raise awareness about wildlife health and share scientific field experiences with the public.

Science Online '09: Women in Science Networking

Research Triangle Park, NC

- Highlighted researcher at annual Women in Science networking event.

COMMUNITY OUTREACH COORDINATOR

January 2004 – January 2005

Big Sur Environmental Institute

Big Sur, CA

Coordinated launch of new environmental think tank in partnership with the US Forest Service and Board of Directors. Reached out to build community partnerships through events and presentations.

S E R V I C E & P R O F E S S I O N A L A S S O C I A T I O N S

Journal Reviewer, *Madagascar Conservation and Development*, *Michigan Journal of Sustainability*, EcoHealth 2012 conference

Southeast Regional Center of Excellence for Emerging Infections and Biodefense/ Southeastern Center for Emerging Biologic Threats One Health Research and Education Agenda Development Meeting Planning Committee, 2011-2012

Duke University Program in Ecology (UPE) Student-Faculty Advisory Committee, 2006 – 2011

Sustainability and Safety Committee, Duke University Biology Department, 2008 – 2011

Duke University Program in Ecology Seminar Executive committee, Duke University, 2006-2011

Coordinator, Biology SuperSpeaker Seminar Series, Duke University, 2008

Coordinator, Oosting Memorial Lecture Series, Duke University, 2008

Professional associations:

- International Association for Ecology and Health. April 2009 - present
- American Public Health Association, 2012 - present
- Ecological Society of America. March 2009-present
- American Thoracic Society, May 2012 - present
- Women in Science and Engineering. Duke University Chapter. September 2006 - 2011
- Global Health Council, Associate Professional Member, November 2007-2011

A D D I T I O N A L S K I L L S & I N T E R E S T S

Languages: Written and conversational Spanish, elementary French.

Software: Analysis: ArcGIS, QGIS, MaxEnt, PC-ORD, JMP, SPlus, Google Earth, Microsoft Access.

Presentations: Adobe Illustrator, Publisher, PowerPoint, Prezi.

Training: Health Impact Assessment (San Francisco Department of Public Health), Communicating Science (AAAS and NSF)

Policy: Implementation of the National Environmental Policy Act (Duke Environmental Leadership), Sanford School Global Environmental Policy and Governance (Duke), Nicholas Institute for Environmental Policy Solutions Graduate Liaisons (Duke), NC House of Representatives lobbying

Management: Excellent skills in team-building, group facilitation, coordination and consensus development.

Interests: Traveling, backpacking, running, music, triathlons, scuba diving.

I N T E R N A T I O N A L W O R K E X P E R I E N C E

Madagascar (9 months over 5 years), Ecuador (6 months), Equatorial Guinea (5 months), Switzerland (5 months), Tanzania (3 months), Australia (3 months), New Zealand (2 months)

P E R S O N A L A C C O M P L I S H M E N T S

Ran 50 miles across Zion National Park, bicycled 4,000 miles across the US, climbed 3 peaks taller than 19,000 feet, circumnavigated Lake Tahoe by kayak (72 miles), certified as an Advanced Open Water Scuba Diver, traveled in every continent except Antarctica.