

KEVIN R. BURGIO

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RESEARCH INTERESTS

When confronted with climate change, species have three options – move, adapt, or go extinct. Currently, my research explores each of these potentialities as well as their implications for conservation prioritization, using an integrative approach focusing on how organisms may shift their ranges and/or alter their behavior and morphology to survive rapidly changing climates and how these phenomena will influence extinction risk of a broad variety of taxa.

EDUCATION

- 2017 **Ph.D.** Ecology and Evolutionary Biology, University of Connecticut
Advisor: Margaret A. Rubega
Committee: Robert K. Colwell, Chad Rittenhouse, Brian Walker, and Michael R. Willig
Dissertation topic: “Extinction, climate change, and the conservation of parrots: developing the models and tools needed to help save the world's most endangered order of birds”
Successfully defended dissertation: 12/15/16
- 2010 **B.A.** (*Summa cum laude*), University of Connecticut
Ecology and Evolutionary Biology (University Scholar)
Honors Thesis: "Utility pole nesting behavior of Monk Parakeets"
Thesis advisors: Margaret Rubega, Chris Elphick, and Elizabeth Jockusch

PUBLICATIONS: Citations: 37. H-index: 3. i10-index: 1

Cizauskas, C.A., C.J. Carlson, **K.R. Burgio**, C.F. Clements, N.C. Harris, E.R. Dougherty, and A.J. Phillips. 2017. Parasite vulnerability to climate change: an evidence-based functional trait approach. *ROYAL SOCIETY OPEN SCIENCE*. 4: 160535.
DOI: 10.1098/rsos.160535

Lopez, B.E., **K.R. Burgio**, M.B. Carlucci, K.A. Palmquist, A. Parada, V. Weinberger, and A.H. Hurlbert. 2016. A new framework for inferring community assembly processes using phylogenetic information, relevant traits and environmental gradients. *ONE ECOSYSTEM*. 1: e9501. DOI: 10.3897/oneeco.1.e9501

Burgio, K.R., C.R. van Rees, K.E. Block, P. Pyle, M.A. Patten, M. Spreyer, and E.H. Bucher. 2016. Monk Parakeet (*Myiopsitta monachus*) in *BIRDS OF NORTH AMERICA ONLINE* (P. Rodewald ed.). Ithaca: Cornell Lab of Ornithology. DOI: 10.2173/bna.322

Burgio, K.R., B.J. Hiller, K.E. Block, P. Pyle, M.A. Patten, and D. Brightsmith. *In press*. Yellow-chevroned Parakeet (*Brotogeris chiriri*). *BIRDS OF NORTH AMERICA ONLINE* (P. Rodewald ed.). Ithaca: Cornell Lab of Ornithology.

Burgio, K.R., B.J. Hiller, K.E. Block, P. Pyle, M.A. Patten, and D. Brightsmith. *In press*. White-winged Parakeet (*Brotogeris versicolorus*). *BIRDS OF NORTH AMERICA ONLINE* (P. Rodewald ed.). Ithaca: Cornell Lab of Ornithology.

Dougherty, E.R., C.J. Carlson, V.M. Bueno, **K.R. Burgio**, C.A. Cizauskas, C.F. Clements, D.P. Seidel, and N.C. Harris. 2015. Paradigms for parasite conservation. *CONSERVATION BIOLOGY*. 30: 724-733

Dreiss, L.M., **K.R. Burgio**, L.M. Cisneros, B.T. Klingbeil, B.D. Patterson, S.J. Presley, and M.R. Willig. 2015. Multiple dimensions of biodiversity for rodents along an extensive tropical elevational gradient: taxonomic, functional, and phylogenetic perspectives. *ECOGRAPHY*. 38: 876–888

Burgio, K.R., M.A. Rubega, and D. Sustaita. 2014. Nest-building behavior of Monk Parakeets and insights into potential mechanisms for reducing damage to utility poles. *PEERJ*. 2:e601 DOI:10.7717/peerj.601

Cisneros, L.M., **K.R. Burgio**, L.M. Dreiss, B.T. Klingbeil, B.D. Patterson, S.J. Presley, and M.R. Willig. 2014. Elevational variation of multiple dimensions of biodiversity in bats. *JOURNAL OF ANIMAL ECOLOGY*. 83: 1124–1136

Carlson, C.J., C.A. Cizauskas, **K.R. Burgio**, C.F. Clements, and N.C. Harris. 2013. The more parasites, the better? *SCIENCE*. 342:1041

Manuscripts in revision/review

Carlson, C.J., **K.R. Burgio**, E.R. Dougherty, A.J. Phillips, V.M. Bueno, C.F. Clements, G. Castaldo, T. Dallas, C.A. Cizauskas, G. Cumming, J. Doña, N.C. Harris, R. Jovani, S. Mironov, O. Muellerklein, H.C. Proctor, and W.M. Getz. Parasite biodiversity faces extinction and redistribution in a changing climate. *SCIENCE ADVANCES*.

Burgio, K.R., C.J. Carlson, and M.W. Tingley. Lazarus ecology: recovering the natural history of the extinct Carolina parakeet. *ECOLOGY & EVOLUTION*.

Burgio, K.R., L.M. Cisneros, K.E. Davis, L.M. Dreiss, B.T. Klingbeil, B.D. Patterson, S.J. Presley, and M.R. Willig. Dimensions of passerine biodiversity along a tropical elevational gradient: a nexus for historical biogeography and contemporary ecology. *ECOGRAPHY*.

Carlson, C.J., **K.R. Burgio**, T.A. Dallas, and W.M. Getz. The mathematics of extinction across scales: from populations to the biosphere. Prepared for: *THE MATHEMATICS OF PLANET EARTH*, 2nd ed.

Manuscripts in preparation (full drafts available)

Burgio, K.R., K.E. Davis, L.M. Dreiss, B.T. Klingbeil, L.M. Cisneros, S.J. Presley, and M.R. Willig. Strategic conservation: parrots, multiple dimensions of biodiversity, and climate change. To be submitted to *GLOBAL CHANGE BIOLOGY*.

Burgio, K.R., C.J. Carlson, M.A. Rubega, and M.W. Tingley. The mysterious extinction of the Carolina parakeet: was habitat loss responsible? To be submitted to *PEERJ*.

Carlson, C.J. and **K.R. Burgio**. Faking your way into ecological niche modeling: a guide to current publication standards for a highly-scrutinized literature. To be submitted to *ECOGRAPHY*.

Harris, N.C., C.J. Carlson, **K.R. Burgio**, E.R. Dougherty, and C.F. Clements. Forgotten no more: the next steps in assessing global parasite hotspots. To be submitted to *GLOBAL ECOLOGY AND BIOGEOGRAPHY*.

PATENTS

Burgio, K.R. and M.A. Rubega. 2013. Monk Parakeet Utility Pole Exclusion Device. Provisional Patent # 61/842,608. USA. Filed: 7/3/2013.

RESEARCH GRANTS, AWARDS, AND FELLOWSHIPS

Career Total: \$167,636

2011 - 2016 (\$121,000) **National Science Foundation Graduate Fellow**
2016 (\$4671) Experiment crowd-funded project (co-PI w/G. Smith-Vidaurre)
2016 (\$750) UConn Doctoral Student Travel Award
2016 (\$125) American Ornithologists Union Travel Award
2016 (\$2000) UConn Dissertation Fellowship
2016 (\$840) UConn EEB Summer Support Grant
2015 (\$500) UConn EEB Summer Support Grant
2014 (\$2,850) UConn EEB Summer Support Grant

- 2013 (\$500) UConn EEB Summer Support Grant
- 2013 (\$17,000) UConn Faculty Large Grant (co-author, awarded to M. Rubega)
- 2013 (\$375) George Clark Jr. Connecticut Natural History Museum Award
- 2010 (\$150) Connecticut Natural History Museum Award
- 2010 (\$1500) Edwin V. Gant Memorial Scholarship, UConn
- 2009 (\$7500) **Barry Goldwater National Scholarship**
- 2009 (\$3500) Treibick Foundation Summer Research Fellowship
- 2009 (\$500) UConn Life Sciences Honors Thesis Research Grant
- 2009 (\$500) UConn Office of Undergraduate Research Grant
- 2009 (\$375) Katie Bu Memorial Grant
- 2009 (\$1800) UConn University Scholar Award
- 2007 (\$1000) UConn Greater Hartford Campus Scholarship
- 2007 (\$200) UConn Hartford Campus Alumni Scholarship

OTHER AWARDS

- 2010 **University Scholar – University of Connecticut**
- 2010 Honors Scholar - University of Connecticut
- 2009 New England Scholar - University of Connecticut
- 2007 - 2008 Babbidge Scholar - University of Connecticut
- 2002 **Air Force Commendation Medal - United States Air Force**
- 2001 Distinguished Graduate - United States Air Force Leadership School
- 1999 Air Force Achievement Medal - United States Air Force
- 1997 Top Graduate - United States Air Force Technical Training School

PROFESSIONAL EXPERIENCE

- 2013 - **Researcher** - Parasite Ecology Research Project
 - Founding member and facilitator of a multi-institution research collaboration investigating the impact of climate change on parasite biodiversity
 - Other institutions represented: University of California Berkeley, the Smithsonian Museum, University of Michigan, and University of Zurich
- 2016 **Research Assistant** – Science Communications Study
 - Facilitated NSF-funded research project designed to test efficacy of classroom training in developing skills required to communicate science to the general public
 - Helped develop methods and study design

- 2012 - 2016 **Visiting Faculty** - Fairfield University, CT
- Responsible for training undergraduate students in basic research skills and field methods in ornithology
 - collecting and analyzing data to test the efficacy of infrared thermography in evaluating stress load and metabolic heat loss in House Sparrows
 - collecting stress hormone, metabolic, and thermographic infrared data to explore the thermoregulatory benefits of a variety of behavioral, morphological, and physiological adaptations of Monk Parakeets
- 2011 - 2016 **Project Facilitator** - National Science Foundation: Dimensions of Biodiversity Distributed Graduate Seminar
- manager of a multi-university collaboration investigating how changes in phylogenetic and functional diversity over an environmental gradient can be used to better understand community assembly processes
- 2010 **Field Research Supervisor** - National Audubon Society: Shrub Bird Project
- supervised field technicians in the collection of shrubland-nesting bird demographic, distribution, and behavioral data
- 2009 - 2012 **Volunteer Field Assistant** - University of Connecticut: Saltmarsh Sparrow Project
- collected demographic and morphological data through mist-netting and censuses
- 2009 - 2010 **Research Intern** - National Audubon Society: New Haven County Breeding Bird Atlas/Survey
- created a breeding-bird map for New Haven County using GIS and citizen science-collected data
 - reviewed and critiqued conservation management and reserve design plans
- 2009 **Summer Research Fellow** - Treibeck Foundation: Monk Parakeet utility pole nesting behavior research
- collected and analyzed Monk Parakeet behavioral and distribution data
- 2008 **Field Assistant** - National Science Foundation (Research Experience for Undergraduates): Invasive birds in seed dispersal mutualisms
- collected invasive plant demographic and growth rate data

- 2008 **Field Assistant** - Town of Mansfield, CT and Natural Resources Conservation Service: Effect of invasive plant removal on forest bird populations
- designed and conducted avian censuses

ORAL PRESENTATIONS

- K.R. Burgio**, K.E. Davis, L.M. Dreiss, L.M. Cisneros, B.T. Klingbeil, S.J. Presley, and M.R. Willig. 2016. Integrating multiple dimensions of biodiversity and considerations of climate change for parrot conservation. **North American Ornithological Conference**, Washington, D.C.
- Willig, M.R., **K.R. Burgio**, L.M. Cisneros, L.M. Dreiss, B.T. Klingbeil, B.D. Patterson, and S.J. Presley. 2014. Gradients of Phylogenetic Relatedness and Size Similarity: Bats and Rodents in a Hotspot of Tropical Biodiversity (Manu, Peru). **American Society of Mammologists** Annual Meeting, Oklahoma City, OK.
- Carlson, C.J., **K.R. Burgio**, and K.E. Block. 2013. Reconstructing the extinction of the Carolina Parakeet: Historical data reveal that two distinct human activities drove two separate subspecies' declines. **Ecological Society of America** Annual Meeting, Minneapolis, MN.
- Willig, M.R., **K.R. Burgio**, L.M. Cisneros, L.M. Dreiss, B.T. Klingbeil, B.D. Patterson, and S.J. Presley. 2013. Comparative Biodiversity of Bats and Rodents along an Extensive Tropical Elevational Gradient: Taxonomic, Functional, and Phylogenetic Dimensions. **American Society of Mammologists** Annual Meeting, Philadelphia, PA.
- Lopez, B.E., **K.R. Burgio**, M.B. Carlucci, K.A. Palmquist, A. Parada, V. Weinberger, and A.H. Hurlbert. 2012. Inferring Community Assembly Processes under Niche Lability: Considering the Stress Dominance Hypothesis. **Ecological Society of America** Annual Meeting, Portland, OR.
- Klingbeil, B.T., **K.R. Burgio**, L.M. Cisneros, K.E. Davis, L.M. Dreiss, B.D. Patterson, S.J. Presley, and M.R. Willig. 2012. Elevational variation of multiple dimensions of biodiversity: inter-taxon comparisons. **Ecological Society of America** Annual Meeting, Portland, OR.

POSTER PRESENTATIONS

Kosman, E., **K.R. Burgio**, S.J. Presley, M.R. Willig, and S.M. Scheiner. 2017. Using functional diversity to set conservation priorities: a methodology and a case study of global parrot diversity. **International Biogeography Society** Annual Conference, Tuscon, AZ.

Cardillo, C., B. Walker, **K.R. Burgio**, and M.A. Rubega. 2016. Is A Hothead Stressed? A pilot assessment of thermal imaging as a tool for indexing glucocorticoids. **Society of Integrative and Comparative Biology** Annual Conference, Portland, OR.

TEACHING EXPERIENCE

Instructor of Record

2017 Ornithology Laboratory – University of Connecticut
2016 Field Methods in Ornithology – University of Connecticut
2015 Field Methods in Ornithology – University of Connecticut

Teaching Assistant

2016 Biology of the Vertebrates – University of Connecticut
2015 Principles of Biology II – University of Connecticut
2015 Ornithology Laboratory – University of Connecticut
2015 Ornithology – University of Connecticut
2014 Biology of the Vertebrates – University of Connecticut
2011 Principles of Biology II – University of Connecticut
2010 Principles of Biology II – University of Connecticut

Other Teaching Experience

2012 - 2016 Undergraduate Independent Research Supervisor – Fairfield University
2015 Guest Lectures (2), Ornithology Laboratory – University of Connecticut
2015 Guest Lectures (2), Ornithology – University of Connecticut
2010 Guest Lecture, Topics in Modern Biology – University of Connecticut

MENTORING

Undergraduates

2012 - 2015 Kali Block '15 - University of Connecticut. Independent research project: Testing Bergmann's, Groger's and Allen's Rule among Monk Parakeet populations
- Recipient 2013 Sigma Xi GIAR (\$1000)

- 2014 - 2016 Kerri McPhail '16 - Fairfield University. Research assistant: Testing the efficacy of infrared thermography in evaluating stress and metabolic heat loss in House Sparrows
- 2014 - 2016 Christian Cardillo '16 - Fairfield University. Research assistant: Testing the efficacy of infrared thermography in evaluating stress and metabolic heat loss in House Sparrows
- 2014 - 2016 Sabrae Boisvert '16 - Fairfield University. Research assistant: Testing the efficacy of infrared thermography in evaluating stress and metabolic heat loss in House Sparrows
- 2014 - 2016 Nicolette Tiernan '16 - Fairfield University. Research assistant: Testing the efficacy of infrared thermography in evaluating stress and metabolic heat loss in House Sparrows
- 2012 - 2013 Thomas Corona '13 - Fairfield University. Independent research project: Monk Parakeet utility pole nesting preferences
- Presented poster, "Determination of Monk Parakeet Nesting Site Preferences on Utility Poles in Southern Connecticut," at Fairfield University Sigma Xi Annual Poster Session April, 2013.

High School Students

- 2013 - 2015 Nikki Pirtel '15, Manchester High School. Independent research project: Using fungi and bacteria in the bioremediation of plastics

MEDIA COVERAGE

- 2015 Paradigms of parasite conservation research published in Conservation Biology featured in [The Atlantic](#).
- 2014 Monk Parakeet utility pole nesting research published in PeerJ featured on: [NPR](#), [FoxCT](#), [New Haven Register](#), [New Hampshire Public Radio](#), [UConn Today](#), [PeerJ Blog](#), and [Hartford Business Journal](#)

PUBLIC OUTREACH

- 2016 Consultant for National Geographic TV series "United States of Animals" Season 1, Episode 11: "The West Sting"
- 2016 Invited speaker: "Nesting behavior of Monk Parakeets on Utility Poles" American Federation of Aviculture Annual Conference
- 2015 Invited speaker: "The extinction of the Carolina Parakeet" New Haven Bird Club
- 2013 Invited speaker: "The Carolina Parakeet: biology, extinction, and current research" The Parrot Club

- 2013 Invited speaker: "Monk Parakeets" Western Connecticut Bird Club
2012 Invited speaker: "The Distribution of Monk Parakeets in Connecticut" CT Department of Energy and Environmental Protection Avian Summit
2012 Invited speaker: "Ecology: research, graduate school, and careers" Manchester High School, CT
2012 Invited speaker: "Adaptations of Birds" Franklin Elementary School, Franklin, CT
2010 Invited speaker: "Monk Parakeets in Connecticut: What Are They Doing Here?" New Haven Bird Club

OTHER PROFESSIONAL EXPERIENCE

- 1996 – 2002 Staff Sergeant - United States Air Force
- Manager of Aerospace Dentistry - duties include: dental assistant, radiology technician, and dental hygienist
 - combat medic specializing in chemical, nuclear, and biological decontamination

VOLUNTEER EXPERIENCE

- 2011 - 2015 Commissioner - Town of Hamden Natural Resource and Open Space Commission
2008 Writing Tutor - University of Connecticut
2000 - 2002 Head Instructor - Dental Assistant Training Program - American Red Cross

RELATED TRAINING AND SKILLS

Computer programs: R, ArcGIS, MaxEnt, EstimateS, GEOLocate, Biota, and ResearchIR

Field training/experience: mist-netting and banding, survey techniques (point counts, territory mapping, and line transects), nest searching, behavioral observations, morphological measurements, blood sampling, and vegetation sampling

Analyses: species distribution modeling, extinction modeling, species biodiversity metrics, and quantifying functional and phylogenetic biodiversity

Technology: Infrared thermography (IRT) and automated recording units (ARUs)

REVIEWER

Global Ecology and Biogeography

REFERENCES

Dr. Margaret A. Rubega

Associate Professor

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Dr. Robert K. Colwell

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