

Dakota E. McCoy, CV

DAKOTA E. MCCOY

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ACADEMIC POSITIONS

Neubauer Family Assistant Professor 2024-present

University of Chicago

Department of Ecology and Evolution, Chicago, IL
Marine Biology Laboratory, Woods Hole, MA

Stanford Science Fellow and NSF PRFB Fellow 2021-2024

Stanford University

Department of Materials Science & Engineering, Stanford, CA
Hopkins Marine Station, Pacific Grove, CA

Advisors: Jennifer Dionne (Nanophotonics), Steve Palumbi (Coral Reef Biology), Sönke Johnsen (Physics and Biology; Duke University)

EDUCATION

PhD in Organismic and Evolutionary Biology 2021

Harvard University, Cambridge, MA, USA

NDSEG Fellow and Ashford Fellow

Advisor: Professor David Haig

Dissertation: *Signaling, Cooperation, and Conflict in Animals*

MPhil in Geography and the Environment 2015

Oxford University, Oxford, UK

Rhodes Scholar

Advisor: Professor Cameron Hepburn

BS in Biology 2013

Yale University, New Haven, CT, USA

Kennedy T. Friend Scholar

AWARDS AND GRANTS

International and National

Chrysalis Prize (\$250,000)	2026
Award to one outstanding early-career evolutionary biologist and one archaeologist.	
2026 Raymond Fong Memorial Lecturer, U. Iowa	2026
Gilbert S. Omenn Prize, Internat'l Soc. for Evolution, Med., & Public Health (\$5000)	2025
Best article of 2024 on evolution, medicine, and/or public health.	
Theodosius Dobzhansky Prize, Society for the Study of Evolution (\$5000)	2023
International award for one outstanding early-career evolutionary biologist	
Early Career Investigator Award, American Society of Naturalists (\$700)	2023
Award for four outstanding early-career scientists	
Stanford Science Fellowship	2021-present
NSF Postdoctoral Research Fellowship in Biology	2021-present
National Science Foundation Rules of Life division	
Trail-Crisp Medal of the Linnean Society	2021
International award for biological microscopy	
Miller Research Fellowship, Berkeley (declined)	2021
NDSEG Graduate Fellowship	2016-2021
Department of Defense, Army Research Office	
Rhodes Scholarship	2013-2015
Marshall Scholarship (elected)	2013
Capital One Academic All-American	2013
Sigma Xi student research award	2013
National Science Foundation Research Experience for Undergraduates Fellow	2012
Goldwater Scholar; elected as a sophomore	2011

University of Chicago

Climate Systems Engineering Initiative Seed Grant (\$150,000)	2026
Biological Consequences of Ocean Alkalinity Enhancement (w/ Dr. A. M. Hulver)	
AI & Machine Learning Fellowship; PI funds (\$1500)	2025
Faculty Development Small Grant (\$1500)	2025
Project STORK: Systematic Tracking of Reproductive Knowledge	

Stanford University

Poster Award (\$1000). Stanford Bio-X Interdisciplinary Initiatives Poster Session.	2022
Title: <i>Windows in a clamshell: how natural fiber optic cables and condensing lenses transmit sunlight for photosynthesis.</i>	

Harvard University

Ashford Fellowship	2015-2021
Awarded to 6 incoming graduate students across all disciplines.	
Office for Sustainability Grant (\$5,000) to plant native trees and shrubs on campus	2020
Bowdoin Prize for Graduate Essay in the Natural Sciences (\$10,000)	2020
Essay: "Cheating Darwin: Germline Parasites and the Paradox of Transplant Rejection"	
Chapman Fellowship (\$2,000) for vertebrate locomotion.	2020
Regeneron Prize Harvard Nominee for "inventive" biomedical research proposals	2019
Harvard Integrated Life Sciences, Student Proposal Grant (\$2,000)	2017
Mind, Brain, and Behavior Graduate Student Award (\$5,229)	2016
Mind, Brain, and Behavior Conference Award	2015

Yale University

Edgar J. Boell Prize, awarded annually to one senior for excellence in biology.	2013
Branford Fellows Prize, awarded to one graduating senior for academic excellence.	2013
Kiphuth Student-Athlete Distinction Award, awarded to one female varsity athlete.	2013
Francis Gordon Brown Prize	2012
Top prize for Yale juniors for distinction, leadership, and service	
Yale Creative and Performing Arts Award	2012
To write and hand-make a book (<i>A Dozen Birds</i>)	
Richter Fellowship, for fieldwork to study primate cognition	2012
Dean's Research Fellowship, for fieldwork to study primate cognition	2012
Yale Writing Center Essay Contest winner	2011
Title: "Do octopuses think like vertebrates?"	
Environmental Summer Fellowship	2011
To study conservation & ecosystem management.	
Von Damm Fellowship	2010-11
To study paleontology at the Yale Peabody Museum.	
Kennedy T. Friend Scholarship	2009-13
For Allegheny County residents who attend Yale	

RESEARCH

Summary: I have published 20 peer-reviewed articles, 3 book chapters, and 4 white papers/public comments in journals including *Nature Communications*, *Current Biology*, *eLife*, and *Trends in Ecology and Evolution* (see [Google Scholar](#)). My work has received media coverage in the [New York Times](#), [Scientific American](#), [National Geographic](#), [The Atlantic](#), [Science News](#), and more.

Manuscripts Under Review

3. Grandison, B. J., *, Pierro, D.*, Allen-Waller, L., Hulver, A.M., Jarvis, G.C., Jack, L.P., Bettencourt, L., and **McCoy, D.E.** Algal symbionts vary in carbon trading strategies, and heat disrupts trade: a biological market analysis of corals.
2. **McCoy, D.E.** Characterizing and Quantifying Color. Chapter 1 in *Bird Coloration*, Oxford University Press, ed.s Geoffrey Hill and Kevin McGraw.
1. King, D.A., **McCoy, D.E.**, Perdyan, A., Mieczkowski, J., Douki, T., Dionne, J.A., Herrera, R.E. and Morrison, A.J., 2024. p53 Regulates Nuclear Architecture to Reduce Carcinogen Sensitivity and Mutagenic Potential. *bioRxiv*, pp.2024-09.

Manuscripts In Preparation

3. **McCoy, D. E.**, Johnsen, S. Palumbi, S., and Dionne, J. (in prep.) Heat stress, light stress, and runaway bleaching in 6 species of Palauan coral.
2. **McCoy, D.E.**, Kaholooa, K., Dionne, J. & Palumbi, S. (in prep.). Optics of the heat-resistant mounding coral *Porites lobata*.
1. **McCoy, D.E.**, Gu, Y., Haig, D., and Kotler, J. GDF15 and the paradox of nausea and vomiting during pregnancy: a side effect of immunological tolerance to the invasive placenta.

Published Papers

23. **McCoy, D.E.**, Cornwell, B, Johnsen, S., and Dionne, J.A. Host-symbiont conflict in reef-building corals and the risk of bleaching. (2025). Chapter 10 in *The Paradox of the Organism: Adaptation and Internal Conflict*, ed.s Manus Patten and Arvid Agren.
22. **McCoy, D.E.**, Burns, D.H., Klopfer, E., Herndon, L.K., Ogunlade, B., Dionne, J.A. ,Johnsen, S. (2024). *Nature Communications* 15:9445. Heart cockles transmit sunlight for photosynthesis using natural fiber optic cables and condensing lenses. [[LINK](#)]; [[PDF version](#)]
- featured image
21. **McCoy, D.E.**, Haig, D., and Kotler, J. (2024). Egg donation and gestational surrogacy: pregnancy is riskier with an unrelated embryo. *Early Human Development* [[LINK](#)]; [[PDF version](#)]
- Omenn Prize-winning paper
20. Braganza, O., John, Y. J., Caldwell, L., & **McCoy, D. E.** (2024). Teleonomy, legibility, and diversity: Do we need more “proxynomics”? *Behavioral and Brain Sciences*, 47, e88. [[LINK](#)]
19. **McCoy, D.E.**, Shultz, A.J., Dall, J.E., Dionne, J.A. and Johnsen, S., 2023. The carotenoid redshift: Physical basis and implications for visual signaling. *Ecology and Evolution*, 13(9), p.e10408. [[LINK](#)]; [[PDF version](#)]
- cover image

18. John Y.J., Caldwell L., **McCoy D.E.**, Braganza O. (2023). Dead rats, dopamine, performance metrics, and peacock tails: Proxy failure is an inherent risk in goal-oriented systems. *Behavioral and Brain Sciences*. 2024;47:e67. [[LINK](#)]; [[PDF version](#)]
- selected for commentary
17. **McCoy, D.E.***, Goulet-Scott, B.*, Meng, W., Atahan, F., Kiros, H., Nishino, M., & Kartesz, J. (2022). Species clustering, climate effects, and introduced species in 5 million city trees across 63 US cities. *eLife*, 11:e77891. [[LINK](#)]
- selected to be featured in *eLife* Digest
16. Ågren, J.A., Haig, D. & **McCoy, D.E.** (2022). Meiosis solved the problem of gerrymandering. *Journal of Genetics*, 101, 38 (2022). [[LINK](#)]; [[PDF version](#)]
15. **McCoy, D.E.***, Shneidman, A.*, Davis, A, and Aizenberg, J. (2021). Finite-difference Time-domain (FDTD) Optical Simulations: A Primer for the Life Sciences and Bio-Inspired Engineering. *Micron*, 103160. [[LINK](#)]; [[PDF version](#)].
14. Frye, B.M., **McCoy, D.E.**, Kotler, J., Embury, A., Burkart, J.M., Burns, M., Eyre, S., Galbusera, P., Hooper, J., Idoe, A. and Goya, A.L., 2021. After short interbirth intervals, captive callitrichine monkeys have higher infant mortality. *IScience*, p.103724. [[LINK](#)]; [[PDF version](#)].
13. **McCoy, D.E.**, Shultz, A.J., Vidoudez, C., van der Heide, E., Dall, J., Trauger, S.A., & Haig, D.A (2021). Microstructures amplify carotenoid signals in tanagers. *Scientific Reports*. 8582 (2021) [[LINK](#)]; [[PDF version](#)]
12. **McCoy, D. E.** and Haig, D. (2020). Embryo selection and mate choice: can ‘honest signals’ be trusted? *Trends in Ecology and Evolution*, 35(4), 308-318. [[LINK](#)]; [[PDF version](#)]
11. **McCoy, D.E.** & Prum, R.O. (2019). Convergent evolution of super black plumage near bright color in 15 bird families. *Journal of Experimental Biology*, 222(18), jeb208140. [[LINK](#)]; [[PDF version](#)]
- cover image
10. Miller, R., Frohnwieser, A., Schiestl, M., **McCoy, D. E.**, Gray, R. D., Taylor, A. H., & Clayton, N. S. (2019). Delayed gratification in New Caledonian crows and young children: influence of reward type and visibility. *Animal cognition*, 23(1), 71-85. [[LINK](#)]; [[PDF version](#)]
9. **McCoy, D. E.**, Schiestl, M., Neilands, P., Hassall, R., Gray, R. D., & Taylor, A. H. (2019). New Caledonian Crows Behave Optimistically after Using Tools. *Current Biology*, 29(16), 2737-2742. [[LINK](#)]; [[PDF version](#)]
8. **McCoy, D. E.***, Frye, B. M.*, Kotler, J., Burkart, J. M., Burns, M., Embury, A., ... & Goya, A. L. (2019). A comparative study of litter size and sex composition in a large dataset of callitrichine monkeys. *American journal of primatology*, e23038. [[LINK](#)]; [[PDF version](#)]; * co-first authors
- cover image
7. **McCoy, D. E.**, McCoy, V. E., Mandsberg, N. K., Shneidman, A. V., Aizenberg, J., Prum, R. O., & Haig, D. (2019). Structurally assisted super black in colourful peacock spiders. *Proceedings of the Royal Society B*, 286(1902), 20190589. [[LINK](#)]; [[PDF version](#)]

- cover image

6. **McCoy, D. E.***, Feo, T.*, Harvey, T. A., & Prum, R. O. (2018). Structural absorption by barbule microstructures of super black bird of paradise feathers. *Nature communications*, 9(1), 1. [[LINK](#)]; [[PDF version](#)]
5. **McCoy, D.E.** (2018) Evolutionary Change. In: Shackelford T., Weekes-Shackelford V. (eds) *Encyclopedia of Evolutionary Psychological Science*, Pp. 1–16. Cham: Springer International Publishing. Springer, Cham. [[LINK](#)]; [[PDF version](#)]
4. **McCoy, D.E.** (2018) Game Theory as a Foundation of Evolutionary Psychology. In: Shackelford T., Weekes-Shackelford V. (eds) *Encyclopedia of Evolutionary Psychological Science*. Pp. 1–17. Cham: Springer International Publishing Springer, Cham. [[LINK](#)]; [[PDF version](#)]
3. Petelle, M. R., **McCoy D.E.**, Alejandro, V.A., and Blumstein, D.T. (2013) Development of boldness and docility in yellow-bellied marmots. *Animal Behaviour* 86: 1147-1154. [[LINK](#)]; [[PDF version](#)]
2. **McCoy, D.E.** (2012) Connecticut birds and climate change: Bergmann’s rule in the fourth dimension. *The Northeastern Naturalist* 19(2):323–334. [[LINK](#)]; [[PDF version](#)]
1. **McCoy, D. E.** and Norris, C.A. (2012) The Cranial Anatomy of the Miocene Notoungulate Hegetotherium mirabile (Notoungulata, Hegetotheriidae) with Preliminary Observations on Diet and Method of Feeding. *Bulletin of the Peabody Museum of Natural History* 53(2):355-374. [[LINK](#)]; [[PDF version](#)]

Invited Talks and Guest Lectures

Rhode Island School of Design (RISD): (Non)human Design(ers) <i>Guest lecture: Animal Minds</i>	January 12, 2025
Michigan State University, Symposium in Ecology, Evolution, and Behavior <i>Keynote Talk: Solar-Powered Animals</i>	May 2, 2024
Internal Conflicts and Organismal Adaptation STN <i>Immunology and Diseases of Pregnancy</i>	April 18, 2024
Beyond Center for Fundamental Concepts in Science at ASU <i>Thinking Beyond Series: Physics Lecture.</i>	Nov. 27, 2023
University of Illinois, Colloquium in Evolution, Ecology, and Behavior <i>Super Black and Solar-Powered Animals</i>	Sep. 22, 2023
Georgetown University, Advanced Topics in Evolution Course <i>Guest lecture. Host-symbiont conflict and coral bleaching.</i>	Sep. 18, 2023
Society for the Study of Evolution: Dobzhanky Prize Talk <i>Solar-Powered Animals</i>	July, 2023
Marine Biological Laboratory (MBL), Seminar	May 2, 2023
Arizona State University, Physics Seminar	Apr. 24, 2023
Massachusetts Institute of Technology, EAPS Department Lecture Series	Feb. 15, 2023

Harvard University School of Engineering and Applied Sciences <i>Climate and Energy Science & Technology Seminar Series</i>	Feb. 10, 2023
University of Chicago, Ecology and Evolution Seminar Series	Jan. 30, 2023
University of Wisconsin Milwaukee; Conservation Paleontology Course <i>Guest lecture. Conservation biology: coral reefs, city trees, and bio-inspired design.</i>	Apr. 18, 2022
Stanford University, Rodolfo Dirzo Lab Meeting <i>Runaway bleaching in coral reefs (and other optical oddities in nature)</i>	Apr. 1, 2022
The Nature Conservancy Dangermond Preserve; Capstone Thesis <i>Conservation of coral reefs, birds, and bugs: bio-inspired design and design-inspired bio.</i>	Feb. 28, 2022
Google Brain Research Team meeting. <i>Sensory perception across species: evolution and machine learning</i>	Jul. 31, 2020
The 28th First Annual IgNobel Prize Ceremony & Lectures; 24/7 Speech. <i>Super Black in Animals.</i>	2018
Harvard University, Ornithology Course Guest Lecture <i>Guest lecture. Structural Color in Birds</i>	2018
Harvard Museum of Natural History, Adult Class on Bird Coloration. <i>Color, Feathers, and the Evolution of Beauty</i>	2018
Harvard University, Vertebrate Viviparity Course <i>Guest lecture. Huddling: Conflict and Thermogenesis</i>	2017
Yale University, Leadership Forum: Careers, Life, and Yale.	2016
Yale Peabody Museum of Natural History. Verrill Medal Symposium, <i>The Value of Museum Collections</i>	2016
University of Zurich, Afternoon Seminars <i>Conflict in Evolution: Thermoregulation to sexual selection</i>	2016
Harvard University, Mind, Brain, and Behavior Open Science Conference <i>Super Black</i>	April 21, 2016
University of Oxford, St. Hilda's College Greenfeast Environmental Festival <i>Connecticut Birds and Climate Change: Bergmann's Rule in the Fourth Dimension.</i>	2014
Yale National University of Singapore Launch; Leadership Forum. <i>One of four panelists speaking to the inaugural class of the Yale National University of Singapore.</i>	2014
Yale Peabody Museum, Leadership Council Presentation <i>Invited to present to assembled financial sponsors, curators, professors, and the board of directors of the Yale Peabody Museum.</i>	2014

Conferences

Keynote and Prize Talks

McCoy, D. E., Haig, D, and Kotler, J. Egg donation and gestational surrogacy: why pregnancy is riskier with an unrelated embryo. Tenth Annual Meeting of the

International Society for Evolution, Medicine, and Public Health. Nashville, Tennessee, USA. July 2025.

Organizing Symposia

“Photosynthesis across the tree of life: symbiosis, photonics, and evolution.” Society of Naturalists Standalone Meeting (Asilomar, Pacific Grove). January 6-10, 2023.

Session Chairing

Conservation Biology, Session Chair. Botany Annual Meeting (virtual). July 21, 2021.

Reproductive Biology, Session Chair. Evolution Annual Conference (virtual). June 23, 2021

Judging

Society for Integrative & Comparative Biology 2021, Best Student Presentation Award. Botany Division.

Research Talks and Presentations

McCoy, D.E. Game theory and conflicts in coral reef symbioses. *New Mathematical Theory in Eco-Evolutionary Modeling of Host-Symbiont Communities 26w5607*. February 8-13, 2026. BIRS, Banff, Canada.

McCoy, D. E., Johnsen, S. Palumbi, S., and Dionne, J. Biophotonics of “runaway bleaching” in coral reefs. *Society for Integrative and Comparative Biology*. January 2023.

McCoy, D.E., Burns, D.H., Klopfer, E., Herndon, L.K., Ogunlade, B., Johnsen, S., Dionne, J.A. Windows in a clamshell: heart cockles transmit sunlight for photosynthesis with natural fiber-optic cables and condensing lenses. *Society for Integrative and Comparative Biology*. January 2023.

McCoy, D.E., Goulet-Scott, B., Meng, W., Atahan, F., Kiros, H., Nishino, M., & Kartesz, J. (2022). More than 5 million city trees across 63 US cities: data science for sustainable cities. *Gear-Up for Science Data (Stanford Libraries and Lane Medical Library)*. October 14, 2022.

McCoy, D.E., Burns, D.H., Klopfer, E., Herndon, L.K., Ogunlade, B., Johnsen, S., Dionne, J.A. Windows in a clamshell: how natural fiber optic cables and condensing lenses transmit sunlight for photosynthesis. *Stanford Bio-X Interdisciplinary Initiatives Seed Grants Symposium and Poster Session*. August 26, 2022. [[LINK](#)]
- Poster award (\$1000)

McCoy, D.E., Goulet-Scott, B., Meng, W., Atahan, F., Kiros, H., Nishino, M., & Kartesz, J. City Tree Communities Across the USA: Urban Ecology and Biodiversity. *Botany Annual Meeting* (virtual). January 5, 2022.

- McCoy, D. E.**, Schiestl, M., Neilands, P., Hassall, R., Gray, R. D., & Taylor, A. H. New Caledonian Crows are Optimistic After Tool Use. *Animal Behaviour Live Online Meeting*; November 19, 2021.
- McCoy, D.E.**, Goulet-Scott, B., Meng, W., Atahan, F., Kiros, H., Nishino, M., & Kartesz, J. (2021). City Tree Communities Across the USA: Urban Ecology and Biodiversity. *Botany Annual Meeting* (virtual). July 21, 2021.
- McCoy, D.E.**, Utter, D., & Haig, D. Pregnancy is an arms race: Primates, horses, and health consequences. *Evolution Annual Conference* (virtual). June 23, 2021.
- McCoy, D.E.**, Shultz, A.J., Vidoudez, C., van der Heide, E., Trauger, S.A., & Haig, D.A. (2019). "The Corruption of Honest Signals: Mate Choice in Red Birds, Pregnancy, & the SAT" *Society for Integrative and Comparative Biology Annual Meeting*. January 3-7, 2019. Tampa, FL.
Finalist: Huey Award for best student paper (Division of Ecology and Evolution)
- McCoy, D. E.**, McCoy, V. E., Mandsberg, N. K., Shneidman, A. V., Aizenberg, J., Prum, R. O., & Haig, D. (2019) "Structurally assisted super black in colorful peacock spiders" (Poster). *Evolution Meeting*. June 21-25, 2019. Providence, RI.
- McCoy, D.E.**, Shultz, A.J., Vidoudez, C., van der Heide, E., Trauger, S.A., & Haig, D.A. (2019). "Microstructure matters: amplifiers of carotenoid signals in Tanagers." *Fourth Annual Boston Area Bird Meeting*. January 24, 2019. Cambridge, MA.
- McCoy, D.E.**, Shultz, A.J., Vidoudez, C., van der Heide, E., Trauger, S.A., & Haig, D.A. (2017). "Red velvet and neon yellow: vivid color from pigment and structure in the *Ramphocelus* tanagers." *The 135th Meeting of American Ornithology*. July 31-August 5, 2017. East Lansing, MI.
- McCoy, D.E.** and Prum., R.O.(2016). "Super black feathers: structure, perception, and a proposed sensory bias." Conference on Comparative Cognition. April 13-16, 2016. Melbourne, FL.
- McCoy, D.E.** (2012). "Biogeography of Sociality in Terrestrial Vertebrates". *Yale Ecology and Evolutionary Biology Senior Research Symposium*
- McCoy, D.E.** (2012). "Theory of Mind in Rhesus Macaques" *Caribbean Cayo Santiago Primate Research Center*
- McCoy, D.E.** (2012). "A Drumlin Marmot: Behavioral Syndromes in the Yellow-Bellied Marmot" *Rocky Mountain Biological Laboratory Symposium*, Gothic, CO.
- McCoy, D.E.** and Norris, C. (2011). "Was Hegetotherium a 'Mammalian Woodpecker?'" *Yale Engineering & Science Weekend* (presentations to newly admitted science students)

White Papers and Public Comments

- Cattaneo, L, **McCoy, D.E.**, Matchett, J., Pollack, E., and Saltzman, V.. (2020). *Waste-to Energy and Community Resiliency: Quapaw Nation, OK*. Harvard Law School; Climate Solutions

Living Lab. Available at <http://clinics.law.harvard.edu/environment/files/2019/05/Team-2-Quapaw-Imp.Plan-FS-FINAL-reduced-size.pdf>

McCoy, D.E., Meeks, A., Clark, A., Gersony, J., Edelman, N. and Goulet, B. (2017) *Public comment on the Department of the Interior (DOI) Notice: Review of Certain National Monuments Established Since 1996*. Available at

<https://www.regulations.gov/document?D=DOI-2017-0002-780036>

Goulet, B., Wilkin, H., Lai, P., Gersony, J., Treibergs, K., **McCoy, D.E.**, and Edwards, M. (2017). *Public comment on the Bureau of Ocean Energy Management (BOEM) Notice: Environmental Impact Statements; Availability, etc.: 2019-2024 Draft Proposed Outer Continental Shelf Oil and Gas Leasing Program*. Available at:

<https://www.regulations.gov/document?D=BOEM-2017-0074-21028>

McCoy, D.E., Meeks, A., and Ross, A. (2017). *Public comment on the U.S. Department of State (DOS) Notice: Environmental Impact Statements; Availability, etc.: Proposed Enbridge Energy, Limited Partnership Line 67 Expansion Project*. Available at

<https://www.regulations.gov/document?D=DOS-2017-0009-0305>

Research Work/Internships

Research Assistant, Corporate Environmental Management. Oxford University, UK. 2014-15
Smith School of Enterprise and the Environment, with Professor Gordon Clark.

Research Assistant, Environmental Policy. Oxford University, UK. 2014-15
Blavatnik School of Public Policy, with Dr. Thomas Hale.

Curatorial Assistant, Vertebrate Paleontology. Yale University, New Haven, CT. 2009-13
With Dr. Chris Norris.

Intern at the National Aviary, Pittsburgh, PA 2010
Conservation, outreach, behavior, natural history, & training.

TEACHING & MENTORSHIP

Teaching Experience

University of Chicago & Marine Biological Lab September Term, 2026
BIO [number TBD]: Light and Color in the Ocean

Stanford University Biosciences Fall 2023
BIOS 273: Ethics and Justice at the Frontiers of Conservation Biology

- *Mini-course in a long weekend workshop format*
- *Primary instructor and co-course designer*

Harvard Law School
Climate Solutions Living Lab (Professor Wendy Jacobs) Spring 2020

- *Teaching Assistant, focusing on climate change and biochemical processes.*

- *Enrollees from business, law, policy, and public health schools.*
- *Directly supervised Carbon Crop Credit team (financial instrument to pair carbon offsets with agricultural emissions reductions via cover crops)*

Harvard University (Faculty of Arts and Sciences)

- GenEd 1084: The First Nine Months (Professor David Haig) Spring 2020
- *Head Teaching Fellow, managed team of 5 teaching fellows*
 - *Designed and led section discussions*
- OEB 101: Biology of Mammals (Professor Jonathan Losos) Fall 2017
- *Teaching Fellow; led lab section; helped write exams*
- OEB 114: Vertebrate Viviparity (Professor David Haig) Spring 2017
- *Teaching Fellow; led section; wrote exam*

Harvard University January-Term

- How to Make a Book: From the Evolution of Writing to Movable Type January 2016
- *Designed and taught a 3-week course*

University of Oxford, Said Business School

- Corporate Environmental Management (Professors Alex Money and Gordon Clark) Spring 2015
- *Teaching Assistant; led section; guest lectured*

University of Oxford, Centre for the Environment

- Corporate Environmental Management (Professor Gordon Clark) Fall 2014
- *Teaching Assistant; led section*

Mentoring Experience

- Research Mentor, Senior Project in Biology (Dawson High School)** 2024
Sukirthan Namachivayam, high school senior. Project: Coral bleaching and PAM fluorimetry.
- Research Advisor, Materials Science Undergraduate Research Fellowship (Stanford University)** 2023
Amiri Nasari Tate, undergraduate. Project: Light stress and bleaching risk in Palauan corals.
- Research Advisor, Biology Summer Research Project (Stanford University)** 2023- present
Lynn Gu, undergraduate at Berkeley. Project: The coevolution of hormones and receptors in mammalian pregnancy.
- Harvard Resident Advisor (Adams House Tutor)** 2016-2021
Live-in social and academic advisor for sophomores through seniors. Academically advised 6 sophomores per year; mentored students as they apply for science PhDs, post-graduate fellowships, jobs, and more; provided social programming and welfare support to 30 students each year.
- NSF REU Advisor, Organismic and Evolutionary Biology (Harvard University)** 2020
Furkan Atahan, undergraduate. Project: City trees across the USA: native species,

biodiversity, and equity. Paper published in *eLife*.

FDR Foundation Summer Research Advisor (Harvard University) 2020

Fellowship program for students of highest financial need. Hana Kiros, undergraduate.

Project: City trees across the USA: native species, biodiversity, and equity. Paper published in *eLife*.

Environmental Policy Summer Research (Harvard University) 2020

Wooddynne Dejeanlouis, undergraduate: Project in preparation for publication:

Anaerobic digestion: waste-to-energy as a backstop for intermittent renewables.

Senior Thesis Adviser, Integrative Biology (Harvard University) 2019-20

Justina Hewitt, undergraduate: Thermoregulation and Sociality in Ground Squirrels.

Justina received a Harvard Teacher Fellowship to teach Biology.

Term-time Research Advisor, Integrative Biology (Harvard University) 2017-18

Emma van der Heide, undergraduate: Microstructures amplify carotenoid plumage

signals in colorful tanagers. Paper published in *Scientific Reports*.

ZLR Valeon Tutor. 2015-17

Mentor talented Chinese students as they consider graduate programs in Environmental

Studies and Biology in the USA.

Freshman Counselor Program, Yale University. 2012-13

Mentor and residential advisor for 16 first-year undergraduates.

LEADERSHIP, SERVICE, AND OUTREACH

Academic Service: International

Global Rhodes Scholarship Preselection Committee 2025-present

Review 6 written applications and interview 5-7 candidates from countries not represented in country-specific Rhodes contests.

Rhodes Scholarship China Preselection Committee 2017-present

Interview 6-10 candidates for the Rhodes Scholarship from China

Reviewer 2013-present

Proceedings of the National Academy of Sciences; Physical Review E; Current Biology; Proceedings of the Royal Society B.; Nature Communications; American Naturalist; Evolution, Medicine, and Public Health; Biological Journal of the Linnean Society; Journal of Animal Ecology; Current Zoology; Journal of Vertebrate Biology; Frontiers in Marine Science; Biological Reviews; Biology Letters; Royal Society Open Science; Human Fertility; Journal of Assisted Reproduction and Genetics; Current Research in Behavioral Sciences; PRE

Evolution Community Resources for Early Career Researchers; Policy Panel 2020

Volunteer Code of Conduct Monitor

Academic Service: University

- DEI Taskforce Member (Stanford Materials Science)** 2023-present
Participate in one or more subgroups, including planning the Rising Stars Symposium for the academic year 2023-2024.
- Rhodes and Marshall Preselector Interviewer** 2023-present
Interview Stanford University candidates.
- DEI Taskforce Facilitator (Stanford Materials Science)** 2021-2023
Facilitator; set agenda for and host monthly meetings, apply for funding, field community questions, and report progress at town halls twice annually.
- Fellowships Adviser for Undergraduates** 2016-present
Mentor, mock interview, and write letters for students applying for post-grad. fellowships.
Of my ~80 advisees to date, more than 35 have won high-profile fellowships and prizes including 2 Rhodes Scholarships, 1 Marshall Scholarship, 4 Fulbright Awards, a Churchill Scholarship, and a Schwarzman Scholarship.
- Ashford Fellowship Coordinating Intern** 2017-2019
Organized social events for Ashford fellows at Harvard.
- Oxford University Course Policy Committees** 2013-15
Student representative on Joint Consultative Committee (Environmental Policy course matters), Postgraduate Research Course Forum, MSc Committee, and Taught Course Forum.
- Rhodes Service and Leadership Committee: Student Representative** 2013-14
Designed and structured programming to encourage and foster service and leadership in all different forms among the Rhodes community. Spoke to assembled benefactors reporting on progress.
- Yale College Task Force on Alcohol and Other Drugs** 2013
One of five undergraduate members. Submitted final report to Dean Mary Miller and presented findings to the Council of Trustees.

Policy Activities

- CovidLoanTracker for Small Business Loans** 2020
www.covidloantracker.com/
Volunteer Data Scientist: visualization, analysis, website design.
- Crowd-sourced effort to track the disbursement of government loans to small businesses during the covid19 crisis.
 - Received survey replies from >30,000 small businesses, received news coverage in [CNN](#), [NBC Miami](#), [Business Insider](#), [Forbes](#), the [LA Times](#), and more.

Harvard GSAS Environmental Action Team¹

2016-2021

<https://www.facebook.com/HarvardGrEAT>

Co-founder and President 2016-2019, Executive Board 2020.

- Graduate students for environmental justice. Averaging three focal topics per semester, we encouraged graduate students to use their research skills for good and become engaged citizens.
- Wrote and submitted multiple public comments to Regulations.gov on oil and gas leasing, the preservation of wild lands, and more. Partnered with the Harvard Law School Emmett Environmental Policy Clinic
- Hosted multiple letter-writing, text-banking, and phone-banking advocacy sessions
- Wrote the [Harvard Against Solitary Confinement](#) petition (over 400 signatures) and submitted it to legislators; prompted Representative Denise Provost to submit a proposed amendment to the Massachusetts omnibus criminal justice bill

Harvard Votes Challenge

2018

Co-chair, Graduate School of Arts and Sciences

Nonpartisan initiative to get out the vote at Harvard. Tabled, flyered, hosted social events.

Popular Press Articles

McCoy, D.E. and M. Sharp (May 9, 2022). "Why abortion is health care." *Slate*. Available at <https://slate.com/technology/2022/05/abortion-access-health-care-pregnancy.html>

McCoy, D.E. (December 14, 2021). "Convergent optical illusions in colourful creatures." *Functional Ecology Blog*. Available at: <https://functionalecologists.com/2021/12/14/convergent-optical-illusions-in-colourful-creatures/>

Mastroianni, A. and McCoy, D.E. (May 17, 2018) "Countries with Less Gender Equity Have More Women in STEM--Huh?" *Scientific American*. Available at: <https://blogs.scientificamerican.com/voices/countries-with-less-gender-equity-have-more-women-in-stem-huh/>

McCoy, D.E. (January 9, 2018). Super-black feathers can absorb virtually every photon of light that hits them. *The Conversation*. Available at: <http://theconversation.com/super-black-feathers-can-absorb-virtually-every-photon-of-light-that-hits-them-89689>

Edelman, N.B., Goulet, B., and McCoy, D.E. (October 27, 2017) Ecologically Critical National Monument Lands are Under Attack. *Harvard Crimson*. Available at: <https://www.thecrimson.com/article/2017/10/27/ecologically-critical-under-attack/>

¹ Formerly named the GSAS Action Coalition.

- Hollingsworth, L.R., Veeraraghavan, P., Wu, K.J., **McCoy, D.E.**, Van Dervort, A., and Gunther K.E. (December 1, 2017). Letter: Speak out against tuition waiver taxes. *Science*. Available at: <http://science.sciencemag.org/content/358/6369/1395.1>
- Kolb, R. and **McCoy, D.E.** (August 3, 2017) "Gene-editing tool raises questions about what is 'disease'." *San Francisco Chronicle*. Available at: <https://www.sfchronicle.com/opinion/openforum/article/Gene-editing-tool-raises-questions-about-what-is-11732894.php>
- McCoy, D.E.** (June 2, 2017). Pittsburgh isn't the city you think it is, Mr. President. *PennLive*. Available at: https://www.pennlive.com/opinion/2017/06/pittsburgh_isnt_the_city_you_t.html
- McCoy, D.E.** (February 17, 2017). Climate & business: Letter to the Editor. *Pittsburgh Tribune Review (TribLive.com)*. Available at: <http://triblive.com/opinion/letters/11939678-74/climate-business-coal>
- McCoy, D.E.** (September 25, 2011). In Praise of the Peabody. *Yale Daily News*. <https://yaledailynews.com/blog/2011/09/25/mccoy-in-praise-of-the-peabody/>

Scientific Outreach

- "Super Black Feathers with Dakota McCoy." (2021). Specimen Stories Podcast Interview, Klara Norden. <https://anchor.fm/klara-norden/episodes/1--Super-black-feathers-with-Dakota-McCoy-e16hqj6/a-a6e2f0g>
- Boston Museum of Fine Art: Art-Science Collaboration. (2018). Jason Chase developed three pieces of art using Singularity Black, a super black structural paint developed by NanoLab. Boston, MA. Viewable at <https://www.jasonchase.com/singularity-black-art>
- "Love is a Battlefield." (2018). Veritalk Podcast Interview, Harvard Graduate School of Arts and Sciences. Cambridge, MA. Available at <https://www.iheart.com/podcast/256-veritalk-43086282/episode/plumage-episode-1-love-is-a-44831286/>
- "Super Black." (2018). Presentation with Harvard Project Teach, Harvard Museum of Natural History. Cambridge, MA.
- Science in the News Public Presentation: "Super Black Birds and Spiders: Conflict in Evolution." (2018). Cambridge, MA. Available at <http://sitn.hms.harvard.edu/seminars/2018/may-2-super-black-birds-spiders-snakes/>
- Host, Op-Ed Writing Workshop for Scientists. (2018). Designed and led workshop for graduate students with science writer Madeline Drexler, supported by Harvard Integrated Life Sciences. Cambridge, MA.
- Paid Science Blogger at passle.net, focusing on the environment, animal cognition, and evolution. (2014-15). Oxford, UK. More than 11,000 post views and 2,400 shares
- Peabody Museum Public Outreach Programs. (2009-13). Annually recurring events, e.g., Meet the Scientist Dino Days (hands-on demonstrator), Paleo-Knowledge Bowl (judge & question writer).

OTHER

Media Coverage

Coral Reefs

- **The Economist:** Bivalve Broadband: Heart-cockle shells may work like fibre-optic cables <https://www.economist.com/science-and-technology/2024/10/28/heart-cockle-shells-may-work-like-fibre-optic-cables>
- **NPR:** What a mollusc shell and fiber optic cables have in common. <https://www.npr.org/2024/11/23/nx-s1-5199634/heart-shaped-mollusc-shell-resembles-fiber-optic-cables>
- **Eco Magazine:** A deep dive into the unique structure of cockle clams. <https://ecomagazine.com/news/research/a-deep-dive-into-the-unique-structure-of-cockle-clams/>
- **Science News:** Nature's first fiber optics could light the way to internet innovation. <https://www.sciencenews.org/article/clam-fiber-optics-symbiotic-algae>
- **Duke Today:** To build better fiber optic cables, ask a clam. <https://today.duke.edu/2024/12/build-better-fiber-optic-cables-ask-clam>

Super Black Birds

- **New York Times;** Ultra-Black Is the New Black <https://www.nytimes.com/2019/11/11/science/black-fashion-physics-animals.html>
- **Scientific American:** Back to Black: How Birds-of-Paradise Get Their Midnight Feathers <https://www.scientificamerican.com/article/back-to-black-how-birds-of-paradise-get-their-midnight-feathers/>
- **Audubon:** Birds-of-Paradise Have Feathers That Act Like Black Holes <https://www.audubon.org/news/birds-paradise-have-feathers-act-black-holes>
- **The Atlantic:** Super-Black is the New Black <https://www.theatlantic.com/science/archive/2018/01/super-black-is-the-new-black/549869/>
- **Science:** 'Superblack' bird of paradise feathers absorb 99.95% of light <https://www.sciencemag.org/news/2018/01/superblack-bird-paradise-feathers-absorb-9995-light>
- **Wired:** The World's Most Metal Bird Makes Darkness Out of Chaos <https://www.wired.com/story/the-worlds-most-metal-bird-makes-darkness-out-of-chaos/>
- **Gizmodo:** These Birds Evolved Feathers So Dark, They're Like A 'Black Hole' <https://gizmodo.com/these-birds-evolved-feathers-so-dark-they-re-like-a-b-1821906446>

- **Inside Science:** BRIEF: For Birds of Paradise, Super-Black Feathers Make Bright Spots Shine <https://www.insidescience.org/news/brief-birds-paradise-super-black-feathers-make-bright-spots-shine>
- **Smithsonian:** Scientists Shine New Light on the Blackest Black Feathers <https://www.smithsonianmag.com/smart-news/scientists-shine-new-light-birds-super-black-feathers-180967796/>

Super Black Peacock Spiders

- **Science News:** Peacock spiders' superblack spots reflect just 0.5 percent of light <https://www.sciencenews.org/article/peacock-spiders-superblack-spots-reflect-just-05-percent-light>
- **National Geographic:** How peacock spiders use optical illusions to woo females <https://www.nationalgeographic.com/animals/2019/05/peacock-spiders-black-females-courtship/>
- **Harvard Gazette:** Researchers eye flashy coats of peacock spiders in pursuit of new solar products. <https://news.harvard.edu/gazette/story/2019/07/researchers-eye-flashy-coats-of-peacock-spiders-in-pursuit-of-new-solar-products/>
- **Smithsonian Mag:** A Nanoscale Light Trick Is the Key to Peacock Spiders' Super-Black Spots <https://www.smithsonianmag.com/smart-news/peacock-spiders-use-nanotech-produce-their-superblack-spots-180972200/>

New Caledonian Crows

- **BBC CrowdScience:** Why am I good at jigsaw puzzles? <https://www.bbc.co.uk/sounds/play/w3ct5rj4>
- **Sci-News:** New Caledonian Crows Enjoy Using Tools, Study Finds <http://www.sci-news.com/biology/new-caledonian-crows-enjoy-using-tools-07529.html>
- **Inside Science:** Using Tools Puts Crows in a Good Mood <https://www.insidescience.org/news/using-tools-puts-crows-good-mood>
- **ABC News:** Crows really enjoy using tools, researchers find <https://abcnews.go.com/Technology/crows-enjoy-tools-researchers-find/story?id=64739159>
- **BBC:** Crows could be the smartest animal other than primates <https://www.bbc.com/future/article/20191211-crows-could-be-the-smartest-animal-other-than-primates>
- **Natural History Magazine:** Animal Optimism <https://www.naturalhistorymag.com/samplings/263719/animal-optimism>
- **Harvard Magazine:** Crows Know How to Have Fun <https://www.harvardmagazine.com/2019/08/crows-know-how-to-have-fun>
- **Phys.org:** After using tools, crows behave more optimistically, study suggests <https://phys.org/news/2019-08-tools-crows-optimistically.html>

- **Harvard Gazette:** At Home with Harvard: The Secret Lives of Animals
<https://harvardmagazine.com/2020/05/at-home-with-harvard-the-secret-lives-of-animals>

Deceptive Tanagers

- **New York Times:** Some Male Birds Fly Under False Colors to Attract Mates, Study Suggests <https://www.nytimes.com/2021/04/21/science/birds-tanagers-mating-color.html>
- **Forbes:** Brilliant 'SuperRed' Feathers Are Created By More Than Just Pigments <https://www.forbes.com/sites/grrlscientist/2020/09/29/brilliant-superred-feathers-are-created-by-more-than-just-pigments/#1e5dfd33ae1f>
- **The Society for Integrative and Comparative Biology:** The Devil Wears Prada: Birds have Designer Cheats to Make the Bland Look Beautiful <https://sicb.burkclients.com/students/2019/hensley.php>

City Trees

- **eLife Digest:** More naturally occurring trees and less clustering could benefit urban forests <https://elifesciences.org/for-the-press/4dc2e673/more-naturally-occurring-trees-and-less-clustering-could-benefit-urban-forests>

Biomimetics

- **SPIE:** Biomimetics: The sincerest form of flattery <https://spie.org/news/photonics-focus/septoct-2024/taking-cues-from-nature>

Skills & Interests

- Computer science: familiar with Lumerical, COMSOL, Python, and R; some experience with Matlab
- Music: 9 years of a cappella singing, including 3 CDs and international tours (past groups: [VoiceLab](#), [The New Blue](#), [Whim 'n Rhythm](#))
- Running and Sports: Yale Varsity Track & Field, top ten all-time at Yale in javelin throw and 60m hurdles, varsity starter in 400m hurdles, 100m hurdles, 4x400m relay; Capital One Academic All-American Division I women's track and field: second team (2013). Capital One First Team Academic All-District I Women's Track & Field team (2011, 2013).
- Egyptian hieroglyphics
- Bookbinding (affiliated with the Bow & Arrow Press)

Rap Music Discography

Backup Dancer. La Perla, Puerto Rico, USA. 2012

Uncredited appearance as backup dancer in music video by Puerto Rican reggaeton artist Audi.