White-throated Needletail
_Hirundapus caudacutus_

**Alternate English Names:** White-throated Needletailed Swift, Spine-tailed, Needletailed or White-throated Swift, Needletail or Northern Needletail; Needle-tailed Swallow, Northern Spine-tailed Swift, Pin-tailed Swallow, or Prickly Swallow; Prickly Tail or Prickly Swift; Storm Bird.

**Description:**

As the name indicates this species has a white throat that distinguishes it from the other three needletails. The pale saddle is shared with the Silver-backed Needletail, and the white lores are shared with the Purple Needletail. Juveniles have dark tips to some of the white vent feathers (Collins & Brooke 1976) and though it has been claimed that juveniles also have smaller & darker lores & foreheads (Dementiev & Gladcov 1951-1954) Collins & Brooke (1976) in their detailed study could not confirm these last two characters. Fresh plumaged birds have an iridescent green on the wings, rump, tail, crown, & nape. Being iridescent it is a structural colour that changes to shiny blue or purple, and then dull black before the next moult (Ferguson-Lees 1960).
Adult Ventral View, moulting P9.

Adult Dorsal View with shine of freshly-moulted plumage.
Detail of Spines at terminus of tail. Photo © M.K. Τορβυρτων.
Adult White-throated Needletail

**MEASUREMENTS**

<table>
<thead>
<tr>
<th></th>
<th>Mean ± SD (mm)</th>
<th>Range (mm)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wing: flat &amp; straight</td>
<td>204.9 ± 6.4</td>
<td>184 - 220</td>
<td>204</td>
</tr>
<tr>
<td>Outer Rectrix</td>
<td>54.9 ± 2.5</td>
<td>49 - 61</td>
<td>204</td>
</tr>
<tr>
<td>Central Rectrix</td>
<td>50.1 ± 2.5</td>
<td>44 - 58</td>
<td>100</td>
</tr>
<tr>
<td>Tail</td>
<td>51.3 ± 4.2</td>
<td>37 – 62.5</td>
<td>69</td>
</tr>
<tr>
<td>Length</td>
<td>197.0 ± 12.5</td>
<td>160 - 238</td>
<td>91</td>
</tr>
<tr>
<td>Wing Span</td>
<td>487.5 ± 21.6</td>
<td>433 - 532</td>
<td>70</td>
</tr>
<tr>
<td>Tarsus</td>
<td>17.3 ± 1.8</td>
<td>9.0 – 21.5</td>
<td>135</td>
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<tr>
<td>Mid-Toe</td>
<td>12.5 ± 1.6</td>
<td>5.5 – 19.5</td>
<td>117</td>
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<tr>
<td>Claw</td>
<td>9.1 ± 0.9</td>
<td>4.0 – 10.7</td>
<td>104</td>
</tr>
<tr>
<td>Culmen</td>
<td>14.2 ± 1.2</td>
<td>10.8 – 17.4</td>
<td>113</td>
</tr>
<tr>
<td>Exposed Culmen</td>
<td>7.7 ± 1.2</td>
<td>4.0 – 10.0</td>
<td>120</td>
</tr>
<tr>
<td>Nare</td>
<td>5.9 ± 0.9</td>
<td>3.4 – 8.9</td>
<td>88</td>
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<table>
<thead>
<tr>
<th></th>
<th>Mean ± SD (mm)</th>
<th>Range (mm)</th>
<th>N</th>
</tr>
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<tbody>
<tr>
<td><strong>Australia</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Weight (g) Live</td>
<td>116.1 ± 7.7</td>
<td>108.0 – 135.5</td>
<td>14</td>
</tr>
<tr>
<td>Weight (g) Museum</td>
<td>94.4 ± 24.1</td>
<td>54.0 – 154.0</td>
<td>68</td>
</tr>
</tbody>
</table>

The majority of these measurements were taken by M.K. Tarburton. 12 were from live birds and the rest from skins in Australian, New Zealand, Russian & Japanese museums.

**MEASUREMENTS:** Are there sexual differences?

<table>
<thead>
<tr>
<th></th>
<th>Males Mean ± SD (mm)</th>
<th>Range (mm)</th>
<th>N</th>
<th>Females Mean ± SD (mm)</th>
<th>Range (mm)</th>
<th>N</th>
<th>Total Mean ± SD (mm)</th>
<th>Range (mm)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wing: flat &amp; straight</td>
<td>205 ± 6.3</td>
<td>185-217</td>
<td>73</td>
<td>205 ± 6.3</td>
<td>197-211</td>
<td>33</td>
<td>205 ± 6.0</td>
<td>184-217</td>
<td>151</td>
</tr>
<tr>
<td>Outer Rectrix</td>
<td>54 ± 2.4</td>
<td>49-61</td>
<td>49</td>
<td>55 ± 2.7</td>
<td>49-61</td>
<td>27</td>
<td>55 ± 2.5</td>
<td>49-61</td>
<td>108</td>
</tr>
<tr>
<td>Central Rectrix</td>
<td>50 ± 1.1</td>
<td>45-58</td>
<td>49</td>
<td>51 ± 2.4</td>
<td>46-55</td>
<td>23</td>
<td>50 ± 2.5</td>
<td>44-58</td>
<td>100</td>
</tr>
<tr>
<td>Tail</td>
<td>52 ± 4.3</td>
<td>46.9-63</td>
<td>38</td>
<td>52 ± 2.2</td>
<td>47-57</td>
<td>5</td>
<td>51 ± 4.3</td>
<td>37-63</td>
<td>62</td>
</tr>
<tr>
<td>Length</td>
<td>198 ± 12.3</td>
<td>178-238</td>
<td>42</td>
<td>200 ± 13.7</td>
<td>175-219</td>
<td>9</td>
<td>196 ± 12.9</td>
<td>160-238</td>
<td>80</td>
</tr>
<tr>
<td>Wing Span</td>
<td>488 ± 21.7</td>
<td>433-520</td>
<td>41</td>
<td>489 ± 23.8</td>
<td>440-532</td>
<td>11</td>
<td>488 ± 21.8</td>
<td>433-532</td>
<td>69</td>
</tr>
</tbody>
</table>
Tarsus  17 ± 2.2  9.0-22  62  17 ± 1.1  15-19  25  17 ± 1.8  9.0-22  129
Mid-Toe  13 ± 1.7  5.5-18  56  12 ± 0.7  11.0-14  23  12 ± 1.6  6.0-20  117
Claw  9 ± 1.0  4.0-11  47  9 ± 0.6  8.0-10  23  9.0 ± 0.9  4.0-11  104
Culmen  14 ± 1.1  11.0-16  51  14 ± 1.3  11.0-17  25  14 ± 1.2  11.0-17  113
Exposed Culmen  8 ± 0.9  4.0-10  53  7 ± 1.2  5.0-9.0  28  8 ± 1.2  4.0-10  116
Weight (g)  92 ± 24.3  54-140  39  101 ± 23  65-137  11  94 ± 24.1  54-154  68

Egg dimensions

<table>
<thead>
<tr>
<th>Length</th>
<th>Width</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>32.27mm</td>
<td>28</td>
<td>22.34mm</td>
</tr>
</tbody>
</table>

Distribution:

*Hirundapus c. nudipes* is resident in the Himalayas (dark green zone in map below).

*Hirundapus c. caudacutus* breeds in SE Siberia, Far NE China, Korea, and in Japan on Hokaido & the north Coast of Honshu and winters in the east coast of Australia. Although the map below shows it wintering in Southern Papua New Guinea, all my sightings and most others are just of passage birds on migration, with less observations there than the few that occur in New Zealand (Tarburton 2009). I have 164 sightings on record from N.Z.

In this distribution map from Wikipedia:

- the light green area shows the breeding region for *Hirundapus c. caudacutus*
- the Yellow area shows the wintering locality for *Hirundapus c. caudacutus*
- The Dark Green area represents the distribution for the non-migratory *H.c. nudipes*.

For such a powerfully flighted bird it is not surprising that vagrants occur over a wide range.

To the east of their normal flight path they have been recorded as vagrants in:
- the *Aleutian Islands* (1 bird 21/5/1974 White & Baird 1977),

New Caledonia 1 obs between 1998-2002, Barré, N. and Bachy, P. (2003) and I have over 100 records for New Zealand.

To the west single vagrants have been seen in Denmark (1 obs), Finland (6 obs), Italy (1 obs), Kazakhstan (4 obs), Sweden (2 obs), UK (22 obs): Iceland (1 obs): and the Seychelles (2 obs). Perhaps the most publicised sighting was the bird located on the Isle of Harris (Hebrides, Scotland) 25 June 2013. The next day hundreds of bird enthusiasts flew to the Island and 30-40 of them saw the bird killed by the only wind turbine on the island.


Habitat:

Most reliably found foraging over forests in both Siberia and Australia, though they do visit woodlands and areas of still water to drink from and to take insects from above the surface. Normally they forage all day, without landing, then about an hour after sunset, they head to a roost site. Radio-tracking a bird in Sth Qld, demonstrated how a devious route was used each night, from the foraging area over coastal forests, to the wooded end of a ridge, to sleep in trees for the rest of the evening (Tarburton 1993). Whereas this bird often foraged with 100-200 others, only 5-10 were seen amongst the trees used for roosting, suggesting they might roost in many places, to avoid nocturnal predators taking a regular & significant toll. To date their main Austral predator appears to be the Barking Owl, which has been seen on three occasions to have taken a Needletail immediately after it has landed on a trunk or branch to sleep (Stanton 2011). The trees used in the Pilliga (NSW) were White-cypress Pine and Narrow-leaved Ironbark (Stanton 2011). The same study found Needletail bones in 26 Barking Owl faecal pellets. Another two roosting records from NSW involve not trees but timber posts in a farm bike shed on Tredegar Station 30 km South of Bombala. Roger & Trevor Morgan-Bruce told Graeme Stevens that in about March of 1981 and again in 2009, a flock of Needletails flew into the shed and hung head up in clusters at the top of the posts supporting the shed. These men were familiar with swallows around their sheds and gave good descriptions of the roosting Needletails.

There is evidence that they roost in the Yarra Ranges in Victoria. The veteran Needletail observer Paul Jones heard them fly over the Mt St. Leonard Fire tower (where he often reported them during daylight hours) after dark, as he was leaving the tower on 20 Mar 2014 (Pers Comm.).

There are Victorian records also of Needletails coming into trees well after dark to roost. Mr B. Amos saw one in the evening of 10.1.1954 land on a Mountain Ash trunk near Silvan Dam in the Dandenong Ranges (Wheeler 1954). Paul Jones has seen 100 Needletails well after sunset land by 2100h, then the remaining 150 land enmass on about 20 trees at the edge of the fire-break around the Mt Beenak Firetower. This was 2 Feb 2001. He also saw a small group roost for the night in January 2002. He reported sighting them at Woods Point while looking for Leadbeaters Possums on 13 Feb 2012, where 10 Needletails were seen after sunset. Then he reported that on Leadbeater Possum watches in the Upper Yarra, & Maroondah Catchments as well as Snobs Creek Gap, that he and others of the group reported seeing them well after sunset on most evenings. The following year Paul saw Needletails in the evenings of 26 Feb in the Upper Yarra, 28 Feb in Toolangi and 1st Mar in Oshaughnassy.

One clue as to why Needletails do not settle until well after dark, is that they forage on beetles that only fly after dark. These include beetles from the families Tenebrionidae, Carabidae, and Elateridae (Tryon 1908).
It has often been stated that Needletails are only seen under certain weather conditions, such as rain squalls, cold fronts, etc. but as already stated here, over forests they are there regardless of the weather for most of the season. Some observers only think of looking for swifts when a cold front passes, or a convection storm develops, and so that is almost the only time they see them. Observers that look almost continually will find them over forests most of the season regardless of the weather. You cannot expect them to disappear when there are no cold fronts over the forested east coast. People who sit in Fire lookout towers right through summer, such as Paul Jones have stated that at places such as the Mt Beenak Firetower, Needletails fly around no matter what the weather conditions (pers comm.). Roy Wheeler the person who started the Swift Study project for the Bird Observers Club of Australia commented on the relationship between hot weather and rain and the sighting of swifts (Wheeler 1950). He said that since 1935 he had observed swifts on 125 occasions. On 48 occasions rain fell during or within 24 hours of noting the birds. This means rain fell in conjunction with only 38% of the sightings, not a good correlation at all.

Landing on tree trunks, and hanging onto foliage in the day-light is sometimes observed. For example the very swift-experienced R.J. Martin of Gerogery, saw some of the Needletails that were foraging low over blossoming Eucalypts, at Tumblong, NSW, repeatedly cling to the blossoms for a second or two, apparently attempting to capture non-flying insects (Wheeler 1956) 15 Feb 1955. Trevor Quested (1980) also reports seeing a Needletail land and hold a vertical position high on the trunk for two seconds, apparently procuring an insect then flying off. It had been one of a flock that had been taking insects on or close to the trunk & branches of several large dead trees in a paddock. Two years later the same author (1982) saw a Needletail land in the foliage of a Rough-barked Apple (Angophora floribunda) just after sunset, 1m from the top, where it remained for four minutes. Mark Clayton (1993) records a Needletail landing high in the foliage of a Red Ironbark (Eucalyptus sideroxylon) by doing a barrel roll then crash landing near the top of the tree. He saw it still there through his binoculars a minute or two later, but it was gone by 0630h next morning. We cannot be sure whether it was taking prey or roosting for the night, but it was a little early for roosting when compared to the one I radio-tracked. On the evening of 10 Jan 1954, Bruce Amos saw a Needletail land on the trunk of a large dead Mountain Ash (Eucalyptus regnans), near the Silvan Dam, north of Melbourne, and the suggestion was made then by Roy Wheeler (1954a) that these trees are possibly used extensively for roosting. A Needletail seen by Corben et al (1982) was more certainly roosting for the night, as after they watched it land in the foliage near the top of a Eucalypt 15 minutes after sunset, they were able to identify it again in the same spot 87 minutes later with the help of a spotlight and binoculars. Even more convincing evidence of roosting was observed at Wilsons Promontory 13 February 1991 (Day 1993). By 2051h Needletails had landed in the foliage one to two metres below the top of two Acacia and one Banksia integrifolia. Shortly after 0610h the next morning one Needletail was seen to leave one of these sites.

Gleaning insects from the foliage had also been recorded in other species of swifts, but they did not land. Fischer (1958) & George (1971) recorded this behaviour in Chimney Swifts, and Collins (1968) recorded it in Short-tailed Swifts, both in North America. It has often been published that swifts in general cannot take off if they become grounded. Examples are Hill (1967), & Wade (1975). Paul Jones on 11 Jan 2000 had a Needletail crash into his Firetower aerial, and fall to the ground, but just as he was approaching it, it flew away. I placed several of the 12 Needletails I caught (Tarburton 1993) on the ground to test this theory. They each were able to become airborne as they were in a large clearing. One placed on the trunk of a sapling climbed much higher before launching itself into the air, for a successful flight.

Some authors are still claiming that Needletails have weak feet (eg. Ingram 1994, Hill 1967). This is in spite of the fact that Frith (1976), Clayton (1993), and Tarburton (1993) have published the observation that they have a very strong foot and grip, and in my experience I found them capable of not only gripping the bones in my fingers very tightly, but also capable of drawing blood when being handled.
Needletails do die from impacts with; each other, windows, such as in Fire towers, powerlines and wind turbines. One died after hitting the Mt Waldron Firetower near Cann River in 1999 (P. Jones, pers comm). Mr Fred Graham was driving along the Traralgon-Callignee Rd early in 1960, when he saw two swifts apparently diving on the same insect from opposite directions, collide with each other, making a noise like a rifle shot, before both birds crashed to the road dead. (Wheeler 1960).

White-throated Needletails are attracted to smoke, presumably to feed on the insects that are being lifted up on the rising air. Ellen McCulloch (1966) described 40-50 wheeling into a pall of smoke at Mitcham (Vic, Australia) 14 Mar 1965. On 29 Jan 2003, my son & I watched 300 feeding high in a smoke pall from a bushfire in Bunyip S.P. (Vic. Australia) for more than an hour. A few days later Ray Marston (pers comm.) saw one leave a group and hover in the smoke at Boolarra (E. Vic. Australia). A fire near the Mt Beenak Firetower (Vic, Australia) in Mar 2000 had up to 70 Needletails spend most of three days circling around the smoke plumes (P. Jones, pers comm). The same observer also saw them flying around the Queenbeyan bushfires in the ACT (Australia) at the end of 2001, though notes he did not see any at the Hawkesbury fires.

Breeding Behaviour:

**Hirundapus c. caudacutus.**
Breeds in Siberia, northern China, Sakhalin and Hokkaido, Japan. Winters in Australia, rarely in New Zealand.

**Hirundapus c. nudipes**
Breeds in NE Pakistan and the Himalayas south and east to Assam and SW China. Winters in the same area. Baker (1934) knew nothing of its nidification, though he had an egg taken from an oviduct of a bird shot 14 Apr 1899. He presumed they nested in hollows in the large oaks then common in Nth Cachar. The egg measured 31.2 x 22.4 mm.

In Siberia it breeds as far west as the Vasyugan River a branch of the Ob River. Normally in hollow trees, and while it is claimed that some nest sites were on cliffs (Witherby et al 1938), have been verified Harber (1955), reviewing in English the Russian 3 Volume The Birds of the Soviet Union by Dementiev & Gladcov 1951-1954.) suggests it is more likely that these observations refer to *cochinchenensis* which used to be considered a sub-species of *caudacutus* (Ferguson-Lees 1960). It might also be that the original observations were of exceptional instances or were less than proven observations (Collins & Brooke 1976). Similar claims have been made about this Needletail nesting on rocky cliffs in Japan (Le Souëf 1907, Austin & Kuroda 1953, Yamashina 1941,1961). Both Collins & Brooke (1976) as well as Dr Hotta the House Swift researcher in Japan (in pers comm from Wild Bird Society of Japan 3 Sep 2010) think it is unlikely they nest on cliffs.

On Hokkaido, they breed in hollow tree trunks that have openings between 2.1 & 7.2 metres above ground level (Yonekawa & Kawabe 2008). Their study of eight nests over three years, found six in Daimyo Oaks (*Quercus dentata*), one in Japanese Larch (*Larix leptolepis*), and one in Japanese Elm (*Ulmus davidiana*). The common feature here with Siberian sites is that they were large old trees standing in paddocks or on the forested edge of a clearing. Nests in Siberia & the Zeya-Amur plateau, were built in larch *Larix*, & Oaks *Quercus* (Neufeldt & Ivanov 1960). One Siberian nest in an Oak was at the bottom of a 7.5m deep cavity (Surmach 1994)

Laying commenced between mid-June and early July. Flint *et al* (1984) give June for Siberia). The eggs were white with very light brown specks. (Flint *et al* (1984) report Siberian eggs as pure white). Hatching was synchronous, the incubation period was estimated to be 18-20 days, which is difficult to imagine for clutches of 4-7 eggs. Nestlings were altricial and nidicolus but the parents did not brood them. Young were fed 4-12 times a day, reaching adult size at 27-30 days, when they
started wing exercises (flapping) inside the hollow. The young fledged at 43-51 days. Contrary to this, Lobko-Lobanovsky (1956) reports that eggs he found in the same clutch were at different stages of development, so not synchronous. Surmach (1994) found that a clutch of six eggs located on the 27 Jun 1990 had hatched by 28 June.

It used to be believed that White-throated Needletails (Spine-tailed Swifts) built a bracket-shaped nest of small twigs, glued together with saliva, on to the inside wall of a hollow tree (Witherby et al. 1938, p. 249. Lack 1956 p. 53.) However, both Siberian studies (Neufeldt & Ivanov 1960) and Japanese studies (Yonekawa & Kawabe 2008) have shown that the eggs are incubated on the bottom of the tree hollows, where up to 10-15 cm of accumulated insect remains have been recorded (Neufeldt & Ivanov 1960).

Lobko-Lobanovski (1956) found that as a rule incubating birds did not leave the nest if the tree stump was hit, or if a person climbs the stump. One remained sitting even when poked with a stick. Only one bird in his experience departed the nest due to his presence, but it returned while he was still on the trunk.

**Egg sizes**

<table>
<thead>
<tr>
<th>Length (mm)</th>
<th>x Length</th>
<th>Width (mm)</th>
<th>x Width</th>
<th>Weight (g)</th>
<th>x Weight</th>
<th>N</th>
<th>Location</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>27.5-32.2</td>
<td>29.99</td>
<td>17.5-20.0</td>
<td>18.88</td>
<td></td>
<td></td>
<td>9</td>
<td>Siberia</td>
<td>Lobko-Lobanovski 1956 + cited in Neufeldt &amp; Ivanov 1960.</td>
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</table>

**Developmental Measurements**

<table>
<thead>
<tr>
<th>Clutch Size</th>
<th>Incubation Period</th>
<th>Fledging Period</th>
<th>N</th>
<th>Location</th>
<th>Source</th>
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</thead>
<tbody>
<tr>
<td>4-7</td>
<td>18-20 days</td>
<td>43-52 days</td>
<td></td>
<td>Hokkaido, Japan</td>
<td>Yonekawa &amp; Kawabe 2008.</td>
</tr>
<tr>
<td>3-6</td>
<td></td>
<td></td>
<td></td>
<td>Siberia, Russia</td>
<td>Flint et al 1984.</td>
</tr>
<tr>
<td>2-7</td>
<td>x = 5.3</td>
<td></td>
<td>9</td>
<td>Siberia, Russia</td>
<td>Gizenko 1955, &amp; Lobko-Lobanovski 1956.</td>
</tr>
</tbody>
</table>

Note: these clutches of 2 and 3 were fresh eggs inspected only once so the full clutch size is likely to be larger.

Surmach (1994) says that 2 nestlings fledged each day, but would only launch if other Needletails were flying overhead, and that even if the observer launched them into the air they would return to either the nest or the launchers hand. None of these fledged nestlings returned to the nest, a phenomenon that we are finding in an increasing number of swift & swiftlet species.
Migration:

<table>
<thead>
<tr>
<th>Arrival Dates</th>
<th>Departure Dates</th>
<th>Location</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-8 May</td>
<td></td>
<td>Ussuriland</td>
<td>Przhevalski (1870), Cherski (1915).</td>
</tr>
<tr>
<td>5-7 June</td>
<td>1 Sep – 9 Oct</td>
<td>Sthn. Sakhalin</td>
<td>Lobko-Lobanovski (1956).</td>
</tr>
</tbody>
</table>

Observers tend to notice the Needletails arrival in its breeding grounds more often that their departure, and even more than during the latter part of the breeding season. This map from eBird captured on 28th Aug 2015 does not show any red tear-drops, which means no sightings were reported in the previous 30 days. The blue tear-drops indicate where earlier sightings have been made.
On the Kraa Isthmus migrating Needletails have been observed between 15 Sep - 5 Nov. and 15 Mar - 28 May. Much of these data come from the Chumphon Raptor Centre, Khao Dinso (Pencil Hill). The average number of Needletails seen passing through Southern Thailand is 19 birds, ranging between 1 and 231. This is a lot less than the numbers of Pacific Swifts passing through the same area., where the average daily count is 376 ($n = 100$).


Occasionally recorded from Borneo (Smythies 1957, 1960.)

Some pass through New Guinea on their way to Australia with Rand & Gilliard (1967) reporting small flocks in October & November. Roger Hicks reported thousands near Bensbach on the 16th November 1985 (PNGBS Newsletter 218: 4-6, and pers. comm.). He could find only 20 the following day, so they had presumably moved across Torres Strait to Australia. Chris Eastwood reported 20+ near Bensbach in Oct 1989. They do travel east of the Bensbach area opposite the tip of Cape York, with sightings around Port Moresby where I have 16 sightings from other observers and 16 of my own. Most sightings are of birds heading south in Sep. – Nov. but some are Dec. – Mar., so maybe some remain in NG or visit from Qld on feeding runs.

Feeding Behaviour:

How do you find out what a swift eats? Previously, a common method was to shoot them and analyse their stomach contents, or to screen their faeces at their nest site. Alternatively, one can analyse the food bolus that they bring to their nestlings. This can be gathered from the parent or the nestling, but it has been thought that because of differential digestion of large and small prey, that this would lead to discrepancies between digested and fresh prey studies. One study (Cucco et al. 1993), however shows that the differences are small and that food ball and faecal analysis agreed in their description of swift diets. Conversely other studies have shown that faecal analysis has a strong bias towards Beetles (Hartley 1948, Van Koersveld 1951, Kopij 2000) Even taking food bolus samples needs to be discreet, and widely spaced so as not to disadvantage or starve one or more nestlings.

In Siberia Needletails are most often seen over lakes and rivers, where they drink, bathe and feed (Lyulieeva 1991). They also feed in the thermals over rocky hill-tops and over the Taiga forests, on swarming insects. They have been recorded taking dragonflies as they swarm (Cherskiy 1915 in Lyulieeva 1991). Due to the birds’ concentration on abundant or swarming insects, one species often make up a high percentage of the gut contents (Spangenberg 1965, Kistyakovskiy & Smogorzhevskiy 1971). In the Ussuri Taiga, stomachs contained mostly Mayflies (Ephemeroptera), parasitic wasps (Ophinioni), lady-beetles (Calvia: Coccinellidae), and small Bumble Bees (Bombus aequester, & B. agrorum).

Over the Serebryanaya River, collected adults had boluses almost soley of Stoneflies (Plecoptera: Nemuridae). During the first week on the breeding grounds their diet was almost exclusively Bumble Bees, then either Hymenoptera or Diptera would be added to each bolus. From 23 stomachs Tabanus, Coccinellidae, Elateridae, Carabidae, Camponotos, Pentatomidae and Sirex gigas were recorded (Chunikhin 1963).

In the Lower Amur River during May to July, 46 stomachs were examined and 80.4% contained caddis flies (Tricoptera), 49.7% Hymenoptera, 28% beetles (Carabidae), & 15.2% Tipulidae (Diptera), (Kistyakovskiy & Smogorzhevskiy 1971).

Mrs Bedggood saw two flocks converge over her home 15 Mar 1960 near Ballarat, Victoria. In their eagerness to procure swarming prey the Needletails collided with each other several times. After 15 minutes all the birds gained height, very rapidly, massed together and were quickly lost to sight. “It was a really unforgettable
Needletails do not just go to great heights without reason. I have watched them feeding at 1 km to 1.9 kilometers for hours. Particularly on hot days with warm air rising, insects can be taken up to the swifts at great heights. The same rising air that takes the insects up allows the swifts to feed using very little energy.

**Conservation:**

Some observers, in the 1990’s particularly in southern Australia started to wonder if this species was in decline as they were seeing smaller flocks and seeing flocks less often than previously. Others further north thought that there was no decline. This proposed a challenge so Mike Tarburton started gathering sightings and encouraged observers to count the individuals in flocks and to report them to him or publish them where he could find them. These data showed that flock size had statistically declined every decade since 1950, except the 1980’s when the sample size was too small to prove the decline. (Tarburton 2014). In this paper he looks at the possible causes for the decline and singles out the destruction of its breeding trees in Siberia, where a large proportion of the population breeds. This bird is only known to breed in hollow stumps (Lyuleeva 1991) unlike its European and North American relatives many of which will nest in man-built structures. The main problem appears to be that much logging in Siberia is of the clear-felling type that takes out these hollow stumps. The BBC estimates from their study that 60% of the logging is illegal and that even the Conservation Parks and forests are being logged (BBC 2008, 2009a, 2009b).

More recently it has become apparent that Wind turbines in Australia are killing Needletails in disproportion to most other species using the airspace around them (Hull et al 2013). This is difficult to conceive that one of the world’s fast flying birds is being killed by the blades of wind turbines, which do not kill smaller slower birds. The problem can be solved as two new types of wind turbines have been tested and neither of them would be likely to kill Needletails. One is a tall pole with narrow blades spiralling the full length of the pole – so would be continuously seen, and the other has material-like mesh between the blades that would stop Needletails flying through. But alas I see no evidence that Australia is using any of these new types – all the new wind farms are using the old type that kills Needletails and Shearwaters. The Tasmanian research has been backed up by my picking up six records from the Australian Government database biocache that recorded six dead Needletails at the Woodlawn Wind Farm just north of Canberra in 2012/13. (Tarburton 2015a).

What about predators? I have watched Peregrine Falcons attempt to take Needletails, but they did not come very close to them, as the Needletails accelerated away from them. On several occasions the Needletails appeared to be just playing with the Peregrines. I do have one record of a Peregrine taking a Needletail, but whether it was a sick, inexperienced or just an unlucky bird we do not know. More recently we have found out what predator they have in Australia. Matthew Stanton in his research on Barking Owls has observed them on three occasions, take Needletails a few seconds after they landed in the dark to roost, and has identified Needletail remains in 26 regurgitated pellets from these owls. However, Barking Owls are not new to the Australian ecosystems so they will not be the cause of the recent decline.

Five 1 km+-long trains mostly filled with raw logs, but some milled timber from Siberia pass through Ulaanbaatar, Mongolia each day. This is just one of the three railway lines that link Siberia to China, where according to the BBC 60% of the exported timber that is illegally logged is exported. Photo taken by a friend who lived next to this railway line for six years.
This is what some parts of Siberia look like: Certainly no nesting sites for Needletails and probably no food for some time either.

More than 5 billion pounds of wood from Russia's Primorski Krai region enters China every year. The local Russian opposition to illegal logging is fragmented, and the Russian environmental movement in general is weak.
Adults commence moulting at about the time they reach Australia, or just before they do. Pre-breeders or failed breeders are likely the ones to start earlier (Higgins 1999). Primaries (10 in all) are moulted one or two at a time from the inside outwards. Secondaries moult from the centre out and the rectrices (5 pairs) moult in pairs from inside outwards. Most adults finish their moult by March, and are thus able to start storing fat supplies for a couple of weeks before commencing the northward migration. Post-juvenile moult may start before arrival in some birds, but after arrival in others and it appears that some may pause their moult & not complete it until the second year (Higgins 1999).

With improvements in photography it is becoming easier to obtain moult data from live specimens – and is certainly growing my moult database. It is easy to see the P9 moulting in one of the birds in a photo above.

History:

Hirundapus caudacutus caudacutus (Latham)


Hirundapus caudacutus nudipes (Hodgson)


References:


