

SEEWIESEN

Max Planck Institute
for Ornithology



LECTURE SERIES

FALL/WINTER 2017/18



MAX-PLANCK-GESELLSCHAFT

THURSDAY | March 22, 2018 | 13 P.M. | HOUSE 4 LECTURE ROOM

DR. MARY CASWELL STODDARD (Cassie)

Princeton University | Host: Küpper Research Group

The Form and Function of Avian Eggs

The eggs laid by birds come in an extraordinary variety of shapes, sizes, colors and textures, despite the fact that they serve the same essential function: to nourish and protect a chick until it hatches. To investigate the form and function of avian eggs, I use a multidisciplinary approach, drawing on tools from math, computer vision, bioengineering and genomics. In this talk, I will show how analyzing eggs has revealed surprising insights into avian evolution and behavior. Egg shape, for example, is correlated with flight behavior, and eggshell pigmentation patterns encode the details of a coevolutionary battle between cuckoos and hosts. Overall, natural selection has tugged the egg phenotype in multiple directions to fashion a structure that can meet diverse mechanical, thermoregulatory and signaling demands.

WHO IS CASSIE STODDARD

2012 PhD University of Cambridge
2012 Junior Fellow in the Harvard Society of Fellows
2016 Assistant Professor at Princeton University

SELECTED PUBLICATIONS

Stoddard, M. C., E. H. Yong, D. Akkaynak, C. Sheard, J. Tobias and L. Mahadevan. 2017. Avian egg shape: Form, function and evolution. *Science* 6344: 1249-1254. DOI:10.1126/science.aaj1945.

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

Stoddard, M. C., K. Kupán, H. N. Eyster, W. Rojas-Abreu, M. Cruz-López, M. Alejandro Serrano-Meneses, C. Küpper. Camouflage and clutch survival in plovers and terns. 2016. *Scientific Reports* 6(32059).

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

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