# JONATHAN P. DRURY

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#### **Positions**

Assistant Professor, Department of Biosciences, Durham University, December 2017-present

**Post-Doctoral Researcher**, Dept. of Ecology & Evolutionary Biology, UCLA, September 2016-December 2017 (Pl: Dr. Gregory F. Grether)

**Post-Doctoral Researcher**, Institut de Biologie de l'Ecole Normale Supérieure, Paris, France, November 2014-September 2016 (PI: Dr. Hélène Morlon)

#### **EDUCATION**

Ph.D. Biology, Dept. of Ecology & Evolutionary Biology, UCLA, September 2014

- **Dissertation:** "The interplay between agonistic character displacement and reproductive interference in rubyspot damselflies (*Hetaerina* spp.)"
- Major advisor: Dr. Gregory F. Grether

B.Sc. Ecology, Institute of Ecology, University of Georgia, December 2006

- Major in Ecology, minors in Spanish and Women's Studies
- Graduated First Honors (4.0 GPA), Summa Cum Laude

#### Honors

- UCLA Department of Ecology & Evolutionary Biology Scherbaum Award, 2013

  Bestowed annually on one graduate student in recognition of distinguished research
- National Science Foundation Graduate Research Fellow, 2008-2011

## Publications (‡DENOTES UNDERGRADUATE RESEARCHER)

- 2022 Standring, S., Sanchez, M., Guillermo-Ferreira, R., Ware, J., Vega-Sánchez, Y., Clement, R., Drury, J., Grether, G., & Bybee, S. Evolution and biogeographic history of rubyspot damselflies (Hetaerininae: Calopterygidae: Odonata). *Diversity*. doi: 10.3390/d14090757
- **Drury, J.**, Clavel, J. Tobias, J., Rolland, J., Sheard, C., & Morlon H. Tempo and mode of morphological evolution are decoupled from latitude in birds. *PLOS Biology*. doi:10.1371/journal.pbio.3001270
  - Baker, E., **Drury, J.**, Judge, J., Roy, D., Smith, G., & Stephens, P. The verification of ecological citizen science data. *Citizen Science: Theory and Practice*. doi: 10.5334/cstp.351

- McEachin, S., **Drury, J.**, Anderson, C., & Grether, G. Mechanisms of reduced interspecific aggression between territorial species. *Behavioral Ecology*.
- **Drury, J.**, Cowen, M., & Grether, G. Competition and hybridization drive interspecific territoriality in birds. *PNAS*. doi: 10.1073/pnas.1921380117
  - Cowen, M., **Drury, J.**, & Grether, G. Multiple routes to interspecific territoriality in sister species of North American perching birds. *Evolution*. doi: 10.1111/evo.14068
  - \*Grether, G., Drury, J., Okamoto, K., McEachin, S, & Anderson, C. Predicting evolutionary responses to interspecific interference in the wild. *Ecology Letters*. doi: 10.1111/ele.13395 \*featured on the cover of the issue in which it appeared
- **Drury, J.**, Anderson, C., Cabezas, M., ‡Fisher, J., McEachin, S., & Grether, G. A general explanation for the persistence of reproductive interference. *The American Naturalist*. doi: 10.1086/704102
  - \*Drury, J., ‡Barnes, M., ‡Finneran, A., ‡Harris, M., & Grether, G. Continent-scale phenotype mapping using citizen scientists' photographs. *Ecography*. doi: 10.1111/ecog.04469 \*featured on the cover of the issue in which it appeared
  - Harmon, L., Andreazzi, C., Débarre, F., **Drury, J.**, Goldberg, E., Martins, A., Melian, C., Narwani, A., Nuismer, S., Pennell, M., Rudman, S., Seehausen, O., Silvestro, D., Weber, M., & Matthews, B. Detecting the macroevolutionary signal of species interactions. *Journal of Evolutionary Biology*. doi: 10.1111/jeb.13477
- **Drury, J.**, Burns, K., Mason, N., Tobias, J., Shultz, A., & Morlon, H. Contrasting impacts of competition on ecological and social trait evolution in songbirds. *PLOS Biology*. doi: 10.1371/journal.pbio.2003563.
  - **Drury, J.**, Grether, G., Garland Jr., T. & Morlon, H. An assessment of phylogenetic tools for analyzing the interplay between interspecific interactions and phenotypic evolution. Systematic *Biology*. 67: 413-427. doi: 10.1093/sysbio/syx079.
  - Tinghitella, R., Lackey, A., Martin, M., Dijkstra, P., Scordato, L., Heathcote, R., **Drury, J.**, Keagy, J., & Tyers, A. On the role of male competition in speciation: A review and research agenda. *Behavioral Ecology*. 29: 783-797. doi: 10.1093/beheco/arx151.
- Putman, B., Drury, J., Blumstein, D. & Pauly, G. Fear no colors? The influence of clothing colour on lizard escape behaviour. *PLOS One.* doi: 10.1371/journal.pone.0182146

  -Press coverage: NPR, Scientific American, Seeker
- **Drury, J.**, Clavel, J., Manceau, M. & Morlon, H. Estimating the effect of competition on trait evolution using maximum likelihood inference. Systematic Biology. 65: 700-710. doi: 10.1093/sysbio/syw020
  - **Drury, J.** & ‡Burroughs, N. Nest shape explains variation in sexual dichromatism in New World blackbirds. *Journal of Avian Biology*. 47: 312-320. doi: 10.1111/jav.00757

- Losin, N., **Drury, J.,** Peiman, K., ‡Storch, C. & Grether, G. The ecological causes and evolutionary stability of interspecific territoriality. *Ecology Letters*. 19: 260-267. doi: 10.1111/ele.12561
- Morlon, H., Lewitus, E., Condamine, F., Manceau, M., Clavel, J., & **Drury, J.** RPANDA: R package for macroevolutionary analyses on phylogenetic trees. *Methods in Ecology & Evolution*. 7: 589-597. doi: 10.1111/2041-210X.12526
- **Drury, J.**, Okamoto, K., Anderson, C., & Grether, G. Reproductive interference explains persistence of aggression between species. *Proceedings of the Royal Society: B.* 20142256. doi: 10.1098/rspb.2014.2256

  -Press coverage: UCLA Newsroom
  - \*Drury, J., Anderson, C., & Grether, G. Seasonal polyphenism in wing coloration affects species recognition in rubyspot damselflies (Hetaerina spp.) *Journal of Evolutionary Biology*. 28: 1439-1452. doi: 10.1111/jeb.12665
  - \*featured on the cover of the issue in which it appeared
  - <sup>‡</sup>Hensley, N., **Drury, J.,** Garland Jr., T. & Blumstein, D. Vivid birds do not initiate flight sooner despite their potential conspicuousness. *Current Zoology*. 61(4): 773-780. doi: 10.1093/czoolo/61.4.773
  - Grether, G., Drury, J., ‡Berlin, E., & Anderson, C. The role of wing coloration in sex recognition and competitor recognition in rubyspot damselflies (*Hetaerina* spp.). *Ethology*. 121(7): 674-685. doi: 10.1111/eth.12382
- \*Drury, J. & Grether, G. Interspecific aggression, not interspecific mating, drives character displacement in the wing coloration of male rubyspot damselflies (*Hetaerina*). Proceedings of the Royal Society: B. 20141737. doi: 10.1098/rspb.2014.1737
  -covered by Anole Annals
  - \*featured on the cover of the issue in which it appeared
- 2013 Grether, G., Anderson, C., Drury, J., Kirschel, A., Losin, N., Okamoto, K., & Peiman, K. The evolutionary consequences of interspecific aggression. *Annals of the NY Academy of Sciences*. doi: 10.1111/nyas.12082
  - <sup>‡</sup>Journey, L., **Drury, J.,** <sup>‡</sup>Haymer, M., <sup>‡</sup>Rose, K. & Blumstein, D. Vivid birds respond more to acoustic signals of predators. *Behavioral Ecology & Sociobiology*. <u>doi: 10.1007/s00265-013-1556-z</u>
- 2011 Anderson, C., Córdoba-Aguilar, A., **Drury, J.,** & Grether, G. An assessment of marking techniques for odonates in the family Calopterygidae. *Entomologia Experimentalis* et *Applicata* 141:258-261. doi: 10.1111/j.1570-7458.2011.01185.x
- **Drury, J.** Immunity & mate choice: a new outlook. *Animal Behaviour* 79:539-545. <u>doi:</u> 10.1016/j.anbehav.2009.12.023
  - **Drury, J.** & Gowaty, P. 2010. Social Selection, Sexual Selection, and Sexual Conflict. In: *Encyclopedia of Animal Behavior* (Eds. M. Breed and J. Moore) Academic Press, San Diego.

### **Invited Symposium Presentations**

- "Phylogenetic analyses reveal drivers of adaptive interspecific territoriality"
   American Ornithological Society Meeting, San Juan, PR (delivered online due to SARS-CoV-2 pandemic), Symposium "Contemporary Insights into Evolutionary Processes Using Large-scale Comparative Analyses of Avian Behavior", August 2020
- "The impact of species interactions on latitudinal gradients in trait evolution in birds" American Ornithological Society Meeting, Anchorage, AK, Symposium "The Future of Global Bird Trait Datasets: A Game-changing Resource for Macroecology, Macroevolution and Conservation Biology?", June 2019
- "Testing for latitudinal gradients in interspecific competition with novel phylogenetic models" Evolution, Providence, RI, Symposium "Beyond tempo and mode - toward process-based models of macroevolutionary trait evolution", June 2019
- "Allopatric divergence not reinforcement shapes signal trait evolution in Tanagers" Gordon Research Seminar on Speciation, Tuscany, Italy, Symposium "Progress, Synthesis and Integration at the Frontiers of Speciation Research", Feb. 2017
- "The maintenance of aggression across species boundaries"

  International Society for Behavioural Ecology, Exeter, UK, Symposium "Male competition & speciation", Aug. 2016
- "Assessing the impact of species interactions on trait evolution"

  Evolution, Austin, TX, Spotlight Session "The evolution of species interactions", June 2016
- "Estimating the long-term effect of species interactions on trait evolution"
   Frontiers in Ecology and Evolution Symposium, IBENS, Paris, FR, June 2015

#### **Oral Conference Presentations**

- "Toward a unified framework for identifying the impact of species interactions on trait and range evolution"
  - BES Macroecology, St. Andrews, UK, July 2018
- "Phylogenetic approaches to studying behavioral interference shed light on interspecific territoriality in North American passerines" Evolution, Portland, OR, June 2017
- "New inference tools for incorporating the effect of interspecific competition on trait evolution"
  - Systematics Association Biennial, Oxford UK, Aug. 2015
- "Character displacement in the wing color patterns of rubyspot damselflies: An experimental test of multiple character displacement hypotheses"

  Evolution, Raleigh, NC, June 2014
- "Agonistic character displacement, not reproductive character displacement, explains variation in male wing patterns in rubyspot damselflies (*Hetaerina* spp.)"
   Society for Integrative and Comparative Biology, Austin, TX, Jan. 2014
- "Reproductive interference and adaptive, between-species territoriality in rubyspot damselflies (Hetaerina spp.)"
   Evolution, Snowbird, UT, June 2013
- "Reproductive interference and interspecific territoriality in rubyspot damselflies" Society for Integrative and Comparative Biology, San Francisco, CA, Jan. 2013
- "Revisiting latitudinal patterns of plumage showiness"

  International Ornithological Congress, Campos do Jordão, Brazil, Aug. 2010

### Departmental Seminars

- Department of Zoology, University of Cambridge, Sep. 2022
- Developmental Biology Focus Group Seminar, Durham University, Nov. 2021
- Ecology, Evolution and Environment Group Seminar, Durham University, Nov. 2021
- Ecology, Evolution and Behavior Seminar, Michigan State University, Oct. 2021 [via Zoom due to SARS-CoV-2 pandemic]
- School of Biological Sciences, University of Aberdeen, Nov. 2020 [via Zoom due to SARS-CoV-2 pandemic]
- Centre for Ecology and Conservation, University of Exeter, Nov. 2020 [via Zoom due to SARS-CoV-2 pandemic]
- Centre for Behaviour and Evolution, Newcastle University, May 2020 [via Zoom due to SARS-CoV-2 pandemic]
- Centre of Population Biology, Silwood Park Campus, Imperial College London, Jan. 2020
- Department of Anthropology, Durham University, Oct. 2018
- Ecology, Evolution and Environment Group Seminar, Durham University, Feb. 2018
- Institut de Biologie, ENS, Paris, Dec. 2015
- Herpetology Department, Museum für Naturkunde, Berlin, Germany, Feb. 2015
- EcoEvoPub Presentation, UCLA, May 2014

### **TEACHING**

#### Instructor

- BIOL 2451, Evolution, Durham University (2018-present)
- BIOL 2511, Behaviour, Durham University (2019-present)
- BIOL 3161, Field Course, Durham University (2019-present)
  - -2019: Mpala Research Station, Kenya
  - -2020-2021: Virtual Field Course, Zoom
  - -2022: Mankwe Game Reserve, South Africa
- EEB 120, Evolution, UCLA, Summer 2014
- EEB 98T, Flexible Phenotypes & Adaptive Evolution, UCLA, Winter 2014

### Teaching Associate

- EEB 132, Field Behavioral Ecology, UCLA & Refugio Bartola, Nicaragua, Winter 2013
- SOCGEN 101. Genetic Concepts for Human Sciences. UCLA. Winter 2012
- EEB 132, Field Behavioral Ecology, UCLA & St. John, U.S. Virgin Islands, Fall 2009
- EEB 17, Evolution for Everyone, UCLA, Winter 2009

### Other Teaching

• Understanding Macroevolutionary Dynamics using RPANDA and JPANDA, Transmitting Science Course, February 2022

#### Mentoring (\*denotes previously or currently pursuing postgraduate education)

• Field assistants: Timothy Alvey, Morgan Barnes, Marco Benitez, Erin Berlin\*, Andrew Chao\*, Jewel Fisher, John Garrett, Simone Giovanetti, Patrick Green\*, Maddie Harris, Kate Henderson\*, Sara Hu\*, Linnea Karlen, Emily Khazan\*, Christina Linkem\*, Emma Long\*, Ruthie Musker\*, Hetty Patterson\*, Summer Sanford\*, Amanda Savage, Thomas Yardley

- UCLA undergraduate research: Carmen Antaky\*, Morgan Barnes, Erin Berlin\*, Eric Boyd, Nathan Burroughs\*, Brian Dang\*, Thomas Dial, Samantha Ellis\*, Kiro Farag, Jewel Fisher, Nicholas Gentry, Cynthia Gonzalez\*, Mike Haymer\*, Niko Hensley\*, Lexi Journey\*, Khin KyiSin, Latonia Luu\*, Jonathan Mai\*, Atishay Mathur, Otensia McKenzie, Kate Rose, Lansing Perng, Cathy Stolitzka, Nick Synstelien, Kelly Tang, Younglin You, Ashley Yu
- Durham undergraduate research: Maddie Harris, Yewshen Lin, William Cooke, Ruby Palin
- Durham integrated Masters (MBiol) supervision: Samuel Draisey (2018-2019), Erin Wright (2019-2020), Daniel Nesbit (2020-2021), Jay Small (2020-2021)
- Durham research Masters (MRes) supervision: Holly Applebee [co-supervisor] (2019-2020)
- PhD students: Dan Nesbit (2021-2025), Christophe Patterson (2020-2024), Emily Baker [co-supervisor] (2019-2022)
- Postdoctoral Research Associates: Erandi Bonillas-Monge (2022-2024)

### AWARDS

### Fellowships

- Collegium of University Teaching Fellowship, Winter 2014
- UCLA Graduate Division Dissertation Year Fellowship, 2013-2014
- UCLA Graduate Division and EEB Department Graduate Research Fellowship, 2011-2013
- National Science Foundation Graduate Research Fellowship, 2008-2011
- HOPE Fellowship, 2002-2006

#### Research Awards

- NSF/NERC (DEB2040883) (co-I with Gregory Grether [UCLA]), "Interspecific interference, character displacement and range expansion", July 2021-June 2025: \$1,235,577 (£299,992 awarded to JPD)
- NERC Environmental Omics Facility (NEOF1274), "Detecting genomic signatures of the impact of competition on historical range expansion", October 2020-present: £17,576.24
- Alliance Hubert Curien Programme, The British Council (w/ collaborators Julien Clavel [Univ. Lyon-1] and Hélène Morlon [ENS Paris]), "Developing eco-evolutionary models for high-dimensional data analyses", October 2020-December 2022: £8,960 (£4,480 awarded to JPD)
- Grant Seedcorn Award, Durham University, "Social competition and geographical range expansion" May 2018-May 2019: £8,500
- Amazon AWS in Education Research Grant, December 2015: \$1,600
- UCLA Dept. of Ecology & Evolutionary Biology Research Award, June 2012: \$500
- UCLA Dept. of Ecology & Evolutionary Biology Research Award, June 2011: \$1,000
- UCLA Dept. of Ecology & Evolutionary Biology Research Award, November 2009: \$1,300

### SERVICE TO THE PROFESSION

### Departmental Service

- Chair of the Equality, Diversity, & Inclusion Committee (2020-present)
- Founder of Department of Biosciences First Generation Scholar Network, providing support for students who come from backgrounds traditionally excluded from science. (2018present)
- Research group chairperson for the Ecology, Evolution, and Environment group of the Department of Biosciences (2020-2022)
- Founder & Coordinator of Department of Biosciences Summer Studentship Program, providing summer studentships for three Durham students to conduct a six-week paid research experience with a departmental researcher. (2019-2022).
- Seminar organizer for the Ecology, Evolution, and Environment group of the Department of Biosciences (2018-2021)
- Internal examiner (with role of thesis approval) for four PhD students and one MSc student.

### Symposium Organization

• "Ecological Models of Macroevolution" Evolution, Montpellier, France, August 2018 (co-organized with Dr. Matthew Pennell, UBC)

#### Peer Review

#### Journals

• The American Naturalist, Behavioral Ecology & Sociobiology, Biological Journal of the Linnean Society, Current Zoology, Ecology Letters, Evolution, Global Ecology and Biogeography, Journal of Animal Ecology, Journal of Biogeography, Journal of Evolutionary Biology, Nature Communications, Oikos, PLOS Biology, Proceedings of the National Academy of Sciences, Proceedings of the Royal Society B: Biological Sciences, Royal Society Open Science, Systematic Biology, Trends in Ecology & Evolution

### Grant-awarding agencies

• Natural Environment Research Council (Peer Review College Member), The Leakey Foundation, The Royal Society, Czech Science Foundation, Leverhulme Trust

### Professional Memberships

- Society for the Study of Evolution (SSE), 2013-present
- British Ecological Society (BES), 2018-present

#### Other Service

External examiner/opponent for three PhD students and one MRes student.

### **CERTIFICATION & TRAINING**

Exploration Medicine First-Aid Certified (Aug. 2019)

#### HOBBIES

I enjoy birdwatching (<u>eBird profile</u>), reading (<u>Goodreads profile</u>), learning languages (I'm fluent in Spanish and conversant in French), hiking, home fermentation, camping, cooking, swimming, and traveling.

### **REFERENCES**

Dr. Gregory Grether
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Dr. Wayne Dawson Associate Professor, Dept. of Biosciences Durham University wayne.dawson@durham.ac.uk +44 191 33 41308