JASON KEAGY

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Education:

2010 **Ph.D.** University of Maryland, College Park, MD. Behavior, Ecology, Evolution and Systematics Program. Dissertation title: "Cognitive performance and the evolution of multiple behavioral display traits."

2003 **B.S.** The College of William and Mary, Williamsburg, VA. *Summa cum laude*. Major: Biology (honors), Minor: Computer Science. Honors thesis title: "Habitat destruction and source-sink dynamics: Are wetlands going down the drain?"

Academic Appointments:

2016-present **Postdoctoral Research Associate.** University of Illinois at Urbana-Champaign, Dept. of Animal Biology, School of Integrative Biology

2016-present **Adjunct Research Associate.** Michigan State University, Dept. of Integrative Biology and BEACON Center for the Study of Evolution in Action

2010-2016 **Postdoctoral Research Associate.** Michigan State University, Dept. of Integrative Biology (formerly Zoology); BEACON Center for the Study of Evolution in Action; Ecology, Evolutionary Biology, and Behavior Program

Grants:

Research Grants:

2017 Sociogenomics RCN Travel Grant to work with Hans Hofmann at The University of Texas at Austin. **$3,000**.

2016-2021 NSF, Dimensions of Biodiversity. **$1,836,132**; I am PI of a **$68,000** subaward. Title: "Diversification of sensory systems in novel habitat: enhanced vision or compensation in other modalities?" PI: Boughman, Co-PIs: Bradburd, Hofmann, Stenkamp.

2016-2017 BEACON, NSF Center for the Study of Evolution in Action. **$127,579**. I was Co-PI. Title: "Evolution of sensory systems in response to loss of visual information." PI: Boughman, Co-PIs: Bradburd, Hofmann, Stenkamp.

2014-2015 BEACON, NSF Center for the Study of Evolution in Action. **$139,712**. I was PI. Title: "Evolution of reproductive isolation through mate discrimination in Sticklebacks and Avida." Co-PIs: Bolnick, Boughman, Cummings, Hofmann, Ofria

2012 Evo-Devo-Eco Network (EDEN) Research Exchange Grant to work with Victoria Braithwaite and Thomas Neuberger at Penn State University. **$3,000**. Title:

"Comparative analysis of neuroanatomical evolution in stickleback fish using magnetic resonance imaging (MRI)."

2002 Environmental Science & Policy Summer Research Grant. **$2,500**.

2001 Mary E. Ferguson Memorial Summer Research Grant. **$500**.

Travel Grants:

- International Society for Behavioral Ecology (ISBE) Travel Grant (2018: **$500**, 2016: **$1600**, 2012: **$2500**, 2010: **$2200**)
- NSF Travel Grant for ISBE Meeting (2016: **$1000**)
- BEACON Travel Grants (2015: **$2000**, 2014: **$500**, 2013: **$1500**, 2012: **$1500**)
- MSU Ecology, Evolutionary Biology, and Behavior Travel Grant (2013: **$500**)
- Evo-Devo-Eco Network (EDEN) Travel Grant (2013: **$500**)
- American Ornithological Union Travel Grant (2009: **$100**)
- Jakob K. Goldhaber Graduate Student Travel Grant (2009: **$800**)
- UMD College of Chemical & Life Sciences Travel Grant (2009: **$600**, 2008: **$600**)
- UMD Behavior, Ecology, Evolution and Systematics Travel Grant (2007: **$300**)

Selected Awards and Honors:

2015 Marsico Scholar, University of Denver

2010 Animal Behavior Society Allee Competition Finalist

2010 Best Student Research Award – UMD Behavior, Ecology, Evolution and Systematics

2010 Hockmeyer Fellowship, UMD College of Chemical and Life Sciences

2009 American Ornithological Union Best Student Talk

2008 Jane Prichard Award for Excellence in Teaching

2004-2005 2-Year UMD Graduate School Fellowship

2003 William and Mary Outstanding Biology Research Student

Publications:

Published:

22. **Keagy, J.**, Minter, R. and Tinghitella. 2019. Sex differences in cognition and their relationship to male mate choice. *Current Zoology* (Special column: "Learning and Neurobiological Aspects meet Sexual Selection"). *Current Zoology*. 65: 285-293.
21. Tighitella, R., Lackey, A., Martin, M., Dijkstra, P., Drury, J., Heathcote, R., **Keagy, J.**, Scordato, E., and Tyers, A. 2018. A major player need not be the only player in speciation: a response to comments on Tinghitella et al. *Behavioral Ecology*. 29: 802-803.
20. Tinghitella, R., Lackey, A., Martin, M., Dijkstra, P., Drury, J., Heathcote, R., **Keagy, J.**, Scordato, E., and Tyers, A. 2018. On the role of male competition in speciation: A review

and research agenda. *Behavioral Ecology* (Invited Review). 29: 783–797.

19. Saltz, J.B., Bell, A.M., Flint, J., Gomulkiewicz, R., Hughes, K.A., and **Keagy, J.** 2018. Why does the magnitude of genotype-by-environment interaction vary? *Ecology and Evolution*. 8: 6342–6353.

18. **Keagy, J.**, Braithwaite, V.A., and Boughman, J.W. 2018. Brain differences in ecologically differentiated sticklebacks. *Current Zoology* (Special column: "Ecology and Evolution along Environmental Gradients"). 64: 243-250.

17. Bell, A.M., Trapp, R., and **Keagy, J.** 2018. Parenting behavior is highly heritable in male sticklebacks. *Royal Society Open Science*. 5: 171029.

16. Canino-Koning, R., **Keagy, J.**, and Ofria, C. 2017. Sexual selection promotes ecological speciation in digital organisms. In: *Proceedings of ECAL 2017 the 14th European Conference on Artificial Life*. Knibbe, C., Beslon, G., Parsons, D., Misevic, D., Rouzaud-Cornabas, J., Bredèche, N., Hassas, S., Simonin, O., Soula, H., Eds. MIT Press. pp. 84-90.

15. Minter, R., **Keagy, J.** and Tinghitella, R. 2017. Complex relationship between male sexual signals, male cognitive performance, and mating success. *Ecology and Evolution.* 7: 5621–5631.

14. Boughman, J.W., **Keagy, J.** and Weigel, W. 2017. Sexual Selection and Speciation. In: *Oxford Bibliographies in Evolutionary Biology.* J. Losos, Ed. Oxford University Press.

13. Martinez, J.†#, **Keagy, J.**†, Wurst, B.#, Fetzner, W.# and Boughman, J.W. 2016. The relative role of genes and environment on spatial learning ability in recently diverged stickleback fish. *Evolutionary Ecology Research*. 17: 565-581.
    (#denotes undergraduate mentee, † co-first authors who contributed equally)

12. **Keagy, J.**†, Hosler, L.C.†, and Borgia, G. 2016. Female active sampling of male paint on bowers predicts female uncertainty in mate choice. *Animal Behaviour.* 116:131-137.
    († co-first authors who contributed equally)
    **featured in that issue's* In Focus *section.*

11. **Keagy, J.**, Lettieri, L., and Boughman, J.W. 2016. Male competition fitness landscapes predict both forward and reverse speciation. *Ecology Letters.* 19: 71-80.

10. Borgia, G. and **Keagy, J.** 2015. Sexual selection and cognitive ability: what bowerbirds can teach us. In: *Animal Signaling and Function: An Integrative Approach.* D. Irschick, M. Briffa, J. Podos, Eds. John Wiley and Sons.

9. Borgia, G., Coyle, B. and **Keagy, J.** 2012. Comment on "Illusions promote mating success in great bowerbirds". *Science*. 337: 292-292.

8. **Keagy, J.**, Savard, J-F, and Borgia, G. 2012. Cognitive ability and the evolution of multiple behavioral display traits. *Behavioral Ecology.* 23: 448-456.

7. Chappell, M.A., Savard, J-F, Siani, J., Coleman, S.W., **Keagy, J.**, and Borgia, G. 2011. Aerobic capacity in wild satin bowerbirds: repeatability and effects of age, sex and condition. *The Journal of Experimental Biology*. 214: 3186-3196.
    **featured on cover.*

6. **Keagy, J.**, Savard, J-F, and Borgia, G. 2011. Complex relationship between multiple measures of cognitive ability and male mating success in satin bowerbirds, *Ptilonorhynchus violaceus*. *Animal Behaviour*. 81: 1063-1070.
    **featured in John Alcock's* Animal Behavior *textbook.*

5. Savard, J-F, **Keagy, J.**, and Borgia, G. 2011. Blue, not UV, plumage color is important in satin bowerbird *Ptilonorhynchus violaceus* display. *Journal of Avian Biology.* 42: 80-84.
4. **Keagy, J.**, Savard, J-F, and Borgia, G. 2009. Male satin bowerbird problem-solving ability predicts mating success. *Animal Behaviour*. 78: 809-817.
   **featured in that issue's* In Focus *section.*
3. Desrochers, D.W., **Keagy, J.C.**, and Cristol, D.A. 2008. Created versus natural wetlands: avian communities in Virginia salt marshes. *Ecoscience*. 15: 36-43.
2. Borgia, G. and **Keagy, J**. 2006. An inverse relationship between decoration and food colour preferences in satin bowerbirds does not support the sensory drive hypothesis. *Animal Behaviour*. 72: 1125-1133.
1. **Keagy, J.C.**, Schreiber, S.J., and Cristol, D.A. 2005. Replacing sources with sinks: When do populations begin to go down the drain? *Restoration Ecology*. 13: 529-553.

In Review

1. **Keagy, J.** *invited* to *The Cambridge Handbook of Animal Cognition* (Cambridge Handbooks in Psychology series), Allison Kaufman, James Kaufman, Josep Call, eds. Bowerbird innovation and problem solving.

Final Stages of Preparation:

2. **Keagy, J.**, Boughman, J.W. and H. Hofmann. *in prep* for *Molecular Ecology*. Transcriptomic response of female mating signals anticipates future mating behavior.
1. **Keagy, J.**, Lehto, W.*, LoPresto, S.*, Minter, R.* and Boughman, J.W. *in prep* for *Biology Letters.* Parallel evolution of differential social information use in stickleback fish.

Presentations:

Invited talks:

2016 Bradley University, Peoria, IL. Biology Seminar Series

2016 International Society of Behavioral Ecology Meeting, Exeter, UK – invited for symposium titled: "Male competition and speciation: causes, consequences, and interactions with mate choice and ecology"

2015 Eastern Michigan University, Ypsilanti, MI. Biology Seminar Series

2015 University of Denver, Denver, CO. Marsico Scholar

2014 International Society of Behavioral Ecology Meeting, New York, NY – invited for symposium titled, "Individual variation in cognition and consequences for life-history and fitness in natural populations"

2013 Behaviour 2013, Newcastle-Gateshead, UK – introductory talk for symposium I organized with Neeltje Boogert titled, "Cognition and sexual selection: how does one influence the other?"

2013 University of St. Andrews, St. Andrews, Scotland. Centre for Biodiversity Seminar Series

2012 Michigan State University, East Lansing, MI. Ecology, Evolutionary Biology, and Behavior Seminar Series

2011 Michigan State University, East Lansing, MI. Behavioral Biology Seminar Series

2010 Animal Behavior Society Annual Meeting, Williamsburg, VA. Allee Competition

2010 Towson University, Towson, MD. Biology Seminar Series

2007 University of Maryland, College Park, MD. Topics in Neuroscience Seminar Series

Additional Presentations at National/ International Meetings:

2009†	American Ornithological Union Meeting
2007†, 2011†, 2015†	Animal Behavior Meeting
2011†, 2019†	Behaviour
2009†, 2012†#, 2013†, 2014†	Evolution
2008†, 2010#, 2012†, 2016†, 2018†	International Society of Behavioral Ecology Meeting
2015†	International Stickleback Behavior and Evolution
2018†	Interplay Between Parental Care and Sexual Selection

†talk, #poster

Selected Editorial Features on My Research:

- *The Genius of Birds.* 2016. Jennifer Ackermann. Penguin Press.
- *Science.* 8 August 2014. 345: 609-610. Elizabeth Pennisi. In the battle for fitness, being smart doesn't always pay.
- *Sydney Morning Herald.* 2 September 2009. Deborah Smith. Why eggheads get the girls and birdbrains don't.
- *Science*. 28 August 2009. 325:1053. Constance Holden. Random Samples: It's fit to be smart.
- *New Scientist*. 19 August 2009. Ewen Callaway. Why geeks get the girls.
- *BBC EARTH NEWS*. 18 August 2009. Jody Bourton. Bird brains prove to be very sexy.
- *The Washington Post*. 14 February 2008. Claire Miller. The bower of love: Male birds in Australia seek to impress with flowers and dancing.

Teaching Experience:

- Ornithology (UIUC IB 461) Guest Lecture. 2019.
- Behavioral Ecology (UIUC IB 431) Guest Lecture. 2018.
- Skype a Scientist, Animal Behavior Course (Ga Tech BIOL 4471: Behavioral Biology)
- Marsico Scholar, Non-Majors Evolution Course (DU BIOL 1261) Guest Lecture. 2015.
- Ecological Aspects of Behavior (MSU ZOO 415) Guest Lecture. 2011, 2013, 2014, 2015.
- Principles of Biology II Laboratory (Introduction to Ecology and Evolution, UMD BSCI 106). Spring 2006, 2007, 2008
- Principles of Biology II Laboratory HONORS (UMD BSCI 106H). Fall 2007, 2008, 2009.
- Mammology Laboratory (UMD BSCI 335). Spring 2009.

- Mammalian Physiology Laboratory (UMD BSCI 441). Spring 2005.

****** Jane Prichard Award for Excellence in Teaching. 2008

****** Postdoctoral Teaching Scholar Certificate after completion of *Pathways to Scientific Teaching* Seminar. 2014

Mentorship:

- Master's Thesis Committee Member: (**2015: Ross Minter**, University of Denver)
- Summer Undergraduate Research Mentor:
    - Phenotypic plasticity Research Experience for Community college Students (PRECS) REU at UIUC **(2017: Kayla Kulinski, 2018: Shayne Kempfer)**
    - Animal Biology/ Access and Achievement Program at UIUC **(2016: Jonathan Sanders, 2018: David Wilkerson-Lindsey)**
    - Integrative Biology of Social Behavior (IBSB) REU at MSU **(2013: Ashley Lindo, 2014: Katelyn Doolittle, 2015: William Fetzner)**
- Distinction Project (UIUC equivalent to Honors Thesis) Mentor **(2017-2018: Erika Carlson, 2018: Katie Julkowski)**
- Independent Research Mentor at UIUC: **Jake Ritthamel**
- Independent Research Mentor at MSU: **Ashley Baird, Clayton Batko, Sarah LoPresto, Whitley Lehto, Jonatan Martinez, Ross Minter, Peter Vites, and Benjamin Wurst**
- Independent Research Mentor at UMD: **Adam Fishbein**
- Supervised additional undergraduate research assistants: **UIUC: 12, MSU: ~20, UMD: ~120, W&M: 2**
- Supervised **26 field assistants** over the course of my field work in Australia
- Trained **6 graduate students** in the field in Australia

Selected Outreach Activities:

- Animal Behavior Society Outreach Fair. 2019. "Stickleback fish parenting: dads stay home!"
- Alan Alda Science Communications Workshop Completion. 2019.
- AGU Sharing Science Workshop Completion: "Science & society: Communicating your message to diverse audiences". 2018.
- Science at the Urbana Farmer's Market. August 2016. Introduced visitors to museum specimens of wildlife found in their backyard and their interesting adaptations.
- Volunteer at 2013 Middle School Girls Math and Science Day at Michigan State University. This is a day where middle school girls can try science demos and games with MSU students and researchers.
- Darwin Discovery Day 2012, 2013 and 2014 at the MSU Museum. This event is targeted towards the public, especially families with children. I developed an exhibit explaining natural selection with games and live stickleback fish.
- BEACON Researchers at Work Blog. May 28, 2012 and April 18, 2016.

- Featured in Feedback, the Association for Study of Animal Behavior Newsletter, January 2011. This publication features activities for students utilizing one of my publications.
- Presented at Nerd Nite, D.C. on March 13, 2010, an opportunity to present research to nonspecialists in a fun atmosphere.

Professional Service:

- Grant Reviewer:
    - Animal Behavior Society Student Research Grants (2017, 2018)
    - SDE/GWIS National Fellowships Program (2013, 2015, 2016, 2018)
    - BEACON Research Grants (2012, 2013, 2014, 2015, 2018)
- Meeting Abstract Reviewer:
    - International Society of Behavioral Ecology (2014)
    - Behaviour (2013)
- Manuscript Reviewer: *American Naturalist, Animal Behaviour*, *Animal Cognition*, *Axios*, *Behavioral Ecology, Behavioral Ecology and Sociobiology*, *Biological Reviews*, *Canadian Journal of Zoology, Comparative Cognition and Behavior Reviews, Emu, Evolution, Journal of Avian Biology, Journal of Experimental Psychology, PLoS One, Proceedings of the Royal Society of London B, Royal Society Open Science*
- Member of: Animal Behavior Society, International Society of Behavioral Ecology, Society for the Study of Evolution
- Volunteer: Behaviour 2019
- Session chair: Evolution (2013, 2014); International Society of Behavioral Ecology (2018)
- Judge: Undergraduate Research Symposium, University of Illinois (Oral Panel: 2018, 2019; Posters: 2019)
- Graduate Program Officer: Student Representative (2009-2010); Social Chair (2008-2009)

References:

Dr. Alison Bell
(current postdoctoral advisor)
Professor
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University of Illinois at Urbana-Champaign
Urbana, IL 61801
tel: (217) 265-5469
e-mail: alisonmb@life.illinois.edu

Dr. Jenny Boughman
(past postdoctoral advisor)
Professor
Department of Integrative Biology
Michigan State University
East Lansing, MI 48824
tel: (517) 353-8636
e-mail: boughman@msu.edu

Dr. Gerald Borgia
(dissertation advisor)
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