

Jacob M. Graving

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Education

- 2019 (expected) **Ph.D., Biology**
Focus: Collective Behavior
Max Planck Institute of Animal Behaviour, Department of Collective Behaviour
Chair of Biodiversity and Collective Behaviour, University of Konstanz
International Max Planck Research School for Organismal Biology
- 2015 **M.S., Biology**
Focus: Ethology, Neuroscience
Bowling Green State University, Department of Biological Sciences
- 2013 **B.S., Biology**
Focus: Ethology, Neuroscience
Bowling Green State University, Department of Biological Sciences

Publications

- 2018 Alarcón-Nieto, G.*, **Graving, J.M.***, Klarevas-Irby, J.A.*, Maldonado-Chaparro, A.A., Mueller, I., and Farine, D.R. An automated barcode tracking system for behavioural studies in birds. *Methods in Ecology and Evolution*. bioRxiv preprint: <https://doi.org/10.1101/201590> *contributed equally
- 2017 **Graving, J.M.**, Bingman, V.P., Hebets, E.A., and Wiegmann, D.D. (2017). Development of site fidelity in the nocturnal amblypygid *Phrynos marginemaculatus*. *Journal of Comparative Physiology A*, 203(5), 313-328.
Bingman, V.P., **Graving, J.M.**, Hebets, E.A., and Wiegmann, D.D. (2017). Importance of the antenniform legs, but not vision, for homing by the neotropical whip spider *Paraphrynos laevisfrons*. *Journal of Experimental Biology*, 220(5), 885-890.
Press: Discover Magazine, National Geographic
- 2016 Wiegmann, D.D., Hebets, E.A., Gronenberg, W., **Graving, J.M.**, and Bingman, V.P. (2016). Amblypygids: model organisms for the study of arthropod navigation mechanisms in complex environments. *Frontiers in Behavioral Neuroscience*, 10, 47.

Research

- 2015–2018 **Max Planck Institute of Animal Behaviour,**
Department of Collective Behaviour
University of Konstanz, Chair of Biodiversity and Collective Behaviour
Iain D. Couzin
“Perception and Motion in Animal Groups”
Studied how sensory information networks and internal state drive the collective dynamics of animal groups.
- 2011–2015 **Bowling Green State University, Department of Biological Sciences**
Daniel D. Wiegmann, Verner P. Bingman
“Navigation and Sensory Discrimination in Amblypygids”

Studied how amblypygids, a taxonomic order of nocturnal arachnids, navigate home in the dark.

2013 **Bowling Green State University, Department of Biological Sciences**

Sheryl L. Coombs

“The Sensory Basis of Rheotaxis in Fish”

Studied how fish use multimodal sensory information to orient to flow.

2009 **SETGO Summer Research Scholar, Bowling Green State University**

Matthew L. Partin

“Phenotypic Plasticity in Photosynthetic Stony Corals”

Studied how genetically identical coral propagules adapt their morphology and physiology to changing environments.

Teaching

2016– **University of Konstanz, Chair of Biodiversity and Collective Behaviour**

Lecturer and Project Advisor, Intensive Research Course for Master’s Students

- Collective Behavior of Locust Swarms
- Measuring Animal Behavior with Computer Vision
- Sensing, Perception, and Movement

2013–2015 **Department of Biological Sciences, Bowling Green State University**

Graduate Assistant

- Advanced Biostatistics (for Graduate Students)
- Introduction to Biostatistics
- Population and Community Ecology
- Introductory Biology for Non-Science Majors
- Guest Lecture on “Arthropod Navigation”, Animal Behavior

2009-2012 **Bowling Green State University, Department of Biological Sciences**

Student Coordinator and Teaching Assistant, Marine Biology Laboratory

- Introduction to Inland Marine Research
- Aquarium Husbandry
- Reef Aquarium Husbandry I and II

2009 **Bowling Green State University, Department of Environmental Science**

Student Teaching Assistant, Introduction to Environmental Science

Funding

2013–2015 **Graduate Research Fellowship**

100% Tuition Waiver and \$45,000 Stipend

Bowling Green State University

2013 **Undergraduate Research Fellowship**

\$5000 Stipend, \$800 Research Funds

Bowling Green State University, Center for Undergraduate Research and Scholarship

2009–2011 **T. Richard Fisher Biology Scholarship**

\$8000/year Tuition Scholarship

Bowling Green State University, Department of Biological Sciences

2009 **Summer Research Fellowship**

\$5000 Stipend, \$1000 Research Funds

Science, Engineering, Technology Gateway Ohio (SETGO), National Science Foundation

2009–2013 **Award of Scholars**
Merit-based 75% Tuition Scholarship
Bowling Green State University, College of Arts and Sciences

Outreach

2017 **Konstanzer Lange Nacht Der Wissenschaft**
“Long Night of Science” Public Outreach Event
Volunteer
Konstanz, Germany

2016 **Das Schwarmverhalten der Fische**
Public Seminar by Prof. Jens Krause
Volunteer Co-organizer
Konstanz, Germany

2013–2014 **Kid’s Tech University, Bowling Green State University**
Public Outreach Event for Schoolchildren Grades K–8
Volunteer
Bowling Green, Ohio, USA

2008–2010 **The Toledo Zoo Aquarium**
Volunteer and Intern
Toledo, Ohio, USA

Advisees

Graduate Ingabritta Hormann, M.S. Biology, University of Konstanz

Undergraduate Connie Santangelo, B.S. Biology, Bowling Green State University
Lindsey Cunningham, B.S. Biology, Bowling Green State University
Tracy Togba, B.S. Biology, Bowling Green State University

Peer Review

eLife Science Advances
PNAS

Skills

Computational

Languages: Python, R, MATLAB
Applications: statistical analysis and data visualization, machine learning and deep learning, computer vision and image processing
Libraries: tensorflow, keras, pytorch, scikit-learn, OpenCV

Biological

Physiology: electrophysiology, histology, ophthalmoscopy, fish lateral line disruption and visualization
Microscopy: scanning and transmission electron microscopy, confocal, fluorescence, and general light microscopy
Field: radio telemetry, photographic polarimetry

References

Iain D. Couzin
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Professor, University of Konstanz
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Daniel D. Wiegmann
Associate Professor
Bowling Green State University
Department of Biological Sciences
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+1 (419) 372 2691

Verner P. Bingman
Distinguished Research Professor
Bowling Green State University
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Sheryl L. Coombs
Professor Emeritus
Bowling Green State University
Department of Biological Sciences
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