Libby Megna

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Education

May 2019 Ph.D. Ecology, **University of Wyoming, Laramie, WY**
Program in Ecology | Department of Zoology & Physiology
Advisor: Matthew D. Carling | Current GPA: 4.0

May 2012 M.S. Biology, **Andrews University, Berrien Springs, MI**
Thesis: *Reproductive success of gulls in the* Larus glaucescens-occidentalis *complex on Protection Island, Washington*
Advisors: James L. Hayward and Shandelle M. Henson
Summa cum laude | Overall GPA: 4.0

May 2010 B.S. Biology, **Andrews University, Berrien Springs, MI**
Zoology emphasis, Mathematics minor, J. N. Andrews Scholar
Summa cum laude | Overall GPA: 3.97 | Major GPA: 4.0

Employment

Detailed teaching experience | Detailed research experience | Detailed curatorial experience

Fall 2013; Springs 2014, 2015, 2016, and 2017 — **Graduate Teaching Assistantship**
Dept of Zoology & Physiology, University of Wyoming, WY
General Biology, Ornithology

Falls 2014, 2015, and 2016 — **Curatorial Assistantship**
University of Wyoming Museum of Vertebrates, WY
Inventorying and specimen preparation

May 2013 to Aug 2013 — **MAPS Volunteer Intern**
Institute for Bird Populations, CA
Bird banding in Indiana

Nov 2012 to Apr 2013 — **Independent Contractor**
Seabird Ecology Team, Andrews University, MI
Spatial analysis of gull reproductive success

May 2012 to Sep 2012 — **Field Crew Supervisor**
Southern Sierra Research Station, CA
Yellow-billed Cuckoo research in Arizona

Fall 2010 to Spring 2012 — **Graduate Research Assistantship**
Seabird Ecology Team, Andrews University, MI
NSF-funded study of hybrid gull reproductive success

Employment, continued

Spring 2010 to Spring 2012	**Graduate Teaching Assistantship** Dept of Biology, Andrews University, MI General Ecology, Ornithology, Research Methods I and II, Biology Seminar
Fall 2009 to Spring 2010	**Undergraduate Teaching Assistantship** Dept of Biology, Andrews University, MI Foundations of Biology
Fall 2008 to Spring 2010	**Undergraduate Teaching Assistantship** Dept of Mathematics, Andrews University Calculus I and II for Biology, Mathematical Modeling in Biology
Spring 2007 to Spring 2010	**Research Experience for Undergraduates** Seabird Ecology Team, Andrews University, MI NSF-funded study of gull behavior and ecology
Summers 2005, 2006, 2007, 2009	**Summer Internship** Sarett Nature Center, Benton Harbor, MI Public outreach and science education

Publications

Google Scholar | ResearchGate

Sandler, AG, **LC Megna**, JL Hayward, SM Henson, CM Tkachuck, and RD Tkachuck. In press. Every-other-day clutch-initiation synchrony in Ring-billed Gulls (*Larus delawarensis*). *Wilson Journal of Ornithology.*

Oswald, JA, MG Harvey, R Remsen, D Foxworth, SW Cardiff, DL Dittmann, **LC Megna**, MD Carling, RT Brumfield. 2016. Willet be one species or two?: A genomic view of the evolutionary history of *Tringa semipalmata*. *The Auk* 133(4): 593-614.

Payne, BG, SM Henson, JL Hayward, **LC Megna**, and SR Velastegui Chávez. 2015. Environmental constraints on haul-out and foraging dynamics in Galápagos marine iguanas. *Journal of Coupled Systems and Multiscale Dynamics* 3(3): 208-218.

Megna, LC, AE Moncrieff, JL Hayward, and SM Henson. 2014. Equal reproductive success of phenotypes in the *Larus glaucescens-occidentalis* complex. *Journal of Avian Biology* 45(4): 410-416.

Hayward, JL, **LC Megna**, and BG Payne. 2014. Feeding interactions between juvenile and adult Flightless Cormorants. *Marine Ornithology* 42(1): 9-10.

Hayward, JL, LM Weldon, SM Henson, **LC Megna**, BG Payne, and AE Moncrieff. 2014. Egg cannibalism in a gull colony increases with sea surface temperature. *The Condor* 116: 62-73.

Hayward, JL, **LC Megna**, BG Payne, SR Velastegui Chávez, and SM Henson. 2013. Temporal and environmental effects on the behavior of flightless cormorants. *The Wilson Journal of Ornithology* 125(4): 790-799.

Moncrieff, AE, **LC Megna**, JL Hayward, and SM Henson. 2013. Mating patterns and breeding success of gulls of the Larus glaucescens-occidentalis complex, Protection Island, Washington. *Northwestern Naturalist* 94(1): 67-75.

Henson, SM, LM Weldon, JL Hayward, DJ Greene, **LC Megna**, and MC Serem. 2012. Coping behavior as an adaptation to stress: post-disturbance preening in colonial seabirds.

Journal of Biological Dynamics 6(1):17-37.

Presentations

Conference Talks

North American Ornithological Conference, Washington, DC: "Predicting reproductive isolation among passerines from song divergence and climatic niche divergence", 19 August 2016.

American Ornithologists' Union and Cooper Ornithological Society Meeting, Estes Park, CO: "Environmental niche divergence for hybridizing and non-hybridizing passerines", 25 September 2014.

American Ornithologists' Union and Cooper Ornithological Society Meeting, Chicago, IL: "Equal reproductive success of phenotypes in the Larus glaucescens-occidentalis complex", 15 August 2013.

Michigan Academy of Science, Arts & Letters Conference, Alma, MI: "Hybridization and reproductive success of gulls in the Larus glaucescens-occidentalis complex at an inland colony", 2 March 2012, jointly with Andre Moncrieff.

Joint Mathematics Meetings, AMS Session on Biology, Washington, DC: "Effect of the abiotic environment on preening in glaucous-winged gulls (*Larus glaucescens*)", 5 January 2009, jointly with Dr. Lynelle Weldon.

Other Talks

Program in Ecology Student Symposium, University of Wyoming: "Song divergence and environmental niche divergence among North American passerines", 4 March 2016.

Program in Ecology Student Symposium, University of Wyoming: "Environmental niche divergence for hybridizing and non-hybridizing passerines", 21 February 2014.

Department of Zoology & Physiology brown bag, University of Wyoming: "Equal reproductive success of phenotypes in the Larus glaucescens-occidentalis complex", 23 September 2013.

Laramie Audubon Society evening program: "Reproductive success of gulls in a hybrid zone", 30 October 2013.

Department of Biology colloquium, Andrews University: "Chasing cuckoos: Adventures in field biology", November 13, 2012.

Department of Biology colloquium, Andrews University: "Go big or go home: Our month in the Galápagos", April 24, 2012, jointly with Brianna Payne.

Sarett Nature Center public program: "Galapagos expedition", 19 November 2011.

Department of Mathematics colloquium, Andrews University: "Life with gulls: Summer research on Protection Island", October 8, 2010.

Department of Mathematics colloquium, Andrews University: "When Gulls Fail Linearity", February 6, 2009, jointly with Dr. Lynelle Weldon.

Poster Presentation

1st World Seabird Conference, Victoria, BC: "Mathematical model of habitat occupancy for pigeon guillemots", September 8-9, 2010.

Undergraduate Mentees

2016-present	Domonique Jones
2016-present	Kara Wise
2016-2017	Kaylee Alles
2015-2016	Dianna Brutsman
2010-2012	Andre Moncrieff

Scholarships and Awards

Major

2009	Barry M. Goldwater Scholarship
2006	National Merit Finalist

Other

2014	Cooper Ornithological Society Student Presentation Award
2010-2011	Biology Graduate Scholarship, 50% tuition
2010-2011	Graduate GRE Scholarship, 50% tuition
2010	Graduate Silver Jubilee Scholarship, $500
2009	Award for Excellence in Differential Equations
2009	Beatrice Stout Memorial Scholarship
2008	Award for Excellence in Mathematical Modeling in Biology
2008	Biology Endowed Scholarship
2007	Award for Excellence in Calculus II for Biology
2007	Beatrice Stout Memorial Scholarship
2006-2010	President's Scholarship, 100% tuition
2006-2008	Michigan Merit Award

Grants

2017	Menkens Award, $9,000
2017	Berry Research Grant, $4,000
2016	Wyoming INBRE Sequencing and Bioinformatics Analysis Program Grant, $10,000
2016	American Ornithologists' Union Research Award, $2,500
2016	WEST Research Award for Quantitative Analysis in Wildlife Ecology, $2,500
2016	University of Wyoming Biodiversity Institute Research Grant, $5,000
2015	L. Floyd Clarke Award, $2500

Professional Service

Fall 2015 to Spring 2016	**UW Ecology Graduate Student Association** Secretary
Fall 2013 to Spring 2013	**UW Ecology Graduate Student Association** PiE Student Symposium Committee
Fall 2011 to Spring 2012	**AU Dept of Biology Faculty Search Committee** Student Representative

Community Outreach

Volunteer Positions

Nov 2013 to present — **Laramie Audubon Society, Laramie, WY**
Secretary, website coordinator, trip leader

Nov 2013 to present — **eBird**
Reviewer for the state of Wyoming

Fall 2007 to Spring 2012 — **Helping Our Youth Achieve, Inc., Benton Harbor, MI**
Volunteer tutor for suspended high school students

2009 to 2012 — **Sarett Nature Center, Benton Harbor, MI**
Occasional volunteer for special events

Other Outreach Events

Aquatic Birds and Predictive Morphology activity; part of the *Girl Scouts in Science: Discovering Wyoming Water* program, 2 March 2016.

Species Concepts and Taxonomy activity; part of the *Latina Youth Conference* program, 15 October 2016.

Standardized Test Scores

Nov 2011 — **GRE Biology Subject Test**
Cellular and Molecular Biology 89 - 89th percentile
Organismal Biology 98 - 99th percentile
Ecology, Evolution, and Population Biology 92 - 99th percentile

Feb 2010 — **Graduate Record Exam**
Verbal 720 - 98th percentile
Quantitative 750 - 82nd percentile
Analytical Writing 5.0 - 84th percentile

Honor Societies

Phi Kappa Phi Honor Society
Sigma Xi Scientific Research Society
Beta Beta Beta Biological Honor Society
Pi Mu Epsilon Mathematics Honor Society

References

Matthew D. Carling
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Melanie A. Murphy
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Carlos Martinez del Rio
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Research Experience

Fall 2013 – Fall 2016
For my dissertation I am studying patterns of hybridization and reproductive isolation among North American passerines. Essentially, I want to know if I can predict whether two species will hybridize or will be reproductively isolated given knowledge about the two species' climate niches, songs, plumage, and genomic patterns of divergence. So far for these projects I have done environmental niche modeling on a large eBird dataset, analyzed song recordings from the Macaulay Library, collected tissue samples, and photographed museum specimens. I have involved four undergraduates total with my research projects.

May 2013 – August 2013
Fourteen weeks in southern Indiana: After completing two weeks of bird-banding training by IBP I operated six MAPS (Monitoring Avian Productivity and Survivorship) banding stations in state parks and state forests in southern Indiana. With one other intern I banded for six hours at each station once every ten days. We banded all small landbirds captured, excluding hummingbirds. Additionally, we color-banded wood thrushes for a project run by the Smithsonian and were joined by a member of the Ricklefs Lab at University of Missouri who bled our birds for a malaria study. Banding was supervised part-time by our biologist Todd Alleger. Other duties included station setup/takedown, mistnet repair, habitat surveys, and data proofing.

November 2012 - April 2013
I worked for the Seabird Ecology Team at Andrews University, this time as a contract researcher. I accomplished various tasks: 1) I revised my master's thesis for publication. 2) I completed the analysis for a study of ovulation synchrony among ring-billed gulls. 3) I spent one week in Washington to survey the distribution of Larus glaucescens-occidentalis phenotypes on Smith Island and to assist with a taphonomy project on Protection Island.

May - September 2012
Eighteen weeks along the Lower Colorado River: I supervised a four-person field crew that studied the abundance and nesting behavior of western yellow-billed cuckoos (*Coccyzus americanus occidentalis*); this project is part of the Lower Colorado River Multi-Species Conservation Program. We worked primarily within the Bill Williams River National Wildlife Refuge, AZ. Field duties included conducting presence/absence playback surveys, searching for nests, assisting with target banding of cuckoos, tracking cuckoos using radiotelemetry, and collecting data from vegetation sample plots. In addition to fieldwork I was responsible for teaching protocols to the techs, the scheduling and logistics of data collection, maintaining quality of data collected, and communicating with the refuge biologist and my bosses Shannon McNeil and Diane Tracy. After fieldwork was complete, I conducted a preliminary analysis of our radiotelemetry data and mapped territories in ArcGIS.

Fall 2011 - Spring 2012
I completed my thesis, which investigated the relationship between degree of hybridization and reproductive success of gulls in the *Larus glaucescens-occidentalis* complex on Protection Island National Wildlife Refuge, WA. I was also involved to some degree with Brianna Payne's master's thesis on haulout behavior of Galápagos marine iguanas (*Amblyrhynchus cristatus*), a pilot study of flightless cormorant (*Phalacrocorax harrisi*) behavior, a study of egg-laying synchrony among ring-billed gulls in Michigan, and logistic regression of reproductive success data for the Protection Island gull colony from the past six years (with Drs. Lynelle Weldon, Jim Hayward, and Shandelle Henson).

Summer 2011
Eight weeks on Protection Island National Wildlife Refuge, WA: Monitored gull nests for a long-term reproductive success study; collected hybrid index data for my master's thesis; mapped locations of gull nests using a survey-grade GPS; conducted scan counts of pigeon guillemots; collected gull fecal samples for hormone analysis; conducted woodland songbird

(transect) surveys; and assisted in organizing and carrying out an island-wide sparrow census. Field work supervised by Dr. Jim Hayward, though I took a lead role in organizing schedules for and supervising data collection by five graduate and undergraduate research assistants.

May 2011
Two and a half weeks on Cabo Douglas, Fernandina, in the Galápagos Islands: Assisted with continuous observation of marine iguanas for Brianna Payne's master's thesis on iguana habitat occupancy and conducted behavior scans for a pilot study on flightless cormorant behavior. Field work supervised by Dr. Jim Hayward.

Fall 2010 - Spring 2011
Analyzed hybridization data obtained during the previous summer; searched for and read the relevant literature, and planned collection of my thesis data.

Summer 2010
Five weeks on Protection Island: Monitored gull nests for a long-term reproductive success study, assisted in designing and carrying out a pilot experiment investigating reproductive synchrony among the gulls, assisted in a pilot study of hybridization between glaucous-winged and western gulls and conducted a woodland songbird survey. Field work supervised by Dr. Jim Hayward.

Fall 2009-Spring 2010
Constructed mathematical models of the environmental drivers of pigeon guillemot occupancy of waters adjacent to Protection Island, under the supervision of Dr. Shandelle Henson.

Summer 2009
Three and a half weeks on Protection Island: Monitored gull nests for a long-term reproductive success study, participated in a pilot study involving collection of gull fecal samples for hormone analysis, and conducted scan counts of pigeon guillemots. Field work supervised by Dr. Jim Hayward.

Spring 2009
Organic chemistry research project: Attempted to produce novel aromatic compounds by formylation and acylation of alpha-pinene. Jointly with Kendra Anderson, under the supervision of Dr. Desmond Murray.

Fall 2008 - Spring 2009
Senior honors thesis: Analysis of video footage for a study of the temporal dynamics of glaucous-winged gull mate-greeting ceremonies; under the supervision of Dr. Jim Hayward.

Summer 2008
Three weeks on Protection Island: Conducted behavior scans of gulls and monitored disturbances by bald eagles (*Haliaeetus leucocephalus*). Field work supervised by Dr. Jim Hayward.

May 2008
Ornithology class project: Recorded and analyzed songs of swamp sparrows (Melospiza melodia) at Point Pelee, Ontario, Canada, in an attempt to determine whether the syllable period of the songs changes at different ambient temperatures. Project was divided among the class members and conducted under the supervision of Dr. Gordon Atkins.

Fall 2007 - Spring 2008
Assisted with a project that used logistic regression to determine the environmental drivers of preening in gulls; with Dr. Shandelle Henson and Dr. Lynelle Weldon.

Teaching Experience

Spring 2016
I taught two lab sections of Ornithology, totaling 29 students. I was responsible for presentation of material, writing and grading quizzes, and overseeing the lab.

Spring 2015
I taught two lab sections of Ornithology, totaling 30 students. I was responsible for presentation of material, writing and grading of quizzes, and overseeing the lab.

Spring 2014
I taught two lab sections of Ornithology, totaling 31 students. I was responsible for presentation of material, writing quizzes, grading, and overseeing the lab.

Fall 2013
I taught two lab sections of General Biology, totaling 48 students. I presented the lab material, supervised the labs, assisted students outside of lab, graded, and maintained gradebooks.

Spring 2012
I graded homework and tests and maintained the grade sheets for Dr. Jim Hayward's Research Methods II (scientific writing, etc.) and Biology Seminar (bioethics) classes.

Fall 2011
I taught the lab for Dr. Jim Hayward's General Ecology class. I added three quantitative field labs to the pre-existing tour-style labs and the freshwater lab I developed last year. I graded the lab reports resulting from these quantitative labs. I reinstated group projects, so I guided students as they developed a research question and methodology. I was responsible for explaining the material to half of the class during the tour-style labs. I also graded for Dr. Jim Hayward's Research Methods I (biostatistics) class. Further responsibilities included substitute teaching for three class periods in General Ecology and three class periods in Research Methods I, and maintaining the grade sheets.

Spring 2011
Graded homework and tests and maintained the grade sheets for Dr. Jim Hayward's Research Methods II and Biology Seminar classes.

Fall 2010
Graded homework and tests and maintained the grade sheets for Dr. Jim Hayward's Research Methods I and General Ecology classes. I was also the lab assistant for General Ecology; the labs were mostly tour-style, so I was responsible for lecturing on the lab material to half of the class. I also developed and ran a quantitative freshwater ecology lab.

May 2010
Lectured for Dr. Gordon Atkins's three-week-long Vertebrate Zoology: Ornithology class. The class included a 10-day birding trip in Michigan and to Point Pelee; I helped plan the trip and gave the class lectures on the bus. During the on-campus portion of the class I guided the students through labs, wrote and graded tests, kept track of grades, etc.

Spring 2010
Graded homework for Dr. Shandelle Henson's Calculus I for Biology class. Assisted a small group of Foundations of Biology students during one lab section, graded their lab assignments/reports, and was their go-to person outside of lab time when they needed assistance with assignments.

Fall 2009
Graded homework for Dr. Shandelle Henson's Calculus II for Biology and Mathematical Modeling in Biology classes. Assisted a small group of Foundations of Biology students during one lab section, graded their lab assignments/reports, and was their go-to person outside of lab time when they needed assistance with assignments.

Spring 2009
Graded homework for Dr. Shandelle Henson's Calculus I for Biology class.

Fall 2008
Graded homework for Dr. Shandelle Henson's Calculus II for Biology class.

Summers 2005-2007, 2009
As an intern/naturalist at Sarett Nature Center I gained considerable experience in the informal teaching of natural history, especially to middle-school children during summer kids' programs and school field trips. I led dune ecology hikes and hikes on nature center property, gave programs at libraries and schools, taught canoeing and kayaking, developed informational displays for the center, etc.

Curatorial Experience

Fall 2016
I am the Curatorial Assistant for the UW Museum of Vertebrates. I am preparing bird skins.

Summer 2016
I conducted a collecting trip for my dissertation research and obtained approximately 70 bird specimens.

Fall 2015
I was the Curatorial Assistant for the UW Museum of Vertebrates. I inventoried and organized the fish collection.

Summer 2015
I conducted a solo collecting trip for my dissertation and obtained over 130 bird specimens.

Fall 2014
I was the Curatorial Assistant for the UW Museum of Vertebrates. I prepared specimens and conducted inventories of various collections.

Fall 2013 - present
I learned how to prepare bird specimens in Fall 2013 and how to collect birds in Summer 2014. I collected birds for my dissertation research in Summer 2015 and am working on preparing them all as study skins. I also volunteer my time preparing salvaged specimens and specimens from general collecting trips.