Date: Tuesday 31 October, 2017
Time: 17:10 – 19:00
Room: Seminar Room

Challenging a textbook example of the status signalling hypothesis: the house sparrow

Presenting author: **Alfredo Sánchez-Tójar**

Authors: Alfredo Sánchez-Tójar[1,2], Shinichi Nakagawa[3], Moisès Sánchez-Fortún[1,4,5], Dominic Martin[2,6], Sukanya Ramani[1], Antje Girndt[1,2], Terry Burke[4], Julia Schroeder[1,2]

Affiliations: [1]Max Planck Institute for Ornithology, Seewiesen, Germany
[2]Department of Life Sciences, Imperial College London, Ascot, United Kingdom
[3]School of Biological, Earth and Environmental Sciences, University of New South Wales, Sydney, Australia
[4]Department of Animal and Plant Sciences, University of Sheffield, Sheffield, United Kingdom
[5]Department of Evolutionary Biology, Ecology and Environmental Sciences, University of Barcelona, Barcelona, Spain
[6]Biodiversity, Macroecology, and Conservation Biogeography group, University of Göttingen, Göttingen, Germany

Bird plumage is one of the most striking examples of colour and pattern diversity, and has attracted a large amount of research. The status signalling hypothesis explains variation in plumage between individuals of a species by suggesting that certain plumage traits are used to signal individual dominance status. The house sparrow (*Passer domesticus*) is a classic model species, where the size of a male's black bib is expected to signal dominance rank. However, the evidence is mainly from low-powered studies, mostly on captive birds. Here, we use multilevel meta-analytic (multi-regression) models to test if the status signalling hypothesis explains variation in bib size in male house sparrows. We tested the prediction that bib size is positively correlated with dominance rank. We identified studies testing this prediction in house sparrows, collected the estimates, and contacted authors to obtain the primary data used in published studies, and if available, unpublished data. Primary data allowed us to standardize the methodology for estimating dominance rank and bib size across studies. We obtained primary data for 7 of 13 previously published studies, together with data for 6 unpublished studies. The mean effect size was much lower and overlapped zero when unpublished studies were added ($Zr = 0.16$, 95%CrI: [-0.01, 0.41], N = 87 estimates) compare to when only published studies were analysed ($Zr = 0.45$, 95%CrI: [0.14, 0.68], N = 53 estimates). Additionally, we found evidence of time-lag bias as the mean effect size decreased with year of publication. Our results suggest that house sparrows may not constitute the best model species for the status signalling hypothesis. We discuss methodological issues (e.g. non-standardized methodology) that may have explained previous higher estimates, and urge more researchers to test this hypothesis experimentally, and to share unpublished data to avoid the file drawer problem (i.e. narrow-sense publication bias).