

Eleanor M. Caves

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EDUCATION

Ph.D.	Department of Biology, Duke University, Durham, NC PI: Dr. Sönke Johnsen	2013-2018
M.Phil.	Behavioural Ecology Group, Zoology Department, University of Cambridge, UK PI: Drs. Claire Spottiswoode and Martin Stevens	2011-2012
B.A.	Biology Department, Pomona College, Claremont, CA. <i>Magna cum laude</i>	2007-2011

PROFESSIONAL APPOINTMENTS

Assistant Professor, University of California Santa Barbara	2021-present
Marie Skłodowska-Curie Postdoctoral Fellow, University of Exeter PI: Dr. Laura Kelley	2019-2021
Post-doctoral associate, Duke University Biology Department PI: Dr. Stephen Nowicki	2018-2019

PEER-REVIEWED PUBLICATIONS (*equal contribution, # undergraduate author; [link to Google Scholar profile](#))

- EM Caves**, F de Busserolles, and LA Kelley. Sex differences in behavioural and anatomical estimates of visual acuity in the green swordtail *Xiphophorus helleri*. 2021. *Journal of Experimental Biology* 224: jeb243420. <https://doi.org/10.1242/jeb.243420>
- T Dixit, **EM Caves**, CN Spottiswoode, and NPC Horrocks. Why and how to apply Weber's Law to the coevolution of models and mimics. 2021. *Evolution*. [doi:10.1111/evo.14290](https://doi.org/10.1111/evo.14290)
- EM Caves**. The behavioural ecology of marine cleaning mutualisms. 2021. *Biological Reviews*. [doi: 10.1111/brv.12770](https://doi.org/10.1111/brv.12770)
- EM Caves**, T Dixit, JFR Colebrook-Robjent, L Hamusikili, M Stevens, R Thorogood, and CN Spottiswoode. Hosts elevate either within-clutch consistency or between-clutch distinctiveness of egg phenotypes in defence against brood parasites. 2021. *Proceedings of the Royal Society B*. 288: 20210326. doi.org/10.1098/rspb.2021.0326
- EM Caves** and S Johnsen. 2021. The sensory impacts of climate change: bathymetric shifts and visually-mediated interactions in aquatic species. *Proceedings of the Royal Society B*. 288: 20210396. doi.org/10.1098/rspb.2021.0396. Covered by: [weather.com](#), [Energy & Environment News](#)
- EM Caves**, PA Green, MN Zippel, D Bharath#, S Peters, S Johnsen, and S Nowicki. 2021. Comparison of categorical color perception in two Estrildid finches. *The American Naturalist*: 197: 190-202. doi.org/10.1086/712379
- EM Caves**, J Troscianko*, and LA Kelley*. 2020. A customizable, low-cost optomotor apparatus: a powerful tool for behaviourally measuring visual capability. *Methods in Ecology and Evolution*. doi.org/10.1111/2041-210X.13449
- EM Caves**, LE Schweikert, PA Green, C Taboada, MN Zippel, S Peters, S Nowicki, and S Johnsen. 2020. Variation in retinal carotenoids correlates with variation in perception of carotenoid coloration. *Behavioral Ecology and Sociobiology*. doi.org/10.1007/s00265-020-02874-5

- EM Caves***, C Chen*#, and S Johnsen. 2019. The cleaner shrimp *Lysmata amboinensis* adjusts its behavior toward predatory versus non-predatory clients. *Biology Letters*: 15, 20190534. doi.org/10.1098/rsbl.2019.0534. Covered by: [New York Times](#), [National Public Radio "Wow in the World" podcast](#)
- EM Caves**, S Nowicki, and S Johnsen. 2019. Von Uexküll revisited: Addressing human biases in the study of animal perception. *Integrative and Comparative Biology*. doi.org/10.1093/icb/icz073
- MN Zipple*, **EM Caves***, PA Green, S Peters, S Johnsen, and S Nowicki. 2019. Categorical perception occurs in both non-signalling and signalling colour ranges in a songbird. *Proceedings of the Royal Society B*: 286, 20190524. doi.org/10.1098/rspb.2019.0524
- LE Schweikert, **EM Caves**, SE Solie, TT Sutton, and S Johnsen. 2019. Variation in rod spectral sensitivity of fishes is best predicted by habitat and depth. *Journal of Fish Biology*. 95: 179-185. doi.org/10.1111/jfb.13859
- LE Schweikert, RR Fitak, **EM Caves**, TT Sutton, and S Johnsen. 2018. Spectral sensitivity in ray-finned fishes: diversity, ecology, and shared descent. *Journal of Experimental Biology*: 221, jeb189761. doi.org/10.1242/jeb.189761
- EM Caves***, PA Green*, MN Zipple, S Peters, S Johnsen, and S Nowicki. 2018. Categorical perception of colour signals in a songbird. *Nature*. 560: 365–367. doi.org/10.1038/s41586-018-0377-7. Covered by: [Nature News](#), [Discover Magazine](#)
- EM Caves**, PA Green, and S Johnsen. 2018. Mutual visual signalling between the cleaner shrimp *Ancylomenes pedersoni* and its client fish. *Proceedings of the Royal Society B* 285: 20180800. doi.org/10.1098/rspb.2018.0800. Covered by: [National Geographic](#), [Scientific American](#)
- EM Caves**, NC Brandley, and S Johnsen. 2018. Visual acuity and the evolution of signals. *Trends in Ecology and Evolution*. 33: 358-372. doi.org/10.1016/j.tree.2018.03.001. Covered by: [Smithsonian Magazine](#), [Discover Magazine](#)
- R Fitak, **EM Caves**, and S Johnsen. 2018. Orientation in pill bugs: an interdisciplinary activity to engage students in concepts of biology, physics, and circular statistics. *The American Biology Teacher* 80: 608-618. doi.org/10.1525/abt.2018.80.8.608
- EM Caves** and S Johnsen. 2017. AcuityView: An R package for portraying the effects of visual acuity on scenes observed by an animal. *Methods in Ecology and Evolution* 9: 793-797. doi.org/10.1111/2041-210X.12911 -I actively maintain the R Package *AcuityView*, [available on the R CRAN](#)
- EM Caves**, M Stevens, and CN Spottiswoode. 2017. Does coevolution with a shared parasite drive hosts to partition their defences among species? *Proceedings of the Royal Society B*. 284: 20170272. doi.org/10.1098/rspb.2017.0272. Covered by: [The Economist](#)
- EM Caves**, TT Sutton, and S Johnsen. 2017. Visual acuity in fish correlates with eye size and habitat. *Journal of Experimental Biology* 220: 1586-1596. doi.org/10.1242/jeb.151183
- EM Caves**, TM Frank, and S Johnsen. 2016. Spectral sensitivity, spatial resolution, and temporal resolution and their implications for conspecific signalling in cleaner shrimp. *Journal of Experimental Biology* 219: 597-608. doi.org/10.1242/jeb.122275
- EM Caves**, M Stevens, E Iverson, and CN Spottiswoode. 2015. Hosts of brood parasites have evolved egg visual signatures with elevated information content. *Proceedings of the Royal Society B* 282: 20150598. doi.org/10.1098/rspb.2015.0598. *cover
- EM Caves***, Jennings SB*, HilleRisLambers J, Tewksbury JJ, Rogers HS. 2013. Natural experiment demonstrates that bird loss leads to cessation of dispersal of native seeds from intact to degraded forests. *PLoS ONE* 8(5): e65618. doi.org/10.1371/journal.pone.0065618

BOOK CHAPTERS & POPULAR ARTICLES (*peer-reviewed)

***EM Caves**, PA Green, and M Hughes. (In press). Communication. In: *The Routledge International Handbook of Comparative Psychology*. Edited by: A.R. Ridley, P. d’Etorre, and T.M. Freeberg. Taylor and Francis

EM Caves. 2021. “The Last Word: Does long and short-sightedness affect other animals? If so, how do they cope?” [New Scientist Magazine](#), February 27 2021.

AWARDS AND HONORS

Jasper Loftus-Hills Young Investigator Award, American Society of Naturalists (four awards given annually)	2019
Dorothy Skinner Award for Research Excellence, one award given annually by the Society for Integrative and Comparative Biology for outstanding and promising work by a postdoctoral researcher	2019
University Scholars Fellowship, Duke University	2013-2018
James B. Duke Fellowship, Duke University	2013-2017
Dean’s Award for Excellence in Mentoring, Duke University	2017
National Geographic Young Explorer	2016
National Defense Science and Engineering Graduate Fellow	2013-2016
Downing Fellowship for Study at the University of Cambridge, Downing College, Cambridge	2011-2012
Barry M. Goldwater Scholar, United States Congress	2010-2011
Summer Student Fellow, Woods Hole Oceanographic Institute, Dr. Peter Tyack, Woods Hole, MA	2011
Charles S. Vaile Prize in Biology, Pomona College	2011
National Science Foundation Research Experience for Undergraduates (REU) Fellow	2010

FELLOWSHIPS AND RESEARCH GRANTS

Pending: NSF Biology Integration Institute (BII), <i>under review</i> (\$12,500,000 total; \$275,459 to EM Caves) Co-PIs Todd H. Oakley, Heather Bracken-Grissom, and Ben S. Halpern. EM Caves Senior Personnel. “LITE-MAR: Light-Integration Institute for Training and Education in Marine Animal Research.”	
Pending: NSF Integrative Biology (IntBio), <i>under review</i> (\$1,800,000 total; \$1,000,000 to EM Caves) Lead PI: EM Caves , Co-PI: Benjamin Titus (University of Alabama). “IntBio: From aposematism to crypsis: integrating molecular, organismal, and community scales to examine the ecology and evolution of protective coloration.”	
Pending: PADI Foundation, <i>under review</i> (\$9248). “Quantifying cleaner shrimp-client fish networks to understand how cleaners impact reef fish health.”	
Marie Skłodowska-Curie Postdoctoral Fellowship, University of Exeter (£183,000)	2019-2021
Duke-Exeter Collaboration Fellowship (£3991)	2020-2021
International Society for Behavioural Ecology Travel Grant. (\$500)	2018
Duke University Biology Department Grant in Aid of Research. (\$1000 each)	2014, 2015, 2016, 2017
Young Explorers Grant, National Geographic Society. (\$5000)	2016-2017
National Defense Science and Engineering Graduate Fellowship, Department of Defense. (\$102,000)	2013-2016
Animal Behavior Society Conference Travel Grant. (\$500)	2016
Rosemary Grant Award for Graduate Student Research, Society for the Study of Evolution. (\$2500)	2015
Duke Sigma Xi Sally Hughes-Schrader Travel Grant. (\$1250)	2015
The Crustacean Society Graduate Student Scholarship. (\$1000)	2015
Duke University International Dissertation Research Travel Award. (\$2000)	2015

Charles Lambert Memorial Endowment, Friday Harbor Laboratories. (\$500)	2014
Fernald Fellowship, Friday Harbor Laboratories. (\$1300)	2014
Journal of Experimental Biology Travelling Fellowship. (\$2400)	2014
Sigma Xi Grant-in-Aid of Research. (\$1000)	2013

INVITED SEMINARS (*upcoming, # invited by graduate students)

#Purdue University: <i>EcoLunch seminar</i>	2021
University of Alabama: <i>Department of Biological Sciences seminar</i>	2021
Newcastle University, UK: <i>Centre for Behaviour and Evolution seminar</i>	2020
University of Exeter, Streatham Campus, UK: <i>Centre for Research in Animal Behaviour seminar</i>	2020
University of Arizona: <i>Department of Ecology and Evolutionary Biology Seminar</i>	2020
University of Bristol, UK: <i>Workshops in Ecology and Behaviour seminar</i>	2020
University of Exeter, Penryn Campus, UK: <i>Centre for Ecology and Conservation seminar</i>	2020
University of California Santa Barbara: <i>Department of Ecology, Evolution, and Marine Biology seminar</i>	2019
Cornell University: <i>Neurobiology, Brain, and Behavior seminar</i>	2019
University of California Davis: <i>Department of Evolution and Ecology seminar</i>	2019
Yale University: <i>Department of Ecology and Evolutionary Biology seminar</i>	2019
University of Chicago: <i>Department of Ecology and Evolution seminar</i>	2019
Harvard University: <i>Brain, Behavior and Cognition seminar</i>	2018
The College of Wooster: <i>Biology Department seminar</i>	2018
University of Guam: <i>POETS Marine Lab seminar</i>	2018
Wake Forest University	2018
Cambridge University	2012

CONFERENCE PRESENTATIONS (*upcoming)

*International Congress on Neuroethology (Lisbon, Portugal), Invited Speaker in the Presidential Symposium (Postponed to 2022 due to COVID-19)	
Living Light Conference (virtual), Invited Keynote Speaker	2021
Association for the Study of Animal Behaviour (virtual), Invited Speaker in the Early Career Symposium	2021
Animal Behavior Society Annual Conference (virtual)	2021
Exeter University ExBASE Conference, Centre for Research in Animal Behaviour (virtual)	2021
Behavior, Ecology, and Evolution of Poeciliid Fishes (virtual)	2021
Society for Integrative and Comparative Biology Annual Meeting (virtual)	2021
Animal Behavior Society Annual Conference (virtual)	2020
Evolution (Providence, RI), American Society of Naturalists Young Investigator Award Symposium	2019
Association for the Study of Animal Behavior Winter Meeting (London, UK), Poster presentation	2019
Color Vision—Circuits and Behavior Conference (HHMI Janelia Farm Ashburn, VA), Invited Keynote Speaker	2019
Society for Integrative and Comparative Biology Annual Meeting (Tampa, FL)	2019
International Society for Behavioural Ecology (Minneapolis, MN)	2018
Society for Integrative and Comparative Biology Annual Meeting (San Francisco, CA)	2018
Animal Behavior Society Annual Conference (Toronto, Canada)	2017
Society for Integrative and Comparative Biology Annual Meeting (New Orleans, LA)	2017
Animal Behavior Society Annual Conference (Columbia, MO)	2016
Society for Integrative and Comparative Biology Annual Meeting (Portland, OR)	2016
Duke University Ecology Symposium, Duke University Marine Lab (Beaufort, NC), Best Student Presentation	2015
Society for Integrative and Comparative Biology Annual Meeting, (West Palm Beach, FL)	2015
International Society for Behavioural Ecology (Lund, Sweden), Poster presentation	2012

DIVERSITY, EQUITY, AND INCLUSION

Trainings

- UC Santa Barbara [ONDAS](#) / [CITRAL](#) Inclusive Teaching Workshop 2021-2022
- A year-long seminar for faculty that explores disciplinary identities, teaches about learning styles, and promotes curriculum design/redesign that is inclusive and antiracist
- [California Consortium for Inclusive Doctoral Education](#) Holistic Recruiting Practices Workshop 2021
- University of California [Field Leadership Toolkit Training](#) 2021
- A four-part workshop that emphasizes how people of different identities experience risk in the field, and promotes strategies for mitigating risks to make fieldwork an inclusive experience
- Duke University Pursuing Respect, Inclusion, Diversity, and Equity ([PRIDE](#)) training 2018
- Training to increase awareness of issues impacting those with marginalized sexual orientations, gender identities, and gender expressions

Events

- Screening of "[Picture A Scientist](#)" for the Centre for Ecology and Conservation, University of Exeter 2021
- Solicited the department for funds to host a screening, followed by a "packed lunch" discussion, of the [Picture A Scientist](#) documentary, which explores challenges faced by women in STEM fields

Service

- DEI Working Group 2: Curriculum and Teaching, UCSB EEMB; faculty representative 2021-present
- Head graduate mentor, [University Scholars Program](#), Duke University 2016-2018
- Interviewed program candidates and organized mentoring activities for more than 120 students for the University Scholars Program, which provides full tuition to undergraduates with financial need

TEACHING AND MENTORING

Instructor of Record

- EEMB 509: Introduction to Ecology and Evolution Winter 2022
- Graduate-level core course in the Department of Ecology, Evolution, and Marine Biology
- EEMB 595: R Seminar Winter 2022
- A graduate-level seminar focused on teaching R coding and providing students with time to workshop and troubleshoot coding roadblocks
- Biology 190S: Sensory Biology—Taste, Touch, Sound, Sight, Smell, and Beyond (Duke University) Summer 2017
- Submitted a successful proposal, and was selected to design and teach a fifteen-student summer session course

Teaching Assistant

- Hong Kong Conservation and Ecology Field Course—LESM002 (University of Exeter) Fall 2019
- Served as a demonstrator for a two-week field course for Master's students in Hong Kong

Training

- UC Santa Barbara [ONDAS](#) / [CITRAL](#) Inclusive Teaching Workshop 2021-2022
- Duke Certificate in College Teaching 2015-2018

Research Mentoring

- UC Santa Barbara:* Miya Ball (2021-present), Kara Chatteron (2021-present)
- Exeter University:* Leela Channer (2020-present), Charlotte Roberts (2020-present)
- Duke University (undergraduate thesis):* Kelsey O'Donnell (2016-2019); Catherine Chen (2013-2016)

Duke University (undergraduate independent study): Lauren Deehan (2018); John Bollinger (2018); Katja Kochvar (2017-2018); Lingrong Jin (2017-2018); Helen Tan (2016-2017); Surabhi Reddy (2014-2016)

Teaching Grants

Duke Data Expeditions, Information Initiative at Duke (iiD), grant for teaching undergraduates big data analysis techniques. \$4500. [See the lesson plan here.](#) [Duke Interdisciplinary Studies Press Release.](#) 2017, 2018, 2019
Duke Support for Interdisciplinary Graduate Networks (D-SIGN), “A STEM researcher-educator network to improve K12 science literacy.” \$13,341. Co-author with Patrick Green and Becca Lauzon. [Duke Award Announcement \(June 2016\)](#) and [Duke Press Release \(August 2017\)](#). 2016-2017

Guest Lectures in University Courses

Vertebrate Natural History, University of San Diego 2021
Graduate seminar in Animal Cognition, University of Cincinnati 2020
Topics in Sensory Biology (Bio427S): one-day guest lecture on color vision across the animal kingdom 2015-2018
Animal Physiology (Bio329L): a two-day Duke Data Expedition guest lecture (see below) 2018-2019
Animal Physiology (Bio329L): a one-day guest lecture on the physiology of vision 2017
Animal Signaling Freshman Seminar (Bio089S): guest lecture on communication across modalities 2017
Introduction to Behavioral Ecology (Bio267D): guest lecture on costs and benefits in animal communication. 2017

SERVICE

Departmental Service

Representative to the UCSB Faculty Legislature 2021-2022
Faculty liaison for the first annual EEMB Undergraduate Research Symposium 2021-2022
EEMB Website committee 2021-2022
DEI Working Group 2: Curriculum and Teaching 2021-present

Symposium and Workshop Organizer

- With Lorian Schweikert and Sönke Johnsen, I co-wrote a successful proposal to serve as **organizers** for “Vision 2020,” a 30-participant workshop fully funded by the Company of Biologists (\$80,000) (cancelled, with invitation to re-apply, due to Covid-19)

Reviewer

Reviewed applications for the National Defense Science and Engineering Graduate Fellowship (Cognitive, Neural, and Behavioral Sciences Division) 2021-2022

Reviewed manuscripts for: *Current Biology*, *The American Naturalist*, *Biology Letters*, *Philosophical Transactions of the Royal Society*, *Journal of Experimental Biology*, *Animal Behaviour*, *Integrative and Comparative Biology*, *Ethology*, *Ecology and Evolution*, *Frontiers in Ecology and Evolution*, *Environmental Biology of Fishes*, *Journal of Fish Biology*, *Journal of Crustacean Biology*, *Coral Reefs*, *Journal of Herpetology*, *Journal of Comparative Physiology A*, *Journal of Zoology*

Service at Meetings and for Societies

- American Society of Naturalists Jasper Loftus-Hills Young Investigator Award Committee (2021-2024)
- Reviewer for the National Defense Science and Engineering Graduate Fellowship (2021-2022)
- Society for Integrative and Comparative Biology Dorothy Skinner Award for Postdoctoral Research Excellence Award Committee (2020)
- Chair for the Vision Researchers Colloquium 2020, GW4 University Group, United Kingdom (virtual, 2020)

- Animal Behavior Society Warner Clyde Allee Young Investigator Award Committee (2019)

COMMUNITY OUTREACH AND MEDIA

Featured Scientist on gizmodo.com's "Giz Asks" series: " Which Animal Species Get Along the Best? "	2021
Featured Guest on the Animal Behavior Society Podcast	2021
Wrote custom codes for Nemo and Friends Aquarium at Walt Disney World, to incorporate visual ecology into their animal enrichment activities	2021
Cerritos College Marine Biology Class "interview with a marine biologist"	2021
Interviewed for Gimlet Media " Every Little Thing " Podcast	2020
Interviewed for a research feature on National Public Radio's "Wow in the World" podcast	2020
Scientific Research and Education Network (SciREN) lesson plan presenter, Raleigh NC	2018
Presentation at the North Carolina Museum of Natural Sciences Daily Planet Theater, Raleigh NC	2018
Presentation to the North Carolina Down Under Divers Association, Raleigh NC	2018
Scientific Research and Education Network (SciREN) Triangle (501c3): leadership board member	2014-2018
National Geographic Learning Panorama: "Seeing Underwater" by Maria Choudhury: a write-up about my dissertation research in a textbook aimed at elementary schoolers, in English and Spanish	2017
American Heritage Girl Scouts, "Zoology Badge" Guest Speaker, Johnston County NC	2017
North Carolina School of Science and Math, High School Evolutionary Biology Guest Lecturer	2015-2017
North Carolina Invite-a-Scientist Festival guest teacher, Raleigh NC and Yanceyville NC	2014-2016
Lowe's Grove Middle School, Sixth Grade Visual Ecology Outreach Day, Durham NC	2014
Scientists with Stories #ScienceFAIL Live Storytelling event, Chapel Hill NC	2014
Scientists with Stories Film Workshop, Manteo NC	2013

SOCIETY MEMBERSHIPS

International Society for Neuroethology, Animal Behavior Society, Society for Integrative and Comparative Biology, Association for the Study of Animal Behaviour, Society for the Study of Evolution, American Society of Naturalists, The Crustacean Society, International Society for Behavioral Ecology