

SEEWIESEN

LECTURE SERIES

FALL/WINTER 2018/19

Max Planck Institute
for Ornithology



MAX-PLANCK-GESELLSCHAFT

THURSDAY | February 14th, 2019 | 13.00 | HOUSE 4 LECTURE ROOM

KATE BUCHANAN

Deakin University | Host: Hau Research Group

Effects of early life on vocal communication

In wild animals - and also for humans, the start you receive in life has profound and long lasting impacts on your behaviour, physiology and fitness. I am fascinated by how early life experiences impact on avian cognition and development, particularly focusing on the trait of vocal communication. The development of the songbird brain and consequent song production is known to exhibit considerable plasticity in relation to environmental conditions. Whilst stimulation enables neural development and complex cognitive abilities to develop, environmental challenges cause stunting during periods of neural growth and reduce the capacity of animals to perform complex cognitive tasks. My work focuses particularly on the impact of developmental stress on neural control mechanisms and song output in a number of songbird species. Our recent work show that the mechanism not only involves volumetric changes in the embryonic brain, but also the capacity of this brain to learn new vocal signatures. We know that early developmental stress affects song within generations and my current work is testing the potential for such effects to be mediated across generations, both through environmental stress and parental communication. In recent years we have become interested in prenatal communication, the impact on the developing brain and its relevance for long term developmental programming in birds. Here, I will present the current research from my group addressing the effects of early life experience on neural development, behaviour and physiology in zebra finches.

WHO IS KATE BUCHANAN?

1989 BSc Hons Zoology Glasgow University, UK
1997 PhD Royal Holloway University of London, UK
1997-2001 Postdoctoral positions University of Stirling, UK
2001-2007 Research Fellowship, Royal Commission for the Exhibition of 1851 and Lectureship, Cardiff University UK
2008-2015 Associate/Professor in Animal Ecology and Behaviour Deakin University, Australia
2015 – present Australian Research Council Future Fellow and Professor in Animal Ecology and Behaviour Deakin University, Australia

SELECTED PUBLICATIONS

- Mariette, M.M., Pessato, A., Buttemer, W.A., McKechnie, A.E., Udino, E. Collins, R.N., Meillère, A., Bennett A.T.D. & Buchanan, K.L. (2018) Parent-embryo acoustic communication: a specialised heat vocalisation allowing embryonic eavesdropping. *Scientific Reports* (8) 17721.
- Bell B.A., M.L. Phan, A. Meillère, J.K. Evans, S. Leitner, D.S. Vicario & K.L. Buchanan (2018) Influence of early-life nutritional stress on songbird memory formation *Proceedings of the Royal Society London B* 285(1887). doi: 10.1098/rspb.2018.1270.
- Fanson, K.V., Z Németh, M. Ramenofsky, J. C. Wingfield and K. L. Buchanan (2017) Inter-laboratory variation in corticosterone measurement: Implications for comparative ecological and evolutionary studies *Methods in Ecology and Evolution* 00, 1-10; DOI: 10.1111/2041-210X.12821
- Mariette, M.M. and K.L. Buchanan (2016) Prenatal acoustic communication programs offspring for high post-hatching temperatures in a songbird. *Science* Vol. 353; 6301, pp. 812-814

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