ALBERT FRONEMAN

chilling IN THE desert?

Pygmy Falcons *Polihierax semitorquatus* are among the world's smallest raptors. An ornithological highlight of any visit to the Kalahari, these charming little birds roost in the vast communal nests of Sociable Weavers *Philetairus socius* and have been the subject of a long-standing mystery among desert ornithologists. During the 1980s in the then Kalahari Gemsbok National Park, Colin Sapsford measured the body temperatures of Pygmy Falcons he carefully removed from their roost chambers before sunrise on cold winter mornings. The falcons' body temperature was just 31 degrees Celsius, substantially lower than typical avian night-time values.

Sapsford's data strongly suggested that the falcons were using torpor, a phenomenon akin to short-term hibernation and common in birds such as hummingbirds, nightjars and mousebirds. Torpor serves primarily to save energy; by allowing body temperature to cool below normal levels, birds reduce the amount of metabolic fuel they need to survive a cold night. As torpor had never been reported in a raptor (nor has it been since), Sapsford's observations were potentially big news. Yet his findings have to a large extent been overlooked by researchers for the past 35 years, in part because they were published, with very few methodological details, in a small local journal.

Intrigued by Sapsford's findings, a team of researchers from the Fitztitute and the University of Pretoria set out to investigate further the possibility that Pygmy Falcons use torpor while roosting in winter. Working at Tswalu, we fitted falcons with transmitters that allowed us to remotely monitor their body temperature while they were roosting at night in Sociable Weaver nests. We then collected data over several weeks in midwinter, the time of year when torpor is most likely. The students on the project spent some rather long nights in their field vehicles recording signals from the transmitters!

Unexpectedly, we found zero evidence that any of the tagged falcons were entering torpor at night. All the birds in our study kept ticking along with a body temperature of 38–39 degrees and not once did we record any deviations from this pattern. What had been referred to as the 'falcon torpor project' in the lead-up to field work was re-dubbed the 'falcon non-torpor project' as we realised, with some chagrin, that these falcons were just not going to do what we had been expecting.

There are several possible explanations for the occurrence of torpor in Sapsford's study and the complete lack thereof in ours. One has to do with the prevailing conditions. Tswalu had good late-summer rains before our midwinter study and the consequent higher food availability may have meant that the falcons were under less pressure to reduce overnight energy demands than during a more typical winter. Another possibility is that falcons in the Nossob area are generally under greater pressure to use torpor to balance their energy budgets as this is a drier, climatically harsher part of the Kalahari than Tswalu. It seems that the mystery of torpor in Pygmy Falcons – and raptors more generally – is not going to be definitively answered just yet.

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Reference

Lund, J. et al. 2020. 'Winter thermoregulation in free-ranging pygmy falcons in the Kalahari Desert.' *Journal of Ornithology* doi: 10.1007/s10336-020-01755-y