

Michelle R. Anderson

Curriculum Vitae

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Education

University of Missouri

Graduation Date: May 2014

- B.S. in Fisheries and Wildlife
- GPA: 3.398

Publications and Reports

1. **Anderson, M.R.**, L. Eggert, M. Slay, B. Wagner, C. Dillman, D. Kampwerth, and J. Koppelman. Relatedness of Six Stygobitic Crayfish Species in *Cambarus* (Decapoda: Cambaridae) Inhabiting the Ozark and Springfield Plateaus. (In-prep to be submitted to Journal of Crustacean Biology)
2. **Anderson, M.R.**, L. Eggert, and J. Koppelman. Genetic Structure of Lake Sturgeon in the Missouri and Mississippi Rivers. (In-prep to be submitted to the North American Journal of Fisheries Management)
3. Hendrickson, B., **M.R. Anderson**, L. Eggert, D. Nelson, and J. Koppelman. Genetic Diversity of Shortleaf Pine Across its Historic Range in Missouri. (In-prep to be submitted to the Journal of Biogeography)
4. **Anderson, M.R.** and J. Koppelman. Report: Walleye Brood Stock Screening 2014-2016.
5. **Anderson, M.R.** and J. Koppelman. White-tailed Deer Forensics Report 1
6. **Anderson, M.R.** and J. Koppelman. White-tailed Deer Forensics Report 2
7. **Anderson, M.R.** and J. Koppelman. Wild Turkey Forensics Report
8. **Anderson, M.R.** and J. Koppelman. Possible Hybrid Channel Catfish, Possible State Record Genetics Report

Research Activities

Genetic population structure of Missouri's lake sturgeon (*Acipenser fulvescens*) **January 2014-Present**

- Extracted DNA from fin clips, PCR amplified mitochondrial sequence and microsatellite genotypes
- Scored haplotypes consistent with previous research in GENEIOUS, scored genotypes in GENEMARKER
- Determined genetic structure using STRUCTURE and STRUCTURE HARVESTER
- Mapped haplotype frequency and genetic cluster assignment across Missouri and Mississippi Rivers
- Determined level of relatedness between samples using ML-RELATE
- Supervisor: Jeff Koppelman, MDC

Forensic analysis for law enforcement

January 2014-Current

- Two deer cases: match meat to carcass using mitochondrial DNA sequence
- Turkey case: match meat to carcass using microsatellite genotypes, determine the number of individuals present in packaged meat

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- Verified possible state record channel catfish as a blue catfish using PCR-RFLP
- Supervisor: Jeff Koppelman, MDC

Genetic diversity of shortleaf pine (*Pinus echinata*) across its historic range in Missouri **January 2014-Present**

- Extracted DNA from cambium tissue from tree core samples
- Microsatellite amplification and scored genotypes using GENEMARKER
- Determined geographic genetic structure using STRUCTURE and STRUCTURE HARVESTER
- Determined inbreeding coefficient in ARLEQUIN
- Mapped geographic genetic structure across species distribution
- Supervisor: Jeff Koppelman, MDC

Genetic relatedness of six stygobitic crayfish in the genus *Cambarus* (Decapoda: Cambaridae) inhabiting the Ozark and Springfield Plateaus **January 2014-Present**

- Extracted DNA from claw/leg samples, PCR amplified sequence from two mitochondrial and two nuclear genes
- Scored haplotypes and genotypes using COLLAPSE
- Determined haplotype and genetic diversity within and between caves using ARLEQUIN
- Constructed gene phylogenies of concatenated mitochondrial and nuclear genes
- Compared patterns between mitochondrial and nuclear gene trees
- Supervisor: Jeff Koppelman, MDC

PCR-RFLP screening on walleye (*Sander vitreus*) brood stock **January 2014-Current**

- Extracted DNA from fin clips, PCR amplified mitochondrial control region
- Enzymatic digestion of PCR product using three different enzymes, ran out on electrophoresis gel to score band lengths to determine desirable brood
- Supervisor: Jeff Koppelman, MDC

Quantification of eDNA shedding rates from invasive bighead carp *Hypophthalmichthys nobilis* and silver carp *Hypophthalmichthys molitrix* **May 2013-December 2013**

- Retrieved and extracted DNA from water samples from experimental tanks and ponds
- Retrieved and processed plankton and chlorophyll samples
- q-PCR amplified DNA
- Supervisor: Dr. Katy Klymus, U.S. Geological Survey

Latitudinal association of den chronology and allele frequency of two genes, *FTO* and *CLOCK*, putatively involved with hibernation in the American black bear **February 2012-May 2013**

- Extracted DNA from muscle tissue
- PCR amplified sequence, aligned and translated into amino acid sequence in GENEIOUS, scored allele frequency from amino acid sequence
- Mapped allele frequency differences for both genes across latitudinal gradient on both west and east coasts
- Supervisor: Dr. Lori Eggert, University of Missouri-Division of Biological Sciences

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Professional Experience

Genetics Assistant

January 2014-Current

Missouri Department of Conservation

- Wrote project summaries and research manuscripts for publication
- Supervised undergraduate research project
- Maintained laboratory inventory
- Organized and maintained a sample inventory database
- Assisted with draining and seining of fishponds at Little Dixie Conservation Area

Molecular Laboratory Technician

May 2013-December 2013

USGS-CERC Student Contractor

- Assisted with laboratory research on invasive Asian carp species and eDNA
- Assisted in field work by monitoring carp in Missouri streams
- Required to work in small groups to complete tasks
- Developed strong communication skills

Undergraduate Laboratory Assistant

February 2012-May 2013

University of Missouri Biological Sciences

- Learned to extract DNA from blood, hair, and tissue samples
- Proficient PCR and laboratory safety skills
- Strong data entry skills using EXCEL
- Developed strong organizational skills and scientific observational skills
- Required to work independently to complete tasks

Mentorship Experience

Student: Ben Hendrickson

Fall 2014-Spring 2016

- Project: Genetic diversity of shortleaf pine across its historic range in Missouri
 - Supervised and trained undergraduate on DNA extraction, PCR amplification, multiple analyses using various software programs, and writing the manuscript for publication

Presentations

Latitudinal association between den chronology and allele frequency of candidate genes for hibernation, *FTO* and *CLOCK*, in American black bears

Life Science Week Poster Presentation-
Spring 2013
University of Missouri, Columbia, MO

Volunteer Experience

Audubon Christmas Bird County Survey

December 2014 & 2015

Eagle Bluffs Conservation Area- Columbia, MO

- Identified various species of birds and waterfowl
- Recorded total number of birds and waterfowl observed within Eagle Bluffs Conservation Area

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Salamander Husbandry

May-August 2014

University of Missouri-Columbia

- Feed salamander held in lab for studies
- Kept compost for worm health
- Meticulously kept climate records

Volunteer Songbird Technician

August 11, 2013

Baskett Forest- Research Project University of Missouri

- Used radio telemetry to track song bird juveniles
- Experience using GPS
- Took vegetation measurements

Organizations

The Wildlife Society

Fall 2013, Current

National Society of Collegiate Scholars

Fall 2009-Spring 2014

Four Directions: Indigenous Peoples and Allies

Spring 2013-Spring 2014

Relevant Coursework

Genetics, Conservation Biology, Animal Population Dynamics, Ecology, Evolution, Undergraduate Research, Biometrics, PIM (Photogrammetry, Inventory, and Models), Statistics, Ecosystem Management, Human Physiology, Ichthyology, Mammalogy, Ornithology, and Dendrology.

Award and Honors

Red and Glayds Dudley Scholarship (\$3,750)

Fall 2009

University of Missouri's Dean's List Recipient

Fall 2009-Spring 2010, Spring 2011-Fall 2011, Fall 2012-Spring 2014