

Note and photographs of a roosting White-throated Needletail *Hirundapus caudacutus* from New South Wales

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Abstract. White-throated Needletails *Hirundapus caudacutus* are very rarely recorded landing in Australia. Here we report on the circumstances of a roosting White-throated Needletail, from the Pilliga Forest, New South Wales. It was detected while we were undertaking targeted nocturnal fauna surveys. We describe the habitat type and provide photographs of the posture and context of a wild White-throated Needletail roosting. We speculate briefly about a potential failed attempt at predation of the Needletail by a Brown Falcon *Falco berigora*.

Introduction

Swifts (Apodidae) are among the fastest recorded birds in flight (Chantler 1999; Henningson *et al.* 2010). They are also among the most aerial, with some species rarely landing (Summers 2008). Swifts possess a range of physical and physiological adaptations to enable fast, constant, and high-altitude flight (Palomeque *et al.* 1980; Tarburton 1993; Thomas 1997; Summers 2008).

The White-throated Needletail *Hirundapus caudacutus* is the largest swift species known from Australia (maximum body mass 169 g; Chantler & Kirwan 2020), generally visiting during the Austral summer. Tarburton (1993, 2021) provided a detailed discussion of the history of debate about White-throated Needletails roosting in Australia, but before 1993 there was general long-standing consensus that they land rarely (Dove 1919; Corben *et al.* 1982). Roosting among leaves has occasionally been reported (Shepherd 1902; Currie 1928; Corben *et al.* 1982; Clayton 1993; Day 1993; Stanton 2011). Before our observation, there appears to be only one published photograph of a White-throated Needletail roosting undisturbed at night in the wild (Sparshott 2021).

Observations and discussion

Here we report on an observation of a White-throated Needletail roosting at night in the Pilliga region, south of Narrabri, New South Wales. The observation occurred in Jacks Creek Forest at 30°30'5"S, 149°47'4"E. The night was very dark (waning crescent moon; moonrise occurred at c. 0114 h Australian Eastern Standard Time (AEST), with almost no wind, following a fine, hot day (maximum ~31°C), with maximum wind gusts at Narrabri, 18 km to the north, of ~17 knots (Bureau of Meteorology 2023). We did not observe any White-throated Needletails in the area on the 6 days before and 4 days after the roosting observation presented here. Photographs were taken using a Nikon D3X, Nikkor 300-mm f/4E PF VR lens and two Nikon SB-800 flash units, at ISO 500 and f/6.3, 1/200 s.

The roosting Needletail was first detected on 6 November 2023 at 2117 h AEST while we were conducting targeted fauna surveys for nocturnal reptiles and mammals. The survey method employed a Pulsar thermal scope (Accolade 2 LRF XP50), and walking in darkness along a forestry track, scanning from ground to canopy with the scope. The Needletail was detected as a 'hot spot' in a tree from a distance of 61 m. Detecting birds in this manner is a common occurrence when using a thermal scope; similar surveys in the area over an eight-night period that included 6 November recorded 51 roosting birds of nine other species. Roosting birds generally cannot be identified through the thermal scope, so visual confirmation using a spotlight and binoculars is often required (here, we use 'visual' to describe seeing the actual animal, even if aided by binoculars and artificial light). This was the case with the Needletail.

The Needletail was perched nearly vertically, hanging by its feet and propped by its tail on the leaves and twigs of the tree's outer canopy (Figures 1, 2). It appeared to be resting on the sub-terminal portion of the tail, not engaging the spines at the tail tip (Figure 1, bottom right). The feet were well forward, with the right foot clearly visible at the level of the 'shoulder' (wrist joint; Figure 1, bottom left). The tree was an ironbark *Eucalyptus* sp. with a total height of 9.6 m and a diameter at breast height of 18 cm. The bird's height above ground was measured with a laser range-finder at 9.2 ± 0.1 m.

In addition to the White-throated Needletail near the top of the tree, a Brown Falcon *Falco berigora* was perched lower in the same tree at a height of 6 m above the ground (Figure 3). It is not known if the two species perched so close (<4 m apart) to each other was merely coincidence or if they were somehow connected. No other White-throated Needletails or Brown Falcons were seen within forested areas of the Pilliga during the survey activities.

Stanton (2011) described three occasions when he observed Barking Owls *Ninox connivens* opportunistically hunting White-throated Needletails, also in the Pilliga Forest area. In each case, it was after sunset, and the Owl captured the Needletail, from below, soon after it landed to



Figure 1. White-throated Needletail roosting posture, with the bird's dorsum facing towards the camera. Note the two toes clinging to a fine twig, petiole and leaf at the bird's right 'shoulder' (bottom left), and the apparent lack of engagement of the tail spines in the perching posture (bottom right). The photograph has been cropped and lightened slightly from the original but is otherwise unaltered. Photo: Eric Vanderduys

roost. Though we cannot be certain, it seems plausible that our observation of the Brown Falcon close to, and below, the White-throated Needletail, may represent a failed hunting attempt.

There are a few published photographs of perched White-throated Needletails (Schodde & Tidemann 1986; Lindsey 1992; Ingram 1994; ANT Photo Library 2010; Sparshott 2021). With the exception of Sparshott (2021), context is not given for any of them, and at least some appear to not be in the wild (e.g. ANT Photo Library 2010). Previous accounts of perching in foliage closely match what we report here, i.e. the bird(s) perched vertically, with the tail used as a prop (Corben *et al.* 1982; Quested 1982a; Day 1993). Notably, previous accounts mention thick foliage, often near the top of trees (Corben *et al.* 1982; Clayton 1993; Day 1993). The bird that we observed was leaning slightly backwards, that is, over-vertical, probably because its centre of gravity was bending the fine foliage where it



Figure 2. White-throated Needletail roosting posture. Note the head rotated back over the body. The photograph has been cropped and lightened slightly from the original but is otherwise unaltered. Note the red 'eye-shine'. Photo: Eric Vanderduys

was perched. Sparshott's (2021) photograph shows the White-throated Needletail hanging backwards at a greater angle than in our observation.

Two field notes that are poorly documented are (1) the bird's head rotation was past 180° at one point (Figure 3, top right), and (2) when observed using only a modified headlamp, ~18 m away, the bird had a moderate 'eye-shine', similar in luminosity to that of many diurnal birds, but redder in colour. This effect is visible in Figure 2, though the light source for that photograph was a camera-mounted flash. Corben *et al.* (1982) reported a red eye-shine from a potential White-throated Needletail, but could not confirm it was a bird.

Tarburton (1993) tracked a White-throated Needletail to its roosting site, and the bird almost certainly used the same tree on consecutive nights, though he was unable to visually locate the perching bird. The bird described in the present study was not in the same location the next day, and was not roosting there on the next evening, when we again visited the site.

Our record of a perching White-throated Needletail roosting in outer foliage, along with similar previous reports mentioned here, suggests that this may be a preferred perching method. Roosting among foliage with some give may be advantageous over more solid surfaces, as the species is reported to come in fast when landing, generally



Figure 3. Relative locations of the White-throated Needletail (top circle, and top right) and a Brown Falcon (bottom circle, and bottom right) in the ironbark on 6 November 2023. Note the Needletail's head is rotated clockwise over 180°. Photos: Eric Vanderduys

with a short flare at the end to establish a vertical landing (Shepherd 1902; Corben *et al.* 1982; Quested 1982a; Day 1993). Having soft foliage to reduce impact may be adaptive for roosting White-throated Needletails. It may also be adaptive in helping alert the roosting Needletail to potential attack; it is unlikely that a large predator such as a Barking Owl (e.g. Stanton 2011) or Brown Falcon easily could approach the Needletail without disturbing the foliage around the Needletail. In one of his three successful predation records, Stanton (2011) reported that the branch on which the Needletail perched was vertical, which might have provided easy access for the Barking Owl. The specific perches of the Needletail in his other two records are only reported as being in White Cypress *Callitris glaucophylla*.

Most records of roosting White-throated Needletails, including this one, are from low trees (Corben *et al.* 1982; Quested 1982a; Clayton 1993). Landing and/or roosting in much taller trees has been reported (Shepherd 1902; Wheeler 1954; Quested 1982b; Stanton 2011). Obviously, such occurrences (or roosting in hollows, which has been suggested by Tarburton 1993) would be inherently harder to observe, and our paper provides no resolution on those possibilities.

Specific habitat may not be important for this record; however, we note that the area around the observation is *Eucalyptus* forest dominated by Narrow-leaved Ironbark *E. crebra* with a subcanopy of White Cypress, *Acacia* spp., and Buloke *Allocasuarina luehmannii*. The maximum

canopy height of the tallest Narrow-leaved Ironbark was ~27 m. Surface geology is a cream to pale-yellow sandy loam, which is similar habitat to that reported by Stanton (2011).

The location of the tree next to a forestry track may be salient. The forestry track provides easy access to lower trees that are adjacent to it. The Needletail was on the side of the tree that faced the track. It could have easily flown in fast and landed in the foliage from the track side, but thicker vegetation on the other side would likely have inhibited its ingress from that direction.

Our observation, and those of Stanton (2011) and others summarised by Tarburton (2021), suggest that roosting of White-throated Needletails in Australia may be much more common than supposed by earlier authors. In addition to being a lucky encounter for us, this record highlights the potential opportunities that a new survey method provides to clarify aspects of the behaviour and habitat use of wildlife. It is unlikely that the White-throated Needletail would have been detected without the careful scanning of track-side vegetation using a thermal scope.

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