Short Communications

Radiotracking a White-throated Needletail to Roost

Michael K. Tarburton

3 Freda Court, Blackburn South, Vic. 3130

EMU Vol. 93, 121-124, 1993. Received 22-4-1992, accepted 5-5-1992

Because swifts benefit by roosting (and nesting) at sites that provide an immediate vertical drop for take off, they tend to conduct these activities at inaccessible sites, which in many species have eluded human detection for many years. Common Swifts *Apus apus* roost in hollows of trees and buildings, high on walls or tree trunks, hanging in the foliage of trees, or they may spend the night on the wing (Berthet 1947; Lack 1956; Kaiser 1984; Holmgren 1987). Swiftlets *Aerodramus* spp. roost on the walls and roofs of caves (Tarburton 1986). Chimney Swifts *Chaetura pelagica* traditionally used hollow trees but now mostly use chimneys (Bent 1940). Short-tailed Swifts *Chaetura brachyura* nest and roost underground partway down the walls of manholes (Collins 1968) while swallow's nests on the sides of buildings are used by White-rumped Swifts *Apus caffer*.

Where White-throated Needletails *Hirundapus caudacutus* roost while visiting Australia and New Zealand has been a matter of conjecture for many years. Although Le Souëf (1907), Cayley (1959) and Simpson (1976) stated that the species clung to cliff faces, tree trunks or thick foliage at night, some later authors disagreed with these statements. Pizzey (1980) noted that although it has been occasionally seen to settle briefly on trunks of dead trees or in foliage, its roosting habits are not known. Others (Slater 1970; Cooper 1971; Rowley 1974; Pescott 1983) claimed the bird was either not known to land or did not need to land in Australia, except as a result of an injury. That the doubts about swifts roosting at terrestrial sites in Australia had swollen to acceptability is perhaps evidenced by the 1973 edition of Cayley being re-phrased to say that there were no definite records of either species of swift alighting in Australia. But this was reversed in the 1984 revision, by the statement that it has been recorded clinging at night to the face of cliffs, against the bark of large trees or in thick foliage. Blakers *et al.* (1984) were one step away from this extreme though common view by saying the species is thought to remain in the air during its time in Australia, though there are some instances of its roosting.

It is probably evidence from work done overseas on other species of swifts that has encouraged Australian authors to suggest that our swifts also spend the night on the wing. A study (Palomeque *et al.* 1980) on the Common Swift, Alpine Swift *Apus melba* and Pallid Swift *A. pallidus* showed that the oxygen collecting ability of their red blood cells was similar to montane birds living above 2500 m. Their haematocrit and haemoglobin concentrations were greater than most birds, being surpassed only by the highest values in hummingbirds, thus allowing them to spend the night at high altitudes, where until recently, they were not likely to collide with anything. A study on the Common Swift in Russia shows they do collide with planes at high altitudes in the middle of the night (Yakobi 1980).

I can find only two instances of the White-throated Needletail roosting in Australia. Shepherd (1902) observed one going to roost in the small branches of a messmate *Eucalyptus obliqua* at dusk. Wheeler (1954) records one landing on the trunk of a dead Mountain Ash *Eucalyptus regnans* in the Dandenong Ranges on a January evening. This lack of information and circumstantial evidence such as prey identification (Tyron 1908) indicating beetle species that fly only after sunset has also encouraged the idea that this species spent the night on the wing.

Outside of Australia there are claims that the birds roost in colonies in Sikkim, where they cling to rough rock surfaces of cliffs or inside the hollow boles of trees (Ali 1962). They nest inside hollow trees in Siberia (Neufeldt & Ivanov 1960), China (La Touche 1934), and Japan (Jahn 1942), though nesting on cliffs is also reported for Japan (Campbell 1900; La Touche 1934).

The first location of the Needletail's evening roosts by radiotracking resulted from the first successful attempt to catch swifts by the flip-net technique in Australia. This was one of several methods developed by Collins (1972) to catch swifts and swallows in central America. In December 1991, I and my son Kerrin travelled to Queensland hoping to catch and radiotrack swifts using the flip-net technique. On 28 December 1991, we located a flock of 310 Needletails flying low

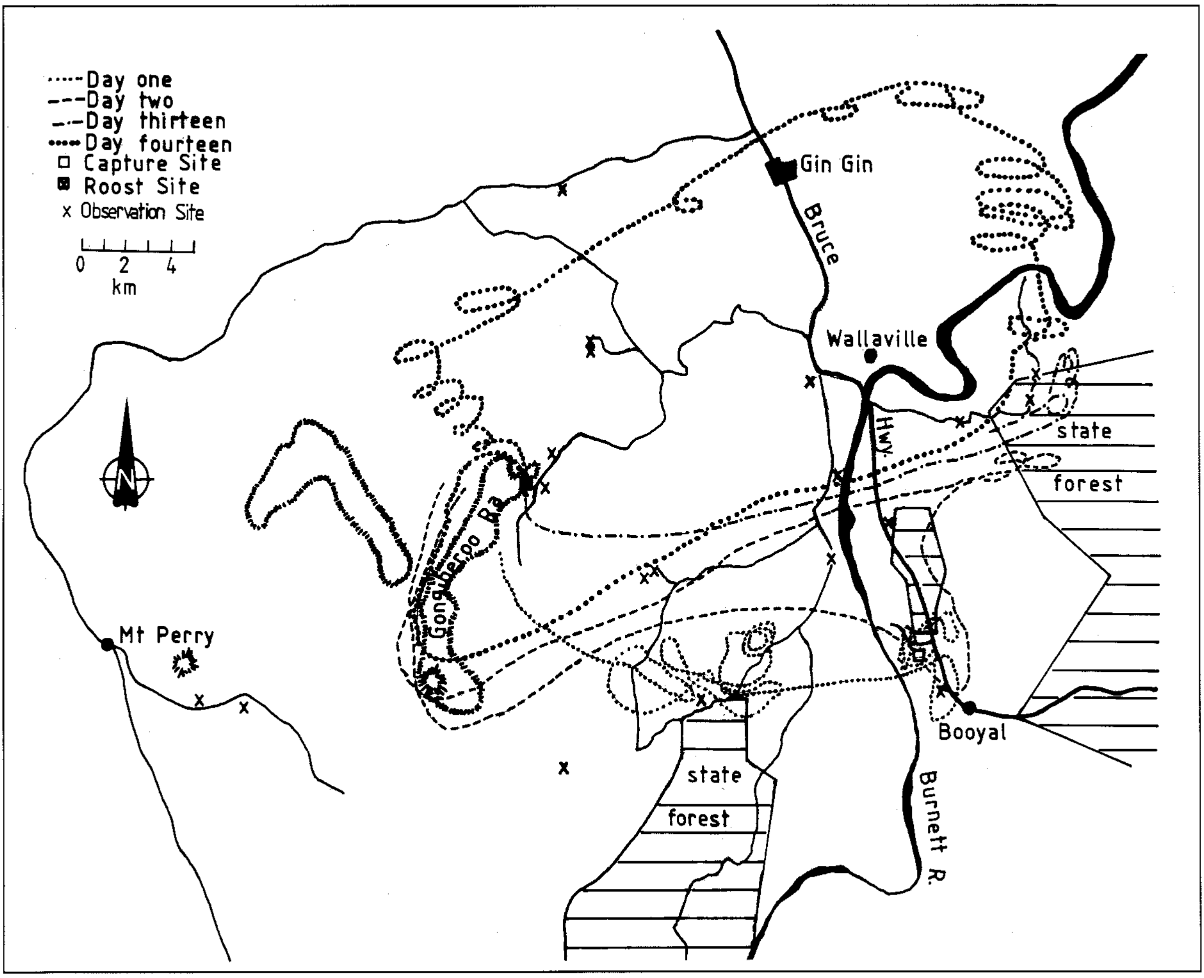

Figure 1 Study area showing capture site on Kirk's Road, off the Bruce Highway, major observation positions, approximate flight paths for the four days the bird was tracked and the roosting location near Doughboy Road. The greatest distance the bird travelled from the roost was 27 km.

enough for the flip-net technique to be employed, 23 km south of Gin Gin in Queensland (25°15′S, 152°05′E Fig. 1). Thirteen birds were caught and a 5.7 g transmitter was attached to one 114 g individual that was released at 1100 h. The transmitter equalled 5% of the weight of the bird, which is the historically accepted maximum weight loading for transmitters (Gessaman & Nagy 1988) although Barn Swallows have been given transmitters weighing up to 5.6% of the bird's weight without significant effects on their foraging ability (Brigham 1989). Visual and radiotelemetric observations both indicated that the tagged bird had no problem staying with the other birds whether they were feeding up at cloud level or swooping and powering after the cicadas flying out of the shrubs and trees at the paddock edges.

After three and a half hours of observation the tagged bird headed inland. This was not suspected as there were still many swifts feeding near the capture site. We caught up with the bird and about 80-100 others 8 km inland and continued to follow their feeding activities for another four hours. At this time the signal was lost because just before dark the bird moved to a low area where there was no vehicle access from where we were. By 2200 h we thought we were on the inland side of the bird but were unable to detect any signals. This indicated that the bird was low down for it was thought to be within transmitter range (25 km).

At 0640 h the following morning we detected a signal and climbed the mountain south of Mount Perry to follow the bird's flight path. It climbed up from a low ridge and flew along behind a mountain range, then returned to the Bruce Highway area and spent much of the day feeding within 10 km of the capture site. Some of the time was spent feeding over state forest east of the Bruce Highway and it again headed inland in the afternoon. We used a different road to follow it this time and were able to monitor it once it stopped moving at 1920 h. Although we could not reach it, we were sure it was close to where it had slept the previous night. It was on the far side of a wooded ridge without cliffs and if the bird had spent that or the previous night on the wing we would have detected that.

Returning from North Queensland on the thirteenth day after its release we picked up the bird's signal at 1505 h over the same state forest that it had fed over during days one and two. After spending three hours over the forest the bird headed inland over a mixture of grazing country and small patches of forest. The bird had stopped moving by 1800 h at what appeared to be the same site used two weeks previously. By 2200 h we had taken bearings from opposite sides of the bird and so learned that we were within a kilometre of it.

The following morning the bird was on the move again half an hour before sunrise. It moved inland then parallel with the coast behind the Gongiberoo Range, before heading back out to the forests nearer to the coast. The first part of the day was spent in the same forest used previously but the bird then moved further north around Gin Gin and by 1600 h had started moving inland again though much further north than on the three previous days. At this point we walked to the low spur where we thought the bird had spent the previous night. From here the signal became fainter and was lost several times between 1915–1938 h. From then on the signal strength increased markedly. Four minutes after sunset two swifts came in very low overhead and gave the distinct impression they were going to roost nearby. Twenty-seven minutes after sunset the signal strength suddenly increased to maximum and the direction of the antennae made no difference to signal strength. We scanned the sky overhead and saw the marked bird fly a circuit less than 10 m over our heads. Within two minutes the bird had settled and we tried to locate the exact tree it had landed in.

The roost site was a low spur of open sclerophyll forest on the end of the Gongiberoo Range. The explanation for the periodically weak signals now became clear. The bird usually flew low behind the length of the Gongiberoo Range just before roosting, the times when signal strength was poor. The commonest trees were Narrow-leafed Ironbarks *Eucalyptus creba*, Yellow Stringybarks *E. muellerana* and Bloodwoods *E. gummifera* with the occasional Brush Box *Lophostemon confertus*. Determining which tree our marked bird was in proved too difficult. One of the possibilities was a large Bloodwood with the top blown off which seemed to produce good signals about two metres below the broken trunk. Because of the vicelike grip of the 13 birds handled two weeks previously I was not surprised to find that they roosted in trees. What was surprising was that they returned to the same site to roost on consecutive nights. However, if they are using tree hollows then it is likely that they make use of known sites as they are much less common than trunks and leafy branches. If this is a widespread habit then locating such sites will be necessary to determine whether these sites are traditional or not. If they are, then the birds are less likely to accept new sites after the destruction of a roost site. As only three birds were seen at the roost site on one night and six on another it could be that large flocks split up to roost and this practice could make their overnight survival a little more sure.

Acknowledgements

For support in the field I thank my son Kerrin and for accommodation near the roost site I thank Keith Stroarch, Russel, Jo and Anne. The radiotelemetry equipment was supplied by Sirtrack Electronics and was largely financed by a grant from the Ingram Trust, Melbourne.

References

Ali, S. 1962. The Birds of Sikkim. Oxford University Press, Oxford.

Bent, A.C. 1940. Life histories of North American cuckoos, goatsuckers, hummingbirds and their allies. United States National Museum Bulletin 176, 254-483.

Berthet, G. 1947. Le Martinet noir, oiseau nocturne. Alauda 15, 129-132.

Blakers, M., Davies, S.J.J.F. & Reilly, P.N. 1984. The Atlas of Australian Birds. RAOU and Melbourne University Press, Melbourne.

Brigham, R.M. 1989. Effects of radio transmitters on the

foraging behaviour of Barn Swallows. Wilson Bulletin 101, 505- 506.
Campbell, A.J. 1900. Nests and Eggs of Australian Birds. Facsimile edn. 1974. Wren, Melbourne.
Cayley, N.W. 1959. What Bird is That? Angus & Robertson, Sydney.
Collins, C.T. 1968. The comparative biology of two species of swifts in Trinidad, West Indies. Bulletin of the Florida State Museum 11, 257-320.
Collins, C.T. 1972. A flip netting technique for capturing swifts and swallows. Ebba News 35, 97-98.
Cooper, R.P. 1971. High flying swifts. Australian Bird Watcher 4, 79-80.
Gessaman, J.A. & Nagy, K.A. 1988. Transmitter loads affect the flight speed and metabolism of homing pigeons. Condor 90, 662-668.
Holmgren, J. 1987. Swifts *Apus apus* roosting in trees, further reports. Anser 26, 111-116.
Jahn, H. 1942. Zur Oekologie und Biologie der Vögel Japans. Journal für Ornithologie 90, 207-209.
Kaiser, E. 1984. Neue Erkenntnisse über das Ausfliegen junger Mauersegler (*Apus apus*). Die Vogelwelt 105, 146-152.
Lack, D. 1956. Swifts in a Tower. Methuen, London.
La Touche, J.D.D. 1934. A Handbook of the Birds of Eastern China, Vol. II. Taylor & Francis, London.
Le Souëf, D. 1907. Nesting place of Australian swifts. Emu 7, 73-74.
Moreau, R.E. 1942. The breeding biology of *Micropus caffer streubelii* Hartlaub, the White-rumped Swift. Ibis 74, 27-49.
Neufeldt, I. & Ivanov, A.I. 1960. Some notes on the biology of the Needle-tailed Swift in Siberia. British Birds 53, 432- 435.
Palomeque, J., Rodriquez, J.D., Palacios, L. & Planas, J. 1980. Blood respiratory properties of swifts. Comparative Biochemistry and Physiology 67a, 91-95.
Pescott, T. 1983. Birds of Geelong. Neptune, Newtown.
Pizzey, G. 1980. A Field Guide to the Birds of Australia. Collins, Sydney.
Rowley, I. 1974. Bird Life. Collins, Sydney.
Shepherd, G.E. 1902. Swifts roosting. Emu 2, 31-32.
Simpson, K. 1976. Spine-tailed Swift. Pp. 314 in Reader's Digest Complete Book of Australian Birds. Ed. H.J. Frith. Reader's Digest, Sydney.
Slater, P. 1970. A Field Guide to Australian Birds. Non-passerines. Rigby, Adelaide.
Tarburton, M.K. 1986. Breeding of the White-rumped Swiftlet in Fiji. Emu 86, 214-227.
Tryon, H. 1908. The Spine-tailed Swift (*Chaetura caudacuta*) and its food. The Queensland Naturalist 1, 38-39.
Wheeler, W.R. 1954. Some Swift records, 1953–54. The Bird Observer 286, 2-4.
Yakobi, V.E. 1980. Migrations and night flights of swifts *Apus apus* (by the data of analysis of their collisions with planes). Zoologicicheskli Zhurnal 59, 472-473.

The Diet of the Sooty Owl *Tyto tenebricosa* in the Blue Mountains, N.S.W.

Geoff Lundie-Jenkins

Department of Ecosystem Management, University of New England, Armidale, N.S.W. 2351 and Conservation Commission of the Northern Territory, P.O. Box 1046, Alice Springs, N.T. 0871

EMU Vol. 92, 124-127, 1992. Received 29-4-1992, accepted 18-5-1992

The Sooty Owl *Tyto tenebricosa* (Gould) is a true rainforest bird, restricted to the wetter forested country of eastern and south-eastern mainland Australia and to the montane forests of New Guinea. It is the third largest of Australia's forest dwelling owls behind the Powerful Owl *Ninox strenua* and the Rufous Owl *N. rufa*. Male Sooty Owls range in size from 37-43 cm and females 44-51 cm (Schodde & Mason 1980). Both sexes are identical in colour and markings and there are no phases.

Sooty Owls are generally considered uncommon and are rarely sighted within the dense, dimly lit forests they inhabit. They are strongly territorial and emit a loud down-swooping whistle that appears to serve the same purpose as the territorial hooting of hawk owls (Schodde & Mason 1980). Previous dietary information for the Sooty Owl is limited but shows the species to prey on a range of terrestrial and arboreal mammals of small to moderate size (Smith 1984; Schodde & Mason 1980; Fleay 1968). Arboreal species appear to be taken