

## Session 9: Life History

### Keynote

Date: Thursday 2 November, 2017  
Time: 10:40 – 11:25  
Room: Seminar Room

## Layers of variance in the parental care of hole-nesting birds and what they might mean

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Many phenotypic traits vary at multiple scales, including within and among individuals. I will describe analyses arising from our 26-year and ongoing study of reproductive performance in House Sparrows, plus two studies on provisioning in great tits and pied flycatchers. In sparrows, various metrics of parental provisioning behaviour show complex patterns of within- and among-individual variance. This variance can be ascribed to three major sources: within-individual plasticity with vaguely known causes, among-individual variance in mean parental care, the causes of which are also unknown, and unexplained residual variance that may have its own within- and among-individual patterning. Parental care is responsive to several well-known factors, including brood size and nestling age. These two interact to affect care, do so differently for males and females, and at least for nestling age, individuals vary in responsiveness. Results from several types of brood manipulations, in sparrows and the other hole-nesting species, have begun to flesh-out the details of plasticity and the direct and indirect effects of behavioural shifts on residual variance. Manipulations of nestling age in house sparrows revealed rapid and symmetrical adjustments to multiple metrics of provisioning behaviour. Brood size manipulations in all three species have confirmed many previous studies but intersected some predictions from theory in odd ways. For example, the predicted effects of brood size manipulations may depend on subtle differences in the shapes of benefit and cost curves. In two recent studies, we uncovered major year effects, supporting this idea. In another example, we tested that the possibility that parents are managing stochastic variance when provisioning offspring, but we encountered difficulties because changes in mean provisioning trickled down to affect residual variances. These fine-grained shifts in the behaviour of parent birds provide new opportunities to learn more about both the mechanisms and functional consequences of plasticity and individuality.