

# NEWS FROM THE PERCY FITZPATRICK INSTITUTE

## Weight-watching Sociable Weavers – average is good!

Recently, one of the Institute's doctoral students completed a thesis investigating ways in which Sociable Weavers *Philetairus socius* interact with their environment.

The phenomenally large nests of Sociable Weavers are unique in the bird world. The huge nest mass is maintained and occupied by the whole colony throughout the year. The birds roost in the nest chambers at night, and they also sometimes return to the nest during the day to avoid the heat and/or predators. Thus, the nest structures are of fundamental importance to these birds for more than just breeding.

Mark Anderson and the Northern Cape Wildlife Society started a population study of Sociable Weavers in the early 1990s at the De Beers-owned Benfontein Game Farm in Kimberley. Rita Covas, born in Portugal and educated in France, spent four years (1998 to 2002) studying the Benfontein weavers. One of her key discoveries relates to the way in which body mass influences the survival of the birds.

It is generally accepted that post-fledging survival increases with increasing body mass, that is, 'fat' chicks survive better than 'skinny' ones. There might be advantages to being heavy, but there are also disadvantages to carrying extra weight. These costs are usually paid in the currency of predation. Birds that are heavier than average may spend more time feeding, placing them at risk from,



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*Sociable Weavers that are too thin or too fat are the most likely to die.*

for example, hawks for longer. Should a hawk arrive on the scene, the heaviest birds are not only the most valuable meals, but they may also have lower than average manoeuvrability. On the other hand, low body mass can also lead to reduced survival because of an increase in the risk of starvation, or because lighter birds have weakened immune systems and are more likely to die of disease.

The fundamental question, however, is not whether high or low body mass has costs, but whether these costs are great enough to be biologically important and to have evolutionary consequences.

Based on eight years of data, Covas was able to show that there are indeed real

survival costs for Sociable Weavers that are either lighter or heavier than the average bird. As a corollary, there is a strong survival advantage to an individual that stays within a relatively tight 'average' body mass range. Natural selection operates against individuals that fall outside this range, reducing both their numbers and their genetic input to the next generation. What makes this result particularly interesting is that an identical pattern linking weight to survival occurred in all years; in other words, there is an evolutionarily determined optimum weight for Sociable Weavers. Unexpectedly, this weight remains constant regardless of year-to-year changes in environmental

conditions – and these changes are considerable in the arid environments in which the weavers live.

Detailed, long-term population studies allow scientists to delve deeply into the mechanisms that drive the natural systems around us. From genetics to breeding cooperation and dispersal, the Sociable Weaver study is proving to be a gold-mine of new facts, theories and ideas. The FitzPatrick Institute plans to continue this study as a field laboratory for many future students. The Institute also gratefully acknowledges the contribution that Mark Anderson has made to this study, as well as the cooperation and logistical assistance of the De Beers Farms Division in Kimberley.

Visit the FitzPatrick website: <http://www.fitzpatrick.uct.ac.za>

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