

# Rachel Fovargue

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## CURRENT POSITION

*Arizona State University*

Tempe, AZ/Reston, VA

Postdoctoral Researcher, Center for Biodiversity Outcomes

## EDUCATION

*The University of Tennessee Knoxville*

Knoxville, TN

PhD, Ecology & Evolutionary Biology, August 2017

Dissertation title: “*Conservation Decisions: Designing, Financing and Fundraising for Protected Areas*”

Academic advisor: Paul Armsworth

*The College of William and Mary*

Williamsburg, VA

BS, Biology, with Honors, May 2009

BS, Chemistry, May 2009

## PUBLICATIONS

**Fovargue, RE, S Rezapour, DH Rosendahl, A Wootten, HZ Sabzi, H Moreno, TM Neeson.** “Planning for water sustainability in the face of climate uncertainty”. *Nature Scientific Reports*. In submission.

Pinnschmidt, AA, R **Fovargue**, M Fisher, J Harris, D LeBouille, MA Hoogstra-Klein, PR Armsworth. “Protecting land leads to increased philanthropic giving to conservation”. *Ecological Economics*. In review.

**Fovargue R, J Fargione, P Armsworth.** “Running on Debt: financing land protection with loans”. *Environmental Management*. In review.

Wineland, S, R **Fovargue**, S Rezapour, T Neeson. “Identifying projects that remain valuable and feasible across future climate scenarios”. *Conservation Biology*. In submission.

Farzaneh MA, S Rezapour, R **Fovargue**, TM Neeson. “Balancing social and environmental water needs in drought-prone river basins under hydrological uncertainty”. *OMEGA: The International Journal of Management Science*. In review.

Gill, KC, RE **Fovargue**, TM Neeson. “Hotspots of species loss do not vary across future climate scenarios in a drought-prone river basin”. *Ecology and Evolution*. In review.

Armsworth, PA, A Benefield, D Bistra, R **Fovargue**, H Jackson, D Le Bouille, C Nolte. “Allocating resources for land protection using continuous optimization: biodiversity conservation in the United”. *Ecological Applications*. **2020**.

Sabzi, HZ, H Moreno, RE **Fovargue**, X Xue, Y Hong, TM Neeson. " Comparison of projected water availability and demand reveals future hotspots of water stress in the Red River basin, USA". *Journal of Hydrology: Regional Studies*. **2019**.

Sabzi, HZ, S Rezapour, RE **Fovargue**, H Moreno, TM Neeson. "Strategic allocation of water conservation incentives to boost environmental flows and societal outcomes". *Ecological Engineering*. **2019**.

**Fovargue, RE, J Harris, M Fisher, PA Armsworth.** "The Landscape of Conservation Fundraising". *Conservation Biology*. **2018**.

**Fovargue**, RE, M Bode, PA Armsworth. "Size and spacing rules can balance conservation and fishery management objectives for marine protected areas". *Journal of Applied Ecology*. **2017**.

**Fovargue**, Rachel. "A National Park for Blue Whales?" Web log. *Ocean View*. National Geographic News Watch. 31 July, **2013**. <http://newswatch.nationalgeographic.com/2013/07/31/a-national-park-for-blue-whales/>

Cristol, DA, RL Brasso, AM Condon, RE **Fovargue**, SL Friedman, KK Hallinger, AP Monroe, AE White. The movement of aquatic mercury through terrestrial food webs. *Science* 320(5874):335. **2008**.

## **PUBLISHED ABSTRACTS AND PRESENTATIONS**

**Fovargue**, Rachel; Atkinson, Carla; Julian, Jason; Vaughn, Caryn C.; Neeson, Thomas M. **August 2019**. "Reducing heat stress on freshwater mussels through reservoir management in a drying climate" Poster Presentation. *Ecological Society of America*. Louisville, KY

**Fovargue**, Rachel; Sabzi, Hamed Z.; Rezapour-Behnagh, Shabnam; Moreno, Hernan; Neeson, Tom. **December 2018**. "Balancing conflicting water usages under a changing climate by optimizing a network of reservoirs in the Red River Basin of the South, USA" Poster Presentation. *American Geophysical Union*. Washington, DC.

**Fovargue**, Rachel; Armsworth, Paul R.; Fisher, Maria; Harris, Jamal. **August 2016**. "Quantifying a conservation fundraising landscape and factors defining its spatial distribution" Contributed Oral Presentation. *Ecological Society of America*. Fort Lauderdale, FL

**Fovargue**, Rachel; Armsworth, Paul R.; Fargione, Joseph E. **August 2015**. "What is the real cost of conservation investments? Calculating the conservation opportunity cost of financing land protection" Poster. *International Congress for Conservation Biology*. Montpellier, France.

**Fovargue**, Rachel; Armsworth, Paul R.; Fargione, Joseph E. **August 2015**. "The true cost of conservation investments: Opportunity cost of financing land protection". *Ecological Society of America*. Baltimore, Maryland.

**Fovargue**, Rachel; Armsworth, Paul; Bode, Michael. **August 2013**. "Size and Spacing Rules for Marine Protected Areas: Useful for Management?" Contributed oral presentation. *Ecological Society of America Annual Meeting*, Minneapolis, MN.

**Fovargue**, Rachel; Armsworth, Paul; Bode, Michael. **August 2013**. "Size and Spacing Rules for Marine Protected Areas: Useful or not?" Contributed oral presentation. *Society of Conservation Biology's International Congress on Conservation Biology*, Baltimore, MD.

**Fovargue**, Rachel; Armsworth, Paul R.; Bode, Michael. "Size and Spacing of Marine Protected Areas Under Realistic Dispersal Conditions" *Institute for Marine and Antarctic Studies*. **November 2012**.

**Fovargue**, Rachel; Armsworth, Paul R.; Bode, Michael. "Managing Reef Fish under Stochastic Dispersal Conditions." *Society for Mathematical Biology Annual Meeting*. **July 2012**.

**Fovargue**, Rachel. "The Integration of Metapopulation Dynamics into Habitat Equivalency Analysis." *National Institute for Mathematical and Biological Synthesis Undergraduate Research Conference*. **November 2009**.

**Fovargue**, Rachel. [Integration of Source and Sink Dynamics into Habitat Equivalence Models](#). *The 4th Annual University of North Carolina Greensboro Regional Undergraduate Mathematics Conference*. **May 2008**.

## **GRANTS AND ACADEMIC AWARDS**

UTK Graduate School's Yates Dissertation Fellowship

2016-2017

▪ \$15,000	
UTK EEB Outstanding Outreach & Community Service Award	2016
▪ \$500	
NSF GRFP – Fellowship Awardee	2013-2016
▪ Over \$65,000 per year in tuition and stipend support	
NIMBIOS Graduate Research Assistantship - offer	2013
▪ Over \$40,000 per year in tuition and stipend support	
NSF GRFP – Honorable Mention	2012
Australian Research Council - CEED Overseas Visiting Fellowship	2012
▪ Centre of Excellence for Environmental Decisions, 3 mo, travel and housing expenses	
SCALE-IT IGERT Research Fellow	2011-2013
▪ Over \$40,000 per year in tuition and stipend support	
UTK EEB Summer Graduate Award	2012, 2013, 2014, 2015
▪ Over \$3000 total award	
Monroe Scholar	2005-2009
▪ Summer research grant based on academic excellence	
Member of Phi Beta Kappa Honors Fraternity	2009

## TEACHING EXPERIENCE

### *Lead instructor with curriculum development:*

University of Tennessee, <b>BIO 167</b>	Fall 2016
▪ Instructor for laboratory section in which honors biology students are taught basics of investigative science – experimental design, statistics, literature search techniques – and mentored in independent research	
University of Tennessee, <b>LS 595: “Biology for Computational Researchers”</b>	Spring 2013
▪ Developed and led 12 class periods on Ecology and Evolutionary Biology topics	
▪ Mixed graduate and undergraduate class	
University of Tennessee, Kids U, “ <b>The Unseen World</b> ”	Summer 2013
▪ Week-long, half-day curriculum on environmental sampling and microbiology	
▪ High-school level; active learning focus	
Non-profit Call of the Sea, <b>Ecology &amp; experimental design</b>	Spring/Summer 2011
▪ Ecology and hydrology lessons for sailing classroom	
▪ Elementary to high-school level students	

### *Teaching assistant:*

University of Tennessee, <b>Landscape Ecology EEB 504</b>	Spring 2017
▪ Organized a career discussion series with landscape ecology professionals from academic, private and public organizations	
University of Tennessee, <b>BIO 158</b>	Fall 2016
▪ Led recitation for introductory biology lecture	
USFWS/USGS: “ <b>Adaptive Management: SDM for Recurrent Decisions</b> ”	Fall 2015
▪ 6-week online course	
USFWS/USGS: “ <b>Decision Analysis for Climate Change</b> ”	Spring 2015
▪ 10-week online course	

## OUTREACH AND SERVICE

• Volunteer Research assistant – National Climate Adaptation Science Center	2020
• SC CASC Working Group member - "Mapping Changes in Species Distributions"	2018-2019
• NIMBioS Working Group member - "Hierarchies in Conservation"	2018-2019

- AGU Outstanding Student Presentation Judge Dec 2019
- Peer Reviewer – Animal Conservation Spring 2018
- USFWS/USGS Structured Decision Making Workshop Coach Jun 2014, May 2016
- Structured Decision Making Workshop Volunteer and Observer Nov 2012, Feb 2014
- EEB Faculty Search committee member, Conservation Biology search Oct 2015 - Apr 2016
- Chancellor-appointed Sexual Misconduct Task Force Member Fall 2015
- Chancellor's Excellence in Teaching committee member Spring 2015
- Graduate Student Senate EEB Representative 2014-2015
- Graduate Student Senate Travel Awards Committee member 2014-2015
- GREBE Vice-President (Departmental grad representation) 2014-2015
- Graduate student panel for NIMBioS REU students July 2013
- Darwin Day volunteer 2012-2015

## PROFESSIONAL & RESEARCH EXPERIENCES

### *Postdoctoral Researcher*

**Arizona State University**, Tempe, AZ April 2020-present

- Using decision analysis to investigate EPA pesticide registration process in regards endangered species act consultations.

### *Postdoctoral Research Fellow*

**University of Oklahoma**, Norman, OK Jan 2018-Jan 2020

- Supported by the Department of Interior's South Central Climate Science Center
- Collaboration with hydrologists and engineers to model future water availability scenarios and impacts on biodiversity and instream flows

### *Structured Decision Making Workshop Coach*

**USFWS National Conservation Training Center**, Shepherdstown, WV June 2014-2016

- Facilitated conservation practitioners during week-long focus groups
- Developed analytical prototypes and frameworks for future research needs on problems in conservation practice

### *National Science Foundation SCALE-IT and Graduate Research Fellow*

**University of Tennessee**, Knoxville, TN August 2011-August 2016

- Collaborated with non-profit organizations to conduct high impact research on conservation fundraising and financing
- Active participant in Scientific Communication Workshops

### *Student Conservation Association Intern*

**USFWS National Conservation Training Center**, Shepherdstown, WV Jan 2010-March 2011

- Assisted with the development and implementation of USFWS training courses
- Create classroom and education materials

### *Population Dynamics Summer Workshop Intern*

**Virginia Tech - NMFS**, Blacksburg, VA June 2009-August 2009

- Researched social and scientific issues in the Gulf of Mexico fisheries through interviews with key figures in the region
- Developed materials for educational website framing and discussing the issues behind an ecosystem based fisheries management system

### *Honors Thesis Research*

**William and Mary Biology Department**, Williamsburg, VA Aug 2008-April 2009

- Developed mathematical model to reflect non-migratory source-sink metapopulation
- Incorporated model into Natural Resource Damage Assessment's Habitat Equivalency Analysis to examine effects on cost estimations

***Lab/Field Assistant***

**William and Mary Biology Department, Williamsburg, VA**

Summer 2006, 2007, 2008

- Analyzed biological samples for concentration of methyl-mercury contaminants
- Collected data, managed database and laboratory for avian study

**SOFTWARE AND FIELD SKILLS**

- MATLAB
- R statistical software
- ArcGIS
- QGIS
- Microsoft Excel
- Wildlife Handling (Avian)

**OTHER TRAINING**

*South Central Climate Science Center*

- Climate Science Early Career Researcher Professional Development Training August 2018

*USFWS National Conservation Training Center:*

- Decision Analysis: Elicitation and Facilitation March 2014
- USGS Structured Decision Making Observation Feb 2014
- Introduction to Structured Decision Making August 2013
- ArcGIS Introduction September 2010
- DOI Motorboat Operator Certification Course, *Annapolis, MD* June 2010