

KEVIN R. BURGIO

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RESEARCH INTERESTS

I am broadly interested in the processes that form, and limit, where species are distributed, and what their roles are in communities and ecosystems. I use an integrative approach, (e.g. environmental niche modeling and analyses of functional and phylogenetic diversity), to examine how organisms may shift their ranges and/or alter their behavior and morphology at range edges and during habitat change; I am particularly interested in the ability of species to survive rapidly changing climates and how climate change will influence extinction risk of a broad variety of taxa. My goal is to help bridge the divide between ecological theory and on-the-ground conservation in order to make the best possible decisions not just for today, but also for the future.

ACADEMIC BACKGROUND

- 2017 - **Postdoctoral Fellow**, Dept. of Ecology and Evolutionary Biology, and the Center for Environmental Sciences and Engineering, University of Connecticut
- 2017 **Ph.D.** Ecology and Evolutionary Biology, University of Connecticut
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"
- 2010 **B.A.** (*Summa cum laude*, University Scholar), University of Connecticut
Ecology and Evolutionary Biology

PUBLICATIONS: Citations: 133. H-index: 6. i10-index: 5

Burgio, K.R., C.J. Carlson, A.L. Bond. Georeferenced sighting and specimen occurrence data of the extinct Carolina Parakeet 1564 - 1944. *BIODIVERSITY DATA JOURNAL*.

Carlson, C.J., A.L. Bond, and **K.R. Burgio**. 2017. Estimating the extinction date of the Thylacine accounting for unconfirmed sightings. *CONSERVATION BIOLOGY*. DOI: 10.1111/cobi.13037

- news coverage: [Vice](#)
- [Altmetric Score](#)

Carlson, C.J., **K.R. Burgio**, T.A. Dallas, and W.M. Getz. *In press*. The mathematics of extinction across scales: from populations to the biosphere. *THE MATHEMATICS OF PLANET EARTH*, 2nd ed. [Preprint available](#)

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. 2017. Parasite biodiversity faces extinction and redistribution in a changing climate. *SCIENCE ADVANCES*. 3(9): e1602422 DOI: 10.1126/sciadv.1602422

- news coverage: [NY Times](#), [Popular Science](#), [Smithsonian Magazine](#), and [the Guardian](#)
- [Altmetric Score](#)

Burgio, K.R., C.J. Carlson, and M.W. Tingley. 2017. Lazarus ecology: recovering the natural history of the extinct Carolina parakeet. *ECOLOGY & EVOLUTION*. 7:5467–5475. DOI: 10.1002/ece3.3135

- news coverage: [Washington Post](#), [IFLScience](#), [Salon](#), [Smithsonian Magazine](#), [Birding Magazine](#), [Forbes](#), [Audubon Magazine](#), [Stuff You Missed in History Class](#)
- [Altmetric Score](#)

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

Brightsmith, D., **K.R. Burgio**, B.J. Hiller, K.E. Block*, P. Pyle, and M.A. Patten. 2017. Yellow-chevroned Parakeet (*Brotogeris chiriri*). *BIRDS OF NORTH AMERICA ONLINE* (P. Rodewald ed.). Ithaca: Cornell Lab of Ornithology. <https://birdsna.org/Species-Account/bna/species/yecpar>

Brightsmith, D., **K.R. Burgio**, B.J. Hiller, K.E. Block*, P. Pyle, and M.A. Patten. 2017. White-winged Parakeet (*Brotogeris versicolorus*). *BIRDS OF NORTH AMERICA ONLINE* (P. Rodewald ed.). Ithaca: Cornell Lab of Ornithology. <https://birdsna.org/Species-Account/bna/species/whwpar>

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

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

- news coverage: [The Atlantic](#) and [Carbon Brief](#)
- [Altmetric Score](#)

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

- News coverage: [NPR](#), [New Hampshire Public Radio](#), and [Hartford Business Journal](#)

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 review / preprinted

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. *BIODIVERSITY AND CONSERVATION*.

Burgio, K.R., K.E. Davis, L.M. Dreiss, B.T. Klingbeil, L.M. Cisneros, S.J. Presley, and M.R. Willig. A complete phylogenetic supertree and trait database for all extant parrots. *BIODIVERSITY DATA JOURNAL*.

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*.

Bond, A.L., C.J. Carlson, and **K.R. Burgio**. Local extinction of insular avifauna on the most remote inhabited island in the world. *JOURNAL OF ORNITHOLOGY*.

Carlson, C.J., **K.R. Burgio**, T.A. Dallas, and A.L. Bond. spatExtinct: an R package for spatially-interpolated extinction date estimation from sighting data. *METHODS IN ECOLOGY AND EVOLUTION*. [Preprint available](#)

Kosman, E., **K.R. Burgio**, S.J. Presley, M.R. Willig, and S.M. Scheiner. Conservation prioritization based on trait-based metrics illustrated with global parrot distributions. *DIVERSITY AND DISTRIBUTIONS*.

Carlson, C.J., A.L. Bond, and **K.R. Burgio**. Addressing issues with sighting models for the extinction of the thylacine. *CONSERVATION BIOLOGY*.

Carlson, C.J., O.C. Mullerklein, A.J. Phillips, **K.R. Burgio**, G. Castaldo, C.A. Cizauskas, G. Cumming, T.A. Dallas, J. Dona, Z. Miao, H. Proctor, H.S. Yoon, and W.M. Getz. The Parasite Extinction Assessment Red List (PEARL): an extensible, open-source, online biodiversity database for neglected invertebrates. [Preprint available](#)

Manuscripts in preparation (full drafts available)

Burgio, K.R., C.J. Carlson, A.L. Bond, M.A. Rubega, and M.W. Tingley. The mysterious extinction of the Carolina parakeet: was habitat loss responsible? To be submitted to *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA*.

Burgio, K.R., A.M.G. Fournier, K.E. Block*, and M.A. Rubega. Do Invaders Conform to Biogeographic “Rules”? Testing Allen’s, Bergmann’s, and Gloger’s Rules in Monk Parakeets.

Bahlai, C.A., L.J. Bartlett, **K.R. Burgio**, C.J. Carlson, A.M.V. Fournier, C.N. Keiser, K. LaBarbera, T. Poisot, K.E.O. Todd-Brown, and K. Stack Whitney. Valid reasons not to participate in open science practices.

NON-ACADEMIC PUBLICATIONS

Burgio, K.R. 2018. The mysterious and tragic story of America’s only native parrot, now extinct for 100 years. *WASHINGTON POST* ([link](#)), *IFLSCIENCE* ([link](#)), *SALON* ([link](#)), *REAL CLEAR SCIENCE* ([link](#)), and *THE CONVERSATION* ([link](#))

- ~ 75,000 reads (as of 6/13/2018)

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: \$168,736

2018 (\$1100) American Ornithology Society Travel Award
2011 - 2016 (\$121,000) **National Science Foundation Graduate Fellow**
2016 (\$4671) Experiment crowdfunded 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 - 2017 **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
 - Managed logistics, payments, and kept records
- 2012 - 2016 **Visiting Faculty** - Fairfield University, CT
- Responsible for training undergraduate students in basic research skills and field methods in ornithology
 - collected and analyzed data to test the efficacy of infrared thermography in evaluating stress load and metabolic heat loss in House Sparrows
 - collected 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** - NSF: Dimensions of Biodiversity
- 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 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

NATIONAL & INTERNATIONAL PRESENTATIONS

- Carlson, C.J., A.J. Phillips, T.A. Dallas, **K.R. Burgio**, and O.C. Muellerklein. 2017. Taking big data for a spin: the georeferenced U.S. National Parasite Collection and what it can do. **Ecological Society of America** Annual Meeting, Portland, OR.
- Kosman, E., **K.R. Burgio**, S.J. Presley, M.R. Willig, and S.M. Scheiner. 2017. Poster: Using functional diversity to set conservation priorities: a methodology and a case study of global parrot diversity. **International Biogeography Society** Annual Conference, Tuscon, AZ.
- 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.
- Cardillo, C., B. Walker, **K.R. Burgio**, and M.A. Rubega. 2016. Poster: 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.

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 Liability: 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.

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

- 2017 - Jordana Gravely '21 – University of Connecticut. Research Assistant: Feather coat insulation of Monk Parakeets.
- 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

PUBLIC OUTREACH

- 2018 Invited speaker: “Extinction in Two Acts: The Life and Death of the Carolina Parakeet” Linda Loring Foundation
- 2018 Invited speaker: “Extinction in Two Acts: The Life and Death of the Carolina Parakeet” Bridgewater State University
- 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, RSTAN, 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, vegetation sampling, Infrared Thermography (IRT) and automated recording units (ARUs)

Analyses: species distribution modeling, extinction modeling, species biodiversity metrics, linear mixed models, Bayesian modeling, and quantifying functional and phylogenetic biodiversity

REVIEWER

Proceedings of the Royal Society B, Global Ecology and Biogeography, Basic and Applied Ecology, Animal Conservation, The Auk

REFERENCES

Dr. Margaret A. Rubega, Associate Professor
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Dr. Michael R. Willig, Professor
Dept. of Ecology and Evolutionary Biology - University of Connecticut
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