

# MARY CASWELL STODDARD

ASSISTANT PROFESSOR • DEPARTMENT OF ECOLOGY AND EVOLUTIONARY BIOLOGY  
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## EDUCATION

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- PhD 2012 **University of Cambridge, Cambridge, UK, Marshall Scholar**  
PhD in Zoology, Graduated July 2012  
2012 Zoological Society of London Thomas Henry Huxley Award and Marsh Prize  
(top thesis in zoology in the United Kingdom)
- BS 2008 **Yale University, New Haven, CT, USA**  
*summa cum laude*, Intensive Bachelor of Science in Biology  
Phi Beta Kappa

## PROFESSIONAL APPOINTMENTS

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- July 2016 Assistant Professor at Princeton University, Department of Ecology and Evolutionary Biology  
2012-2016 Junior Fellow in the Harvard Society of Fellows, Harvard University

## CURATORIAL APPOINTMENTS

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- 2016-2021 Research Associate at the American Museum of Natural History (Ornithology)  
2015-2020 Curatorial Affiliate in the Division of Vertebrate Zoology, Yale University Peabody Museum of Natural History

## FELLOWSHIPS AND GRANTS

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- 2016 Wissenschaftskolleg (WiKo) Institute of Advanced Studies, Berlin, Germany: ***Animal Coloration Focus Group***
- 2015 L'Oréal International Rising Talents Fellow (1 of 15 internationally)
- 2013 L'Oréal USA For Women In Science Fellowship and Research Grant (1 of 5 in USA)
- 2013 Harvard Milton Fund Award
- 2013 Harvard University Faculty Aide Award to support undergraduate research projects
- 2012-2016 Harvard Society of Fellows
- 2012 National Science Foundation Postdoctoral Research Fellowship in Biology: Intersections of Biology and Mathematical and Physical Sciences (*declined*)
- 2008-2012 Marshall Scholar  
National Science Foundation Graduate Research Fellow
- 2010 International Society for Behavioral Ecology Travel Grant
- 2008 Hanne and Torkel Weis-Fogh Fund Award
- 2007 Goldwater Scholar  
National Science Foundation Research Experience for Undergraduates Fellow
- 2004 National Merit Scholar

## AWARDS AND HONORS

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- 2016 ● Dobzhansky Prize, awarded by the Society for the Study of Evolution; delivered the Dobzhansky Prize Lecture at the SSE meeting in Austin, Texas
- 2016 ● Ned K. Johnson Young Investigator Award, given by the American Ornithologists' Union
- 2015 ● American Society of Naturalists Jasper Loftus-Hills Young Investigators Award
- 2015 ● Elected as 2015 Kavli Frontiers of Science Fellow by the National Academy of Sciences
- 2015 ● L'Oréal International Rising Talents Fellow (1 of 15 internationally)
- 2014 ● Cooper Ornithological Society Young Professional Award for outstanding contributions to ornithology
- 2013 ● L'Oréal USA For Women In Science Fellow (1 of 5 in the USA)  
Press release: <http://www.aaas.org/news/loréal-usa-and-aaas-honor-early-career-women-scientists>  
Video: <https://www.youtube.com/watch?v=So4LF-jifWQ>
- 2012 ● Winner of the Zoological Society of London Thomas Henry Huxley Award and Marsh Prize for best thesis in zoology in the United Kingdom
- 2011 ● Grand prize winner at the Cambridge Graduate School of Life Sciences Poster & Image Competition
- 2011 ● Best student presentation at the Association for the Study of Animal Behaviour Easter Conference
- 2009 ● Student presentation award at the American Ornithologists' Union annual meeting
- 2009 ● American Ornithologists' Union Marcia Brady Tucker Travel Award
- 2008 ● William Belknap Prize for Excellence in Biology (Highest Honors), Yale University
- 2008 ● Yamanaka Prize for Best Senior Thesis awarded by Peabody Museum of Natural History, Yale University
- 2008 ● Andrew Patterson Prize for Distinguished Contribution to Morse College, Yale University
- 2004 ● Delegate to the National Youth Science Camp

## PUBLICATIONS

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Google Scholar Profile: <http://scholar.google.com/citations?user=137o120AAAAJ&hl=en&oi=ao>

**Stoddard, M. C.**, E. H. Yong, D. Akkaynak, C. Sheard, J. Tobias and L. Mahadevan. 2017. Avian egg shape: Form, function and evolution. *Science* 365, 1249-1254. Covered by the [New York Times](#), [LA Times](#), [the Atlantic](#), [the Times](#), [Washington Post](#), [Smithsonian Magazine](#), [National Geographic](#), [Science](#), [NPR](#), [NPR Newstime](#), [Science Podcast](#), [BBC](#).

**Stoddard, M. C.** and M. E. Hauber. 2017. Color, vision and coevolution in avian brood parasitism. *Philosophical Transactions of the Royal Society B* 372, 20160339.

Caro, T.\*, **Stoddard, M. C.\*** and D. Stuart-Fox.\* 2017. Animal coloration research: why it matters. *Philosophical Transactions of the Royal Society B* 372, 20160333. \*All authors contributed equally to this article and as editors in the special theme issue, "Animal Coloration."

Caro, T.\*, **Stoddard, M. C.\*** and D. Stuart-Fox.\* 2017. Animal coloration: Production, Perception, Function and Application. *Philosophical Transactions of the Royal Society B* 372, 20170047. \*All authors contributed equally to this article and as editors in the special theme issue, "Animal Coloration."

Burns, K. J.\*, K. J. McGraw\*, A. J. Shultz\*, **M. C. Stoddard\***, and D. B. Thomas\*. 2017. Advanced methods for studying pigments and coloration using avian specimens. In: *Studies in Avian Biology: Emerging Frontiers*. \*All authors contributed equally to this article.

- Stoddard, M. C.**, K. Kupán, H. N. Eyster, W. Rojas-Abreu, M. Cruz-López, M. Alejandro Serrano-Meneses, C. Küpper. 2016. Camouflage and clutch survival in plovers and terns. *Scientific Reports* 6(32059).
- Johnstone, R. A., A. Manica, A. L. Fayet, **M. C. Stoddard**, M. A. Rodríguez-Gironés, and C. A. Hinde. 2016. Evidence for conditional cooperation: a response to Schlicht et al. *Behavioral Ecology*, 27(3), e6-e7.
- Mayani-Parás, F., R. M. Kilner, **M. C. Stoddard**, C. Rodríguez, and H. Drummond. 2015. Behaviorally induced camouflage: A new mechanism of avian egg protection. *The American Naturalist* 186:4.
- Stoddard, M. C.**, R. M. Kilner, and C. Town. 2014. Pattern recognition algorithm reveals how birds evolve individual egg pattern signatures. *Nature Communications*. DOI: 10.1038/ncomms5117. **Covered by Nature (“Patterned eggs fend off cuckoo usurpers”, 23 June 2014), Science (“Birds call fowl on cuckoo’s antics”, 20 June 2014), Smithsonian Magazine, ABC News, AAAS Science Update Radio.**
- Feeney W.E., **M. C. Stoddard**, R. M. Kilner, and N.E. Langmore. 2014. 'Jack of all trades' egg mimicry in the brood parasitic Horsfield's bronze-cuckoo? *Behavioral Ecology*: aru133.
- Ellis, J. C., S. M. Bogdanowicz, **M. C. Stoddard**, and L. W. Clark. 2014. Hybridization of a Lesser Black-backed Gull and Herring Gulls in Eastern North America. *Wilson Journal of Ornithology* 126: 338-345.
- Johnstone, R., A. Manica, A. Fayet, **M. C. Stoddard**, M. Rodríguez-Gironés, and C. Hinde. 2013. Reciprocity, turn-taking and conditional cooperation between great tit parents. *Behavioral Ecology* 25: 216-222.
- Hanley, D., **M. C. Stoddard**, P. Cassey, and P. Brennan. 2013. Eggshell conspicuousness in ground nesting birds: do conspicuous eggshells signal nest location to conspecifics? *Avian Biology Research* 6: 147-156.
- Stoddard, M. C.**, and R. M. Kilner. 2013. The past, present and future of ‘cuckoos versus reed warblers.’ *Animal Behaviour* 85: 693-699.
- Stourmaras, K. E., E. Lo, K. Böhning-Gaese, E. Cazetta, D. M. Dehling, M. Schleuning, **M. C. Stoddard**, M. J. Donoghue, R. O. Prum, and H. M. Schaefer. 2013. How colorful are fruits? Limited color diversity in fleshy fruits on local and global scales. *New Phytologist*.
- Mendes-Pinto, M. M., A. M. LaFountain, **M. C. Stoddard**, R. O. Prum, H. A. Frank, and B. Robert. 2012. Variation in carotenoid-protein interaction in bird feathers produces novel plumage coloration. *Journal of The Royal Society Interface* 9: 3338-3350.
- Prum, R. O., A. Fountain, J. Berro, **M. C. Stoddard**, and H. Frank. 2012. Molecular diversity, metabolic transformation, and evolution of carotenoid feather pigments in cotingas (Aves: Cotingidae). *Journal of Comparative Physiology B*: DOI: 10.1007/s00360-012-0677-4.
- Stoddard, M. C.** 2012. Mimicry and masquerade from the avian visual perspective. *Current Zoology* 58: 630-648.
- Stoddard, M. C.**, A. Fayet, R. M. Kilner, and C. Hinde. 2012. Egg speckling patterns do not advertise offspring quality or influence male provisioning in great tits. *PLoS ONE* 7: e40211. doi:10.1371/journal.pone.0040211.

**Stoddard, M. C.,** K. Marshall, and R. M. Kilner. 2011. Imperfectly camouflaged avian eggs: artefact or adaptation? *Avian Biology Research* 4: 196-213.

**Stoddard, M. C.,** and R. O. Prum. 2011. How colorful are birds? Evolution of the avian plumage color gamut. *Behavioral Ecology* 22: 1042-1052. **Covered by *Science* in Editor's Choice ("The Plumage Rainbow," 1 July 2011) and selected as a Faculty of 1000 "must-read."**

**Stoddard, M. C.,** and M. Stevens. 2011. Avian vision and the evolution of egg color mimicry in the common cuckoo. *Evolution* 65: 2004-2013. **Covered by BBC Earth and Science News, BBC Radio 5 Live, CBC Radio (Canada) and NPR (USA).**

**Stoddard, M. C.,** and M. Stevens. 2010. Pattern mimicry of host eggs by the common cuckoo, as seen through a bird's eye. *Proceedings of the Royal Society, Series B* 277: 1387-93. **Covered by BBC News Big Picture and the New York Times.**

Stevens, M., **M. C. Stoddard,** and J. P. Higham. 2009. Studying primate color: towards visual system-dependent methods. *International Journal of Primatology* 30: 893-917.

**Stoddard, M. C.,** and R. O. Prum. 2008. Evolution of avian plumage color in a tetrahedral color space: a phylogenetic analysis of New World buntings. *American Naturalist* 171: 755-776.

Ellis, J.C., **M. C. Stoddard,** and L. W. Clark. 2008. Breeding by a lesser black-backed gull (*Larus fuscus*) on the Atlantic coast of North America. *North American Birds* 61: 546-548.

## POPULAR ARTICLES

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**Stoddard, M. C.** 2017. Lesser is More: The True story of the First Lesser Black-backed Gull to Breed Successfully in North America. *BirdWatching Magazine*, June 2017 issue.

## EDITOR

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With Tim Caro and Devi Stuart-Fox, I served as **Guest Editor** for the 2017 theme issue "**Animal Coloration**" in *Philosophical Transactions of the Royal Society B*. All editors contributed equally.

## CONFERENCE PRESENTATIONS

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**Stoddard, M. C.** 2017. *Evolution*. Portland, Oregon, USA.

**Stoddard, M. C.** 2016. *North American Ornithological Congress*. Washington, D. C.

**Stoddard, M. C.** 2016. *Evolution*. Austin, Texas, USA

**Dobzhansky Prize Lecture: *A Multidisciplinary Perspective on the Evolution of Avian Eggs***

**Stoddard, M. C.** 2016. *Wissenschaftskolleg (WiKo) Institute of Advanced Studies*, Berlin, Germany.

**Stoddard, M. C.** 2015. *The 2015 Kavli Frontiers of Science Indo-U.S. Symposium at the National Academy of Sciences*. Irvine, California, USA.

**Invited symposium speaker: *The Biomechanical Basis of Animal Behavior***

**Stoddard, M. C.** 2015. *Evolution*. Guarujá, Brazil.

**American Society of Naturalists Young Investigator Award Symposium:  
*Mimicry, Recognition and the Evolution of New Phenotypes***

**Stoddard, M. C.** 2014. *American Ornithologists' Union*. Estes Park, Colorado, USA.

**Invited plenary speaker: *Avian vision and the coevolution of bird eggs.***

**Stoddard, M. C.** 2014. *International Ornithological Congress*. Tokyo, Japan.

**Invited keynote symposium speaker: *Avian brood parasitism - novel findings and new puzzles.***

**Stoddard, M. C., R. M. Kilner, and C. Town.** 2014. *International Society for Behavioral Ecology*. New York City, New York, USA.

**Stoddard, M. C., R. M. Kilner, and C. Town.** 2014. *Evolution*. Raleigh, North Carolina, USA.

**Stoddard, M. C.** 2013. *American Ornithologists' Union*. Chicago, Illinois, USA.

**Invited symposium speaker: *Physiological and functional advances in avian coloration.***

**Stoddard, M. C.** 2012. *International Symposium on Avian Brood Parasitism*. Hainan Normal University. Hainan, China. **Invited symposium speaker.**

**Stoddard, M.C.** 2011. *Animal Behavior Society*. Bloomington, Indiana, USA.

**Stoddard, M.C.** 2011. *Association for the Study of Animal Behaviour*. Cambridge, UK.

**Best student presentation.**

**Stoddard, M.C., and M. Stevens.** 2010. *International Society for Behavioral Ecology*. Perth, Australia.

**Stoddard, M.C., and R. Prum.** 2010. *International Ornithological Congress*. Campos do Jordão, Brazil.

**Stoddard, M.C., and M. Stevens.** 2010. *Association for the Study of Animal Behaviour*. Exeter, UK.

**Stoddard, M.C., and M. Stevens.** 2009. *American Ornithologists' Union*. Philadelphia, Pennsylvania, USA.  
**Student presentation award.**

**Stoddard, M.C., and R.O. Prum.** 2006. *North American Ornithological Conference*, New Insights on Avian Color session, Veracruz, Mexico.

## INVITED TALKS AND GUEST LECTURES

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**2017:** University of Washington

**2016:** Wissenschaftskolleg (WiKo) Institute of Advanced Studies, Berlin, Germany, Yale University, Tulane University

**2015:** University of Chicago, Yale University, University of Michigan, University of California – Santa Barbara, Stanford University, Princeton University, University of Massachusetts (Boston), Marine Biological Laboratory at Woods Hole

**2014:** University of Pennsylvania, University of New Hampshire, Shoals Marine Laboratory, Brown University, Cornell University, University of British Columbia, University of North Carolina, Dartmouth College

**2013:** Marine Biological Laboratory at Woods Hole, University of Massachusetts at Dartmouth, University of Texas at Austin, Shoals Marine Laboratory, University of Chicago, Queens College CUNY, Cornell University, Boston University

**2012:** University of Bern (Switzerland), University of Oxford and Edward Grey Institute of Field Ornithology (UK), Natural History Museum (UK)

**2011:** Harvard University, Marine Biological Laboratory at Woods Hole, University of Maryland, Baltimore County, Natural History Museum (UK)

## TEACHING EXPERIENCE

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EEB 329 Sensory Ecology (Fall 2016, Fall 2017)

EEB 504 Fundamental Concepts in Ecology, Evolution and Behavior (Fall 2016)

## SOFTWARE

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**EGGEXTRACTOR:** a Matlab-based computer tool for the analysis of egg sizes and shapes (Stoddard et al. 2017).

**TETRACOLORSPACE:** a Matlab-based computer tool for the analysis of reflectance spectra in avian tetrahedral color space (Stoddard & Prum 2008).

**NATUREPATTERNMATCH:** a computer vision tool for extracting and matching visual features (Stoddard, Kilner & Town 2014). See <http://www.naturepatternmatch.org/>.

**EDGEDETECTOR:** a low-level computer vision tool for extracting and quantifying edges in complex visual scenes (Stoddard et al. 2016).

## PROFESSIONAL SERVICE

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**NSF BIO Panelist 2017:** Wrote reviews of proposals prior to multi-day discussion, followed by the creation of panel summary reports.

**American Society of Naturalists Symposium Organizer:** *The Evolution of Species Interactions*. Evolution Meeting, Austin, Texas, June 2016. Co-organizers: Jesse Lasky and Marjorie Weber.

**American Ornithological Society:** Judge for the Young Professional Award (2015, 2016)

**Reviewer:** *Evolution*, *American Naturalist*, *Proceedings of the Royal Society B*, *Philosophical Transactions of the Royal Society B*, *Biology Letters*, *Biological Journal of the Linnean Society*, *Journal of Zoology*, *Evolutionary Ecology*, *PeerJ*, *Behavioral Ecology*, *Behavioral Ecology and Sociobiology*, *Integrative Zoology*, *Methods in Ecology and Evolution*, *Auk*, *Journal of Ornithology*, *Journal of Avian Biology*, *Avian Biology Research*, *Oecologia*, *Ostrich*, *Forktail*

**Ad-hoc grant reviewer:** National Science Foundation, National Geographic Society

## SCIENCE OUTREACH AND SERVICE

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**Princeton EEB Women in Science Partnership (EEB WiSP)**

Faculty Mentor (2016- )

**American Museum of Natural History, New York City (2016-2017)**

Research featured in the exhibit Dinosaurs Among Us

Exhibit: <http://www.amnh.org/exhibitions/dinosaurs-among-us/>

Video: [http://www.amnh.org/explore/science-bulletins/\(watch\)/bio/news/egg-patterns-identify-intruders](http://www.amnh.org/explore/science-bulletins/(watch)/bio/news/egg-patterns-identify-intruders)

**Rocky Mountain Biological Laboratory, Gothic, Colorado (2016)**

Seminar for undergraduates: “Communicating your science to the media: pros and cons”

**Harvard Women in Science and Engineering (2013-2016)**

Mentor to graduate women in science and engineering research programs

**Mentor and advisor, Harvard University, USA (2013-2016)**

Advisor to two undergraduate biologists, who have developed independent research projects to pursue in my lab. I applied for and received grants from Harvard University to help support their research.

**Iguazu Falls Civic Center, Argentina (2015)**

Presented public lecture entitled “How to Study Bird Coloration: From Feathers to Eggs” (July 2015)

**Harvard Museum of Natural History (2013-2014)**

Scientific instructor for three-hour “Nests! The Intriguing World of Avian Architecture” science and art seminar for adults (October 2014)

Scientific instructor for three-hour “Investigating the Science of Avian Coloration through Observational Drawing” seminar for adults (January 2014)

Instructor for three-hour “Eggs and Nests: Engineering and Evolution in the Avian World” seminar for adults (March 2013)

**American Museum of Natural History, New York City (2014)**

Research featured in Science Bulletins video displayed in the Hall of Biodiversity

**Monhegan Island Associates, A Non-profit Land Conservation Organization (2014)**

Presented public lecture entitled “The Gulls of Appledore Island, Maine: What Watching Birds Tells Us About Our Changing World” (July 2014)

**BBC News (2011-2012)**

Interviewed on BBC 5 Live Radio about cuckoo egg evolution (March 2011)

Guest presenter on BBC One Show “Monster Babies” filmed at the National Museum Cardiff, Wales (June 2011)

**Natural History Museum, London (2011-2012)**

Guest speaker at the “Nature Live” 2011 and 2012 talk series at the Natural History Museum, London  
Research featured in exhibit on “Behind the Scenes” research at the national egg collections, Natural History Museum in Tring (July 2011)

Guest scientist at “Science Uncovered” at the Natural History Museum in Tring (September 2011)

**Cambridge University Museum of Zoology (2008-2012)**

Year-round employee and volunteer

Helped design and run workshop on cuckoo evolution for the Young Zoologists Club

Helped organize the 2010 Cambridge University Science Festival (“Colourful Creatures”)

**Cambridge University Birding Society (2008-2010)**

Vice President

**Yale Ecology and Evolutionary Biology Undergraduate Group (YEEBUG) (2006-2008)**

Founder and President

**Peabody Museum of Natural History (2006-2008)**

Volunteer tour guide and events coordinator

MEDIA

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**Evolution of Egg Shape:** [New York Times](#), [LA Times](#), [the Atlantic](#), [the Times](#), [Washington Post](#), [Smithsonian Magazine](#), [National Geographic](#), [Science](#), [Forbes](#)

Listen: [Science Podcast](#), [BBC World Service](#), [NPR](#), [NPR Newstime](#), [Naked Scientist](#)

**Princeton University:** “Hatching a new hypothesis about egg shape diversity.”

<https://www.princeton.edu/news/2017/06/22/hatching-new-hypothesis-about-egg-shape-diversity>

**Science Magazine:** “Cracking the mystery of egg shape.” Featured infographic.

<http://vis.sciencemag.org/eggs/>

**Physics World:** “Cuckoo forgeries – a bird’s-eye view.” Feature article: Animal physics.

<https://lizkalaugher.files.wordpress.com/2017/01/pwjan17kalaugher.pdf>

**Harvard Gazette:** “Cracking the egg: Biologist collaborates across disciplines to yield insights on structure, color.” <http://news.harvard.edu/gazette/story/2015/06/cracking-the-egg/>

**AAAS Science Update Podcast.** 26 June 2014. “Fighting counterfeit eggs.”

Listen: <http://www.scienceupdate.com/2014/06/egg-2/>

**AAAS Science Update Podcast.** 7 July 2011. “Bird colors.”

Listen: <http://www.scienceupdate.com/2011/07/color/>

**AAAS Science Update Podcast.** 24 June 2011. “Birds of a feather.”

Listen: <http://www.scienceupdate.com/2011/06/podcast-for-24-june-2011/>

**CBC Radio “As It Happens.”** Broadcast in Canada and USA (NPR). 28 March 2011. “Cheating cuckoos.”

Listen: <http://www.cbc.ca/asithappens/episode/2011/03/28/monday-march-28-2011/>

**BBC Radio 5 Live.** 24 March 2011. “Cuckoo color mimicry as seen by birds.”