

CONTACT
INFORMATION

Research Specialist
Department of Fish and Wildlife Conservation
Virginia Polytechnic Institute and State University
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Blacksburg, VA 24601 USA

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EDUCATION

**Doctorate of Philosophy Student in
Fish and Wildlife Conservation**

Virginia Polytechnic Institute and State University

- Research focuses on the development and use of multispecies hierarchical models of site occupancy, survival, and state transition with coursework in Conservation Genetics, Advanced Statistics, Landscape Ecology, Geographic Information Systems, and Remote Sensing
- Tentative Dissertation Title: Multispecies inference using hierarchical models: approaches to understand synchronous and asynchronous responses to shared conditions
- Adviser: Dr. Paul L. Angermeier

Graduate Certificate in Geospatial Information Technology

May 2014

Virginia Polytechnic Institute and State University

- Course work in Remote Sensing, Geographic Information Systems, and Spatial Statistics

Master of Science in Ecology

August 2009

University of Georgia

- Research focused on quantitative aspects of sampling rivers and streams with coursework in Stream Ecology, Population and Community Ecology, Quantitative Biology, and Conservation Biology
- Thesis: Confronting incomplete detection to address questions about distribution and reproductive season for four imperiled stream fishes.
- Adviser: Dr. Mary C. Freeman

Bachelor of Arts in History

May 2005

University of Georgia

- Course and research emphasis on Environmental History with additional coursework in Ecology, Geology, and Hydrogeology
- Coursework and field experience in Geology, Ecology, and Anthropology in over twenty National Parks throughout the western United States
- Senior Thesis: More than a paper cut: Using local action to create environmental regulation and public justice in Savannah, Georgia

PROFESSIONAL
EXPERIENCE

Research Specialist I

October 2012-Present

Department of Fish and Wildlife Conservation

Virginia Polytechnic Institute and State University, Blacksburg, Virginia

- Designs and conducts field studies to assess the current status of fish populations in the southeast
- Analyzes and compiles information on the population dynamics of fish populations of the southeast
- Coordinates and supervises student interns and field technicians
- Collaborates with agencies and stakeholders to establish research objectives and study designs and provides management guidance on species conservation
- Completes projects and reports using software such as R, JAGS, ArcGIS, Imagine, Access, and MS Office

Graduate Research Assistant

August 2011-October 2012

Department of Fish and Wildlife Conservation

Virginia Polytechnic Institute and State University, Blacksburg, Virginia

- Conducted field studies to assess the current status of fish populations
- Analyzed and compiled information on the population dynamics of the endangered Roanoke logperch
- Completed projects and reports using software such as R, JAGS, ArcGIS, and MS Office Suite

PROFESSIONAL
EXPERIENCE

Research Support Specialist I

May 2010-August 2011

Department of Natural Resources

Cornell University, Ithaca, New York

- Acted as Project Coordinator for surveillance of pathogenic viruses in Great Lakes
- Coordinated and supervised student interns and graduate students
- Designed studies to understand VHSV dynamics within littoral populations of Great Lakes
- Organized and lead field crews to sample Great Lakes and other water bodies for the collection of specimens
- Advised graduate students on the design and implementation of their projects
- Managed laboratory and procured supplies and equipment
- Used software such as ArcGIS, WinBUGS, R, Mark, Filemaker Pro, and MS Office Suite

Student Contractor

February 2010-April 2010

Patuxent Wildlife Research Center

U.S. Geological Survey, Athens, Georgia

- Assessed approaches to estimate population status and distribution of fishes
- Conducted research on the effects of climate change on freshwater biodiversity
- Wrote articles to be published in peer reviewed journals

Research Professional I

August 2009-January 2010

Odum School of Ecology

University of Georgia, Athens, GA

- Conducted research on passage of freshwater fishes through culvert road crossings
- Used statistical approaches and Geographic Information Systems to estimate distribution of fishes
- Developed prioritization strategy for culvert replacement and remediation
- Completed projects and reports using software such as ArcGIS, Netica, R, WinBUGS, and MARK

Graduate Research/Laboratory Assistant

August 2007-August 2009

Odum School of Ecology

University of Georgia, Athens, GA

- Designed and conducted field studies to assess the current status of fish populations
- Identified fishes and prepared collections for the Georgia Museum of Natural History
- Developed curriculum for laboratory portion of Ichthyology class (2009)
- Monitored and taught weekly laboratory sessions on fish taxonomy and identification (2009)
- Developed and updated class webpage (2009)
- Completed projects and reports using ArcGIS, ArcView, Filemaker Pro, R, and Mark

Biological Science Technician

June 2008-August 2008

Patuxent Wildlife Research Center

U.S. Geological Survey, Athens, Georgia

- Helped develop protocols for detecting rare and elusive fish species
- Sampled long-term monitoring sites within the Upper Coosa River system

Research Technician

June 2005-August 2007

River Basin Center

University of Georgia, Athens, GA

- Identified fishes and prepared collections for the Georgia Museum of Natural History
- Conducted basin-wide water quality sampling
- Georeferenced localities, impoundments, and other features of interest
- Processed and managed data and field notes and assisted in analyses and annual reports

SKILLS AND
EXPERTISE

Statistical Methods

- Frequentist, Information Theoretic, and Bayesian Approaches
- Generalized Linear Models, Generalized Linear Mixed Models, and Hierarchical Models
- Occupancy Estimation, Mark-Recapture Analysis, and Species Distributional Modeling
- Spatial, Temporal, and Spatiotemporal Statistics
- Multivariate Statistics

SKILLS AND
EXPERTISE

Geospatial Analysis

- ArcInfo/ArcGIS 10.x and various extensions
- ArcGIS Model Builder and ArcPy in Python.
- Spatial Analysis using R, including the following packages: sp, spdep, gstat, geoR, raster, and maptools

Statistical Languages and Software

- R, BUGS (OpenBUGS and JAGS), and Python
- Netica, Presence, and MARK

Desktop Editing and Productivity

- Adobe Creative Suite (CS5), including Illustrator, Photoshop, InDesign, Flash, and Dreamweaver
- T_EX (L^AT_EX and B^BT_EX)
- MySQL, Microsoft Access and FileMaker Pro
- Microsoft Office, OpenOffice.org, and Google Docs

Operating Systems

- Microsoft Windows, Apple OS X, and Linux

PEER REVIEWED
PUBLICATIONS

- Cornwell, E.R., **G.B. Anderson**, D.C. Coleman, R.G. Getchell, G.H. Groocock, J.V. Warg, A.M. Cruz, J.W. Casey, M.B. Bain, and P.R. Bowser. Applying multi-scale occupancy models to infer host and site occupancy of viral pathogens: an application using an emerging fish pathogen in the Great Lakes. Manuscript accepted to the Journal of Great Lakes Research.
- Cornwell, E.R., A. Primus, P.T. Wong, **G.B. Anderson**, T.M. Thompson, G. Kurath, G.H. Groocock, M.B. Bain, P.R. Bowser, and R.G. Getchell. Round gobies (*Neogobius melanostomus*) are a reservoir for viral hemorrhagic septicemia virus genotype IVb in the St. Lawrence River and eastern Lake Ontario. Manuscript accepted to the Journal of Wildlife Diseases.
- Anderson, G.B.**, M.C. Freeman, B.J. Freeman, C.A. Straight, M.M. Hagler and J.T. Peterson. 2012. Dealing with uncertainty when assessing fish passage through culvert road crossings. *Environmental Management* **50**(3): 462-477.
- Anderson, G. B.**, M.C. Freeman, M.M. Hagler, and B.J. Freeman. 2012. Occupancy modeling and estimation of the holiday darter species complex within the Etowah River system. *Transactions of the American Fisheries Society* **141**(2): 34-45.
- Cornwell, E.R., **G.B. Anderson**, G.A. Wooster, R.G. Getchella, G.H. Groocock, J.W. Casey, M.B. Bain, and P.R. Bowser. 2012. Low prevalence of cyprinid herpesvirus-3 found in common carp collected from nine locations in the Great Lakes. *Journal of Wildlife Diseases* **48**(4): 1092-1096.

REPORTS

- Anderson, G.B.**, J.H. Roberts, and P.L. Angermeier. 2014. Assessing impacts of the Roanoke River Flood Reduction Project on the endangered Roanoke logperch: project report to the Wilmington district, U.S. Army Corps of Engineers, Wilmington, NC, Pages 47. Blacksburg, Department of Fish and Wildlife Conservation, Virginia Polytechnic Institute and State University.
- Anderson, G.B.**, J.H. Roberts, and P.L. Angermeier. 2014. Assessing impacts of the Roanoke River Flood Reduction Project on the endangered Roanoke logperch: project report to the Wilmington district, U.S. Army Corps of Engineers, Wilmington, NC, Pages 48. Blacksburg, Department of Fish and Wildlife Conservation, Virginia Polytechnic Institute and State University.
- Anderson, G.B.**, J.H. Roberts, and P.L. Angermeier. 2013. Monitoring of endangered Roanoke logperch in Smith River upstream of Philpott Reservoir: project report to the Wilmington district, U.S. Army Corps of Engineers, Wilmington, NC, Pages 28. Blacksburg, Department of Fish and Wildlife Conservation, Virginia Polytechnic Institute and State University.

REPORTS

- Roberts, J.H., **G.B. Anderson**, and P.L. Angermeier. 2013. Assessing impacts of the Roanoke River Flood Reduction Project on the endangered Roanoke logperch: final report to the Wilmington district, U.S. Army Corps of Engineers, Wilmington, NC, Pages 53. Blacksburg, Department of Fish and Wildlife Conservation, Virginia Polytechnic Institute and State University.
- Nash, E.A., **G.B. Anderson**, and M.B. Bain. 2011. Environmental impacts of energy production in the Great Lakes: 2011 narrative report for the project Integrating Energy and Water Resources Decision Making in the Great Lakes Basin: An Examination of Future Power Generation Scenarios and Water Resource Impacts. Great Lakes Commission, Ann Arbor, MI.
- Anderson, G.B.** 2009. Confronting incomplete detection to address questions about distribution and reproductive season for four imperiled stream fishes. M. S. Thesis. University of Georgia, Athens, GA.
- Freeman, B.J., **G.B. Anderson**, and M.M. Hagler. 2009. Identification and mapping of critical habitats in the Etowah River system with an emphasis on the distribution of sensitive species of fishes: 2008 annual report to the Georgia Department of Natural Resources, Atlanta, Pages 96. Athens, Odum School of Ecology and Georgia Museum of Natural History, University of Georgia.
- Freeman, B. J., **G.B. Anderson**, M.M. Hagler, and S.J. Wenger. 2008. Identification and mapping of critical habitats in the Etowah River system with an emphasis on the distribution of sensitive species of fishes: 2007 annual report to the Georgia Department of Natural Resources, Atlanta, Pages 48. Athens, Odum School of Ecology and Georgia Museum of Natural History, University of Georgia.
- Freeman, B.J., **G.B. Anderson**, M.M. Hagler, and S.J. Wenger. 2008. Identification and mapping of critical habitats in the Etowah River system with an emphasis on the distribution of sensitive species of fishes: 2007 annual report to the Georgia Department of Natural Resources, Atlanta, Pages 48. Athens, Odum School of Ecology and Georgia Museum of Natural History, University of Georgia.
- Freeman, B.J., M.M. Hagler, S.J. Wenger, **G.B. Anderson**, and R.A. Katz. 2007. Identification and mapping of critical habitats in the Conasauga River Corridor of Georgia and Tennessee: 2006 annual report to the Georgia Department of Natural Resources, Atlanta, Pages 84. Athens, Odum School of Ecology and Georgia Museum of Natural History, University of Georgia.

PUBLICATIONS
SUBMITTED OR IN
PREPARATION

- Roberts, J.H., P.L. Angermerier, and **G.B. Anderson**. Population viability analysis for endangered Roanoke logperch (*Percina rex*). Manuscript in preparation.
- Hassan, M.Z., and **G.B. Anderson**. Invasion Dynamics of round goby: an occupancy estimation approach to understand the effects of colonization of round gobies into Lake Ontario Tributary Systems. Manuscript in preparation.
- Anderson, G.B.**, S.J. Wenger, M.C. Freeman, M.M. Hagler, and B.J. Freeman. Confronting incomplete detection to address questions about reproductive season and habitat use of four imperiled stream fishes. Manuscript in preparation.

CONFERENCE
PRESENTATIONS

- Anderson, G.B.**, R.H. Wynne. Cirrus cloud effects on land use classification of multitemporal Landsat 8 data: a case study using hierarchical/multilevel models. PECORA 19, November 19, 2014.
- Anderson, G.B.**, J.H. Roberts, and P.L. Angermeier. Accounting for imperfect detection and spatiotemporal autocorrelation in a BACI design to monitor the federally endangered Roanoke logperch. South Division of the American Fisheries Society, January 25, 2014.
- Anderson, G.B.**, E.C. Cornwell, J.W. Casey, M.B. Bain, and P.R. Bowser. Host selection and spatiotemporal heterogeneity of viral hemorrhagic septicemia virus: inferences from hierarchical multi-scale occupancy models. Ecological Society of America Mid-Atlantic Chapter. April 14, 2012.

CONFERENCE
PRESENTATIONS

- Anderson, G.B.**, and M.C. Freeman. Occupancy modeling and estimation of the *Etheostoma brevirostrum* species complex within the Etowah River system. Southeastern Fishes Council. November 13, 2009.
- Anderson, G. B.** and M.C. Freeman. Occupancy modeling and estimation of the *Etheostoma brevirostrum* species complex within the Etowah River system. Odum School of Ecology Graduate Student Symposium, University of Georgia, January 22, 2009.

CONFERENCE
POSTERS

- Cornwell, E.R., **G.B. Anderson**, G.A. Wooster, D. Coleman, G.H. Groocock, R.G. Getchell, G.E. Eckerlin, T.M. Thompson, W.N. Batts, G. Kurath, R.N. Casey, J.R. Winton, J.W. Casey, M.B. Bain, and P.R. Bowser. Results of 2010 surveillance for viral hemorrhagic septicemia virus and koi herpes virus in the Great Lakes. New York Chapter of the American Fisheries Society. January 20, 2011.
- Anderson, G.B.**, A.M. Neese, N.L. Pontzer, M.M. Hagler, C.A. Straight, R.A. Katz, J. Pahl, C.L. Baker, and S.J. Wenger. Research to support aquatic conservation in Georgia. Southeastern Fishes Council. November 13, 2008.
- Anderson, G.B.**, A.M. Neese, N.L. Pontzer, M.M. Hagler, C.A. Straight, R.A. Katz, J. Pahl, C.L. Baker, and S.J. Wenger. Fish conservation in Georgia. Aquatic Conservation Science: Merging Theory and Application, October 3, 2008.
- Anderson, G.B.**, M.M. Hagler, S.J. Wenger, and B.J. Freeman. Reproductive aspects of three darter species (Percidae) within the Etowah River Basin. Southeastern Fishes Council, November 8, 2007.

REFEREE SERVICE

- Ecological Applications
- North American Journal of Fisheries Management
- Transactions of the American Fisheries Society
- Canadian Journal of Fisheries and Aquatic Sciences
- River Research and Applications
- Fisheries Management and Ecology

TEACHING
EXPERIENCE

- 2014 Co-Instructor:** Analysis and Programing in R for Fish and Wildlife Conservation, Virginia Polytechnic Institute and State University
- 2014 Co-Instructor:** Occupancy Modeling for Fisheries: An Introduction to the Design and Implementation of Occupancy Models, VA Chapter of the American Fisheries Society Workshop
- 2013 Co-Instructor:** Introduction to the Design and Implementation of Occupancy Models, Southern Division American Fisheries Society Workshop
- 2012 Co-Instructor:** Seminar on Quantitative Ecology, Virginia Polytechnic Institute and State University
- 2012 Guest Lecturer:** Fluvial Landscape Ecology and Species Distribution Modeling, Virginia Polytechnic Institute and State University
- 2012 Guest Lecturer:** Applied Conservation Genetics, Virginia Polytechnic Institute and State University.
- 2009 Teaching Assistant:** Ichthyology, University of Georgia

ORGANIZATIONS
AND VOLUNTEER
WORK

- 2007-Present** Southeastern Fishes Council
- 2010-2011** New York Chapter of the American Fisheries Society
- 2008-2010** Upper Oconee Watershed Network
- 2008-2009** American Water Resource Association
- 2008-2009** Toastmasters International (Club 1779)