



## **Consultation Document on Listing Eligibility and Conservation Actions**

### ***Hirundapus caudacutus* (White-throated Needletail)**

You are invited to provide your views and supporting reasons related to:

- 1) the eligibility of *Hirundapus caudacutus* (White-throated Needletail) for inclusion on the EPBC Act threatened species list in the vulnerable category; and
- 2) the necessary conservation actions for the above species.

Evidence provided by experts, stakeholders and the general public are welcome. Responses can be provided by any interested person.

Anyone may nominate a native species, ecological community or threatening process for listing under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or for a transfer of an item already on the list to a new listing category. The Threatened Species Scientific Committee (the Committee) undertakes the assessment of species to determine eligibility for inclusion in the list of threatened species and provides its recommendation to the Australian Government Minister for the Environment and Energy.

Responses are to be provided in writing either by email to:  
[species.consultation@environment.gov.au](mailto:species.consultation@environment.gov.au)

or by mail to:

The Director  
Migratory Species Section  
Biodiversity Conservation Division  
Department of the Environment and Energy  
PO Box 787  
Canberra ACT 2601

**Responses are required to be submitted by 21 December 2018.**

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## General background information about listing threatened species

The Australian Government helps protect species at risk of extinction by listing them as threatened under Part 13 of the EPBC Act. Once listed under the EPBC Act, the species becomes a Matter of National Environmental Significance (MNES) and must be protected from significant impacts through the assessment and approval provisions of the EPBC Act. More information about threatened species is available on the Department's website at: <http://www.environment.gov.au/biodiversity/threatened/index.html>.

Public nominations to list threatened species under the EPBC Act are received annually by the Department. In order to determine if a species is eligible for listing as threatened under the EPBC Act, the Threatened Species Scientific Committee (the Committee) undertakes a rigorous scientific assessment of its status to determine if the species is eligible for listing against a set of criteria. These criteria are available on the Department's website at: <http://www.environment.gov.au/biodiversity/threatened/pubs/guidelines-species.pdf>.

As part of the assessment process, the Committee consults with the public and stakeholders to obtain specific details about the species, as well as advice on what conservation actions might be appropriate. Information provided through the consultation process is considered by the Committee in its assessment. The Committee provides its advice on the assessment (together with comments received) to the Minister regarding the eligibility of the species for listing under a particular category and what conservation actions might be appropriate. The Minister decides to add, or not to add, the species to the list of threatened species under the EPBC Act. More detailed information about the listing process is at: <http://www.environment.gov.au/biodiversity/threatened/nominations.html>.

To promote the recovery of listed threatened species and ecological communities, conservation advices and where required, recovery plans are made or adopted in accordance with Part 13 of the EPBC Act. Conservation advices provide guidance at the time of listing on known threats and priority recovery actions that can be undertaken at a local and regional level. Recovery plans describe key threats and identify specific recovery actions that can be undertaken to enable recovery activities to occur within a planned and logical national framework. Information about recovery plans is available on the Department's website at: <http://www.environment.gov.au/biodiversity/threatened/recovery.html>.

## Privacy notice

The Department will collect, use, store and disclose the personal information you provide in a manner consistent with the Department's obligations under the Privacy Act 1988 (Cth) and the Department's Privacy Policy.

Any personal information that you provide within, or in addition to, your comments in the threatened species assessment process may be used by the Department for the purposes of its functions relating to threatened species assessments, including contacting you if we have any questions about your comments in the future.

Further, the Australian, State and Territory governments have agreed to share threatened species assessment documentation (including comments) to ensure that all States and Territories have access to the same documentation when making a decision on the status of a potentially threatened species. This is also known as the '[common assessment method](#)'. As a result, any personal information that you have provided in connection with your comments may be shared between Australian, State or Territory government entities to assist with their assessment processes.

The Department's Privacy Policy contains details about how respondents may access and make corrections to personal information that the Department holds about the respondent, how respondents may make a complaint about a breach of an Australian Privacy Principle, and how the Department will deal with that complaint. A copy of the Department's Privacy Policy is available at: <http://environment.gov.au/privacy-policy>.

## **Information about this consultation process**

Responses to this consultation can be provided electronically or in hard copy to the contact addresses provided on Page 1. All responses received will be provided in full to the Committee and then to the Australian Government Minister for the Environment and Energy.

In providing comments, please provide references to published data where possible. Should the Committee use the information you provide in formulating its advice, the information will be attributed to you and referenced as a 'personal communication' unless you provide references or otherwise attribute this information (please specify if your organisation requires that this information is attributed to your organisation instead of yourself). The final advice by the Committee will be published on the Department's website following the listing decision by the Minister.

Information provided through consultation may be subject to freedom of information legislation and court processes. It is also important to note that under the EPBC Act, the deliberations and recommendations of the Committee are confidential until the Minister has made a final decision on the nomination, unless otherwise determined by the Minister.

# *Hirundapus caudacutus*

White-throated Needletail

## **Taxonomy**

Conventionally accepted as *Hirundapus caudacutus* Latham, 1801

Other names: Needle-tailed, Spine-tailed or White-throated Swift, Needletail or Northern Needletail, Needle-tailed, Pin-tailed or Prickly Swallow, Prickly Tail or Prickly Swift, Storm Bird (Higgins 1999).

There are two recognised subspecies:

- nominate subspecies *caudacutus* occurs in central and eastern Siberia, northern Mongolia, northern China and the Korean Peninsula, Sakhalin and Japan, and migrates to spend the non-breeding season in Australasia
- subspecies *nudipes*, which breeds in the Himalayas from northern Pakistan to Assam and south-western China, and is largely resident and does not occur in Australasia (Chantler 1999; Higgins 1999).

## **Species/Sub-species Information**

### **Description**

The White-throated Needletail is a large swift with a thickset, cigar-shaped body, stubby tail and long pointed wings (20 cm in length and approximately 115–120 g in weight). Sexes are alike, with no seasonal variation in plumage. The adults have a dark-olive head and neck, with an iridescent gloss on the crown; the mantle and the back are paler, greyish; and the upperwings are blackish, sometimes with a greenish gloss, with a contrasting white patch at the base of the trailing edge; the uppertail is black with a greenish gloss. The face is dark-olive with a narrow, white band across the forehead and lores and a white patch on the chin and throat. The underparts are generally dark-olive except for a U-shaped band across the rear flanks, the vent and the undertail coverts, and the undertail is black with a greenish gloss. The underwing is black brown with glossy grey-brown flight feathers. The bill is black, the eyes black-brown and the legs and feet are dark grey, sometimes with a pinkish tinge.

Juveniles have a similar appearance to the adults, but can be separated by duller plumage, with little gloss. The pale saddle is duller, contrasting less with the head, neck and uppertail; and the white band across the forehead and white patches on the upperwings and the vent and undertail coverts are all less prominent and duller (Higgins 1999).

The White-throated Needletail is generally gregarious when in Australia, sometimes occurring in large flocks, though they are occasionally seen singly. Occasionally the species occurs in mixed flocks with other aerial insectivores, including Fork-tailed Swifts (*Apus pacificus*) and Fairy Martins (*Hirundo ariel*) (Learmonth 1950, 1951; McMicking 1925; Wheeler 1959).

### **Distribution**

The White-throated Needletail is widespread in eastern and south-eastern Australia (Barrett et al. 2003; Blakers et al. 1984; Higgins 1999). In eastern Australia, the species is recorded in all coastal regions of Queensland and NSW, extending inland to the western slopes of the Great Dividing Range and occasionally onto the adjacent inland plains. Further south on the mainland, it is widespread in Victoria, though more so on and south of the Great Dividing Range, and there are few records in western Victoria. The species occurs in adjacent areas of south-eastern

South Australia, where it extends west to the Yorke Peninsula and the Mount Lofty Ranges. It is widespread in Tasmania (Barrett et al. 2003; Blakers et al. 1984; Higgins 1999).

White-throated Needletails only occur as vagrants in the Northern Territory (recorded in the Top End, including around Darwin, Katherine and Mataranka and Tennant Creek; and further south around Alice Springs) and in Western Australia (at disparate sites from the Mitchell Plateau in the Kimberley, south to the Nullarbor Plain and Augusta in the South West, and west to Barrow Island, the Houtman Abrolhos Islands and the Swan River Plain) (Barrett et al. 2003; Blakers et al. 1984; Brooker et al. 1979; Sedgwick 1978; Slater 1964; Storr 1987; Storr et al. 1986; Wheeler 1959). The species is also a vagrant to various outlying islands, including Norfolk, Lord Howe, Macquarie, Christmas and Cocos-Keeling Islands (Barrand 2005; Green 1989; McAllan et al. 2004; Schodde et al. 1983; Stokes et al. 1984; Warham 1961).

The breeding distribution of the White-throated Needletail is fragmented, with two subspecies occurring in different parts of Asia. The nominate subspecies *H. c. caudacutus* breeds from northern Japan west to central and eastern Siberia, while subspecies *H. c. nudipes* breeds from south-western China to northern Pakistan, and is largely resident (Chantler 1999).

## Relevant Biology/Ecology

### *General habitat*

In Australia, the White-throated Needletail is mostly aerial, from heights of less than 1 m up to more than 1000 m above the ground (Coventry 1989; Tarburton 1993). Although they occur over most types of habitat, they are recorded most often above wooded areas, including open forest and rainforest, and may also fly below the canopy between trees or in clearings (Higgins 1999). When flying above farmland, they are more often recorded above partly cleared pasture, plantations or remnant vegetation at the edge of paddocks (Emison & Porter 1978; Friend 1982; Tarburton 1993). In coastal areas, they have been observed flying over sandy beaches or mudflats (Cooper 1971; Crompton 1936; Davis 1965), and often around coastal cliffs and other areas with prominent updraughts, such as ridges and sand-dunes (Cooper 1971; Dawson et al. 1991; Loyn 1980; Mitchell et al. 1996; Schulz & Kristensen 1994).

### *Roosting habitat*

Although the species appears to primarily roost aerially, it has been recorded roosting in trees in forests and woodlands, both among dense foliage in the canopy or in hollows (Corben et al. 1982; Day 1993; Quested 1982; Tarburton 1993).

### *Feeding*

During the non-breeding season in Australia, the White-throated Needletail has been recorded eating a wide variety of insects, including beetles, cicadas, flying ants, bees, wasps, flies, termites, moths, locusts and grasshoppers (Cameron 1968; Madden 1982; Rose 1997; Tarburton 1993).

### *Life history*

The species does not breed in Australia (Higgins 1999). The White-throated Needletail lays eggs from late May to early June in their breeding grounds in the Northern Hemisphere (Chantler 1999). The nest is placed in a vertical hollow in a tall coniferous tree or on a vertical rock-face, either comprising a small bracket or half-cup of thin twigs and straw cemented together by the bird's saliva and glued to the side of the hollow or rock (Roberts 1991), or a shallow scrape among debris accumulated at the bottom of a tree hollow (Chantler 1999). Clutches usually comprise two eggs (Dement'ev & Gladkov 1951; Yamashina 1962) but some may be as large as seven eggs (Chantler 1999), and these are incubated by both sexes for 40

days (Chantler 1999). The chicks fledge after 40–42 days (Chantler 1999; Dement'ev & Gladkov 1951; Yamashina 1962).

There are no published details of the ages of sexual maturity or life expectancy of the White-throated Needletail, however, the estimated generation time is 8.5 years (BirdLife International 2018).

### *Movement patterns*

The nominate subspecies *caudacutus* is a trans-equatorial migrant, breeding in the Northern Hemisphere and flying south for the boreal winter (Higgins 1999).

### *Departure from breeding grounds*

The species breeds in wooded lowlands and sparsely vegetated hills, as well as mountains covered with coniferous forests in eastern Siberia, north-eastern China, the Korean Peninsula and Japan. The species leaves the breeding grounds between late August and October, flying singly or in scattered flocks (Chantler 1999; Dement'ev & Gladkov 1951).

The southern passage from the breeding grounds takes needletails through eastern China and Japan between August and November (Dement'ev & Gladkov 1951), and the Korean Peninsula mainly between September and October (Gore & Won 1971). Between late September and late November, most birds apparently migrate east of Borneo (Higgins 1999), as the species is seldom recorded along the Malay Peninsula or in Indonesia (Higgins 1999). Passage may, however, be extremely rapid and thus poorly detected (White & Bruce 1986). In Papua New Guinea, most records, presumably of birds on southern passage, occur between September and November (Bell 1970; Coates 1985; Hicks 1990; Rand & Gilliard 1967).

### *Non-breeding season in Australia*

White-throated Needletails mainly enter Australia via the Torres Strait, usually during September and October, and sometimes in early November (Draffan et al. 1983; Warham 1962), and less often via the Arafura Sea (Warham 1962). The mean date of the first sighting in Australia is 22 October  $\pm$  27.62 days (range of 1 September and 27 December (Higgins 1999)). After reaching Australia, they move south along both sides of the Great Dividing Range in Queensland and NSW in October and November, usually arriving in southern parts of their range (Victoria and Tasmania) in November, with increasing numbers recorded from December and peaking in March (Emison et al. 1987; Higgins 1999).

### *Northern passage*

Northward migration from Australia begins between mid-March and April (Higgins 1999). A few birds occasionally remain in Australia during the breeding season (Higgins 1999).

When undertaking northern migration to return to their breeding grounds in the Northern Hemisphere, the majority of the White-throated Needletail population pass through New Guinea in March and April (Eastwood & Gregory 1995; Hicks 1990) and are thought to mostly travel east of Borneo (Smythies 1957, 1981). The few records of birds on northward passage through Indonesia are all in March and April (Coates & Bishop 1997; Smythies 1957, 1981; White & Bruce 1986), and there are only a few records on the Malay Peninsula, between March and mid-May (Medway & Wells 1976; Wells 1999). They are also recorded passing through Hong Kong between mid-March and mid-May (Chalmers 1986; Chantler & Driessens 1995), and eastern China in May.

White-throated Needletails arrive back at their breeding grounds in the Northern Hemisphere in mid-May (Chantler 1999; Chantler & Driessens 1995; Dement'ev & Gladkov 1951).

## Threats

In Australia there is evidence of collision with wind turbines (Hull 2013), overhead wires (Cameron & Hinchey 1981; Campbell 1930; Wheeler 1965), windows (Slater 1964) and lighthouses (Draffan et al. 1983; Stokes 1983) but this appears to be of little consequence (Tarburton 2014).

Tarburton (2014) identified the use of insecticides, particularly organochlorines, as another possible cause of decline of White-throated Needletails, either through a decrease in the abundance of invertebrates from wide use of insecticides or from secondary poisoning by insecticides accumulated as sublethal doses in the prey.

As noted in Tarburton (2014), the loss of roosting sites in Australia may also be contributing to the decline of the species. Loss of forest and woodland habitats may have also resulted in the reduction of invertebrate prey.

It is thought that logging of taiga forests in Siberia, where most of the population breeds, poses the greatest risk by removing old trees and stumps that contain hollows which this species uses to breed (Newell et al. 2000; Crowley 2005; Smirnov et al. 2013).

On the species' breeding grounds it was formerly hunted with nets placed near their breeding sites.

**Table 1:** Threats impacting the White-throated Needletail in approximate order of severity of risk, based on available evidence

Number	Threat factor	Threat type and status	Evidence base
1.0	Habitat loss and fragmentation		
1.1	Logging of breeding habitat	suspected current	The loss of old, hollow bearing trees in the breeding range is suspected be impacting breeding success (Tarburton 2014).
1.2	Loss of habitat in the non-breeding range	suspected current	The loss of roosting sites in Australia may be contributing to the decline of the species. Loss of forest and woodland habitats may have also resulted in the reduction of invertebrate prey (Tarburton 2014).
2.0	Direct mortality		
2.1	Wind turbines and overhead wires	potential	Impacts from wind farms can be categorised as direct (collisions with wind turbines) and indirect (barrier and alienation, with the potential to reduce access to habitat).  Collision with wind turbines and overhead wires is of low severity and affects a small number of birds (Hull 2013)
3.0	Poisoning		
3.1	Organochlorines	potential	Tarburton (2014) identified the use of insecticides, particularly organochlorines, as a possible cause of decline of White-throated Needletail, either through a decrease in the abundance of invertebrates from wide use of insecticides or from secondary poisoning by insecticides accumulated as sublethal doses in the prey.



## Assessment of available information in relation to the EPBC Act Criteria and Regulations

<b>Criterion 1. Population size reduction (reduction in total numbers)</b> Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4			
	<b>Critically Endangered Very severe reduction</b>	<b>Endangered Severe reduction</b>	<b>Vulnerable Substantial reduction</b>
<b>A1</b>	≥ 90%	≥ 70%	≥ 50%
<b>A2, A3, A4</b>	≥ 80%	≥ 50%	≥ 30%
<p>A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.</p> <p>A2 Population reduction observed, estimated, inferred or suspected in the past where the causes of the reduction may not have ceased OR may not be understood OR may not be reversible.</p> <p>A3 Population reduction, projected or suspected to be met in the future (up to a maximum of 100 years) [(a) cannot be used for A3]</p> <p>A4 An observed, estimated, inferred, projected or suspected population reduction where the time period must include both the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible.</p>	<p><i>based on any of the following</i></p> <ul style="list-style-type: none"> <li>(a) direct observation [except A3]</li> <li>(b) an index of abundance appropriate to the taxon</li> <li>(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat</li> <li>(d) actual or potential levels of exploitation</li> <li>(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites</li> </ul>		

### Evidence:

Tarburton (2014) reported that based on data collected between 1998 and 2002, the *New Atlas of Australian Birds* (Barrett et al. 2003) indicated a 49 per cent decline in reporting rates (number of records as a proportion of number of surveys, adjusted for the survey method, season and size of area searched) of needletails compared with those of the first *Atlas of Australian Birds* conducted between 1977 and 1981 (Blakers et al. 1984).

Tarburton (2014) showed that with each decade after 1950 a progressive decline in the mean number of needletails counted per flock has occurred. Australia-wide trends in mean number of White-throated Needletails counted per flock have fallen from 164 ± 37.3 in 1951-1960 to 42 ± 1.7 in 2001-2010 (Tarburton 2014). These declines are continuing with more recent data indicating that the mean number of White-throated Needletails counted per flock between 2011-2017 has fallen to 36 ± 0.9.

Tarburton (2014) demonstrated that from three sites in Victoria, at the level of each eastern state and at the national scale, a 30-50 per cent decline in White-throated Needletail flock size has occurred over three generations (25.5 years).

The data presented above appear to demonstrate that the species is **eligible for listing as vulnerable A2b** under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the species' status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

<b>Criterion 2. Geographic distribution as indicators for either extent of occurrence AND/OR area of occupancy</b>			
	<b>Critically Endangered Very restricted</b>	<b>Endangered Restricted</b>	<b>Vulnerable Limited</b>

B1. Extent of occurrence (EOO)	< 100 km <sup>2</sup>	< 5,000 km <sup>2</sup>	< 20,000 km <sup>2</sup>
B2. Area of occupancy (AOO)	< 10 km <sup>2</sup>	< 500 km <sup>2</sup>	< 2,000 km <sup>2</sup>
AND at least 2 of the following 3 conditions indicating distribution is precarious for survival:			
(a) Severely fragmented OR Number of locations	= 1	≤ 5	≤ 10
(b) Continuing decline observed, estimated, inferred or projected in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) area, extent and/or quality of habitat; (iv) number of locations or subpopulations; (v) number of mature individuals			
(c) Extreme fluctuations in any of: (i) extent of occurrence; (ii) area of occupancy; (iii) number of locations or subpopulations; (iv) number of mature individuals			

### Evidence:

Within Australia, the extent of occurrence is estimated at >20,000 sq km, and the area of occupancy estimated at >18,000 sq km. These figures are based on the mapping of point records from post 1997 species observations, obtained from state governments, museums, CSIRO, and Birdlife Australia. The EOO was calculated using a minimum convex hull, and the AOO calculated using a 2x2 km grid cell method, based on the IUCN Red List Guidelines 2014 (DotE 2015).

The data presented above appear to demonstrate the species is not eligible for listing under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the species' status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

Criterion 3. Population size and decline			
	Critically Endangered Very low	Endangered Low	Vulnerable Limited
Estimated number of mature individuals	< 250	< 2,500	< 10,000
AND either (C1) or (C2) is true			
C1 An observed, estimated or projected continuing decline of at least (up to a max. of 100 years in future)	Very high rate 25% in 3 years or 1 generation (whichever is longer)	High rate 20% in 5 years or 2 generation (whichever is longer)	Substantial rate 10% in 10 years or 3 generations (whichever is longer)
C2 An observed, estimated, projected or inferred continuing decline AND its geographic distribution is precarious for its survival based on at least 1 of the following 3 conditions:			
(a) (i) Number of mature individuals in each subpopulation	≤ 50	≤ 250	≤ 1,000
(a) (ii) % of mature individuals in one subpopulation =	90 – 100%	95 – 100%	100%
(b) Extreme fluctuations in the number of mature individuals			

### Evidence:

Within Australia, the population size has not been quantified, but it is not believed to approach the thresholds for Vulnerable under the population size criterion (<10,000 mature individuals with a continuing decline estimated to be >10 per cent in ten years or three generations, or with a specified population structure) (BirdLife International 2018).

The data presented above appear to demonstrate the species is not eligible for listing under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the species' status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

Criterion 4. Number of mature individuals			
	Critically Endangered Extremely low	Endangered Very Low	Vulnerable Low
Number of mature individuals	< 50	< 250	< 1,000

**Evidence:**

The global population size has not been quantified, but the species is reported to be local and uncommon throughout much of its range (del Hoyo *et al.* 1999). Global population estimates include: c.100-10,000 breeding pairs and c.50-1,000 individuals on migration in China; c.100-10,000 breeding pairs and c.50-1,000 individuals on migration in the Republic of Korea; c.100-10,000 breeding pairs and c.50-1,000 individuals on migration in Japan and possibly c.100-100,000 breeding pairs and c.50-10,000 individuals on migration in Russia (Brazil 2009; BirdLife International 2018).

The data presented above appear to demonstrate the species is not eligible for listing under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the species' status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

Criterion 5. Quantitative Analysis			
	Critically Endangered Immediate future	Endangered Near future	Vulnerable Medium-term future
Indicating the probability of extinction in the wild to be:	≥ 50% in 10 years or 3 generations, whichever is longer (100 years max.)	≥ 20% in 20 years or 5 generations, whichever is longer (100 years max.)	≥ 10% in 100 years

**Evidence:**

As population viability analysis appears not to have been undertaken, there are insufficient data to demonstrate if the species is eligible for listing under this criterion. However, the purpose of this consultation document is to elicit additional information to better understand the species' status. This conclusion should therefore be considered to be tentative at this stage, as it may be changed as a result of responses to this consultation process.

**Conservation Actions**

**Recovery Plan**

A decision about whether there should be a recovery plan for this species has not yet been determined. The purpose of this consultation document is to elicit additional information to help inform this decision.

**Primary Conservation Actions**

Work with governments in East Asia to minimise destruction of key breeding habitats.

Important habitats in Australia are identified and protected.

## **Conservation Actions**

### **Conservation and Management priorities**

- Habitat loss and modifications
  - Seek the support of governments in East Asia to protect remaining old growth forests within the breeding range of the species.
  - Identify requirements of important habitat in Australia.
  - Support initiatives to improve habitat management at key sites in Australia.

### **Stakeholder Engagement**

- Through the bilateral migratory bird consultative meetings with the Governments of Japan, China and the Republic of Korea, raise awareness of the conservation of White-throated Needletail.
- Promote the conservation, and raise the profile, of White-throated Needletail through strategic programs and educational products.
- Promote the exchange of information between governments, NGOs and communities through use of networks, publications and websites.

### **Survey and Monitoring priorities**

- Enhance existing White-throated Needletail monitoring programs, particularly to improve coverage in under surveyed parts of Australia.

### **Information and Research priorities**

- Use remote sensing to assess the extent of habitat loss at the breeding grounds.
- Undertake work to more precisely assess White-throated Needletail life history, population size, distribution and ecological requirements in Australia.
- Improve knowledge about potential threatening processes including the impacts of infrastructure (i.e. wind turbines and overhead wires).
- Quantify levels of organochlorines in individuals and prey species.

## **Collective list of questions – your views**

1. Do you agree with the current taxonomic position of the Australian Faunal Directory and Birdlife Australia for this species (as identified in the draft conservation advice)
2. Can you provide any additional references, information or estimates on longevity, age of maturity, average life span and generation length?
3. Has the survey effort for this species been adequate to determine its national distribution and adult population size?
4. Do you accept the estimate provided in the nomination for the current population size of the species?
5. For any population with which you are familiar, do you agree with the population estimate provided? If not, are you able to provide a plausible estimate based on your own knowledge? If so, please provide in the form:
  - Lower bound (estimated minimum):
  - Upper bound (estimated maximum):
  - Best Estimate:
  - Estimated level of Confidence: %
6. Can you provide any additional data, not contained in the current nomination, on declines in population numbers over the past or next 10 years or 3 generations, whichever is the longer?
7. Is the distribution as described in the nomination valid? Can you provide an estimate of the current geographic distribution (extent of occurrence or area of occupancy in km<sup>2</sup>) of this species?
8. Has this geographic distribution declined and if so by how much and over what period of time?
9. Do you agree that the species is eligible for inclusion on the threatened species list, in the category listed in the nomination?
10. Do you agree that the threats listed are correct and that their effects on the species are significant?
11. To what degree are the identified threats likely to impact on the species in the future?
12. Can you provide additional or alternative information on threats, past, current or potential that may adversely affect this species at any stage of its life cycle?
13. What are your recommendations with regard to survey techniques, priority locations and frequency to effectively monitor the species over time within Australia?
14. In seeking to facilitate the recovery of this species, can you provide management advice for the following:
  - What individuals or organisations are currently, or need to be, involved in planning to abate threats and any other relevant planning issues?
  - What threats are impacting on different populations, how variable are the threats and what is the relative importance of the different populations?
  - What recovery actions are currently in place, and can you suggest other actions that would help recover the species? Please provide evidence and background information.

15. Can you provide additional data or information relevant to this assessment?

### **References cited in the advice**

- Barrand, P.D. (2005). White-throated Needletail *Hirundapus caudacutus*: a new bird for Christmas Island. *Australian Field Ornithology*. 22:104-105.
- Barrett, G., A. Silcocks, S. Barry, R. Cunningham & R. Poulter (2003). *The New Atlas of Australian Birds*. Melbourne, Victoria: Birds Australia.
- Bell, H.L. (1970). Field notes on birds of the Nomad River sub-district, Papua. *Emu*. 70:97-104.
- BirdLife International (2018) Species factsheet: *Hirundapus caudacutus*. Downloaded from <http://www.birdlife.org> on 06/08/2018.
- Blakers, M., S.J.J.F. Davies & P.N. Reilly (1984). *The Atlas of Australian Birds*. Melbourne, Victoria: Melbourne University Press.
- Brazil, M. (2009). *Birds of East Asia: eastern China, Taiwan, Korea, Japan, eastern Russia*. Christopher Helm, London.
- Brooker, M.G., M.G. Ridpath, A.J. Estbergs, J. Bywater, D.S. Hart & M.S. Jones (1979). Bird observations on the north-western Nullarbor Plain and neighbouring regions, 1967-1978. *Emu*. 79:176-190.
- Cameron, A.C. (1968). Feeding habits of the Spine-tailed Swift. *Emu*. 68:217-219.
- Cameron, R. & M. Hinchey (1981). An apparently immature White-throated Needletail in Australia. *Australian Bird Watcher*. 9:68.
- Campbell, A.G. (1930). Notes on swifts. *Emu*. 29:308.
- Chalmers, M.L. (1986). *Birds of Hong Kong*. Hong Kong: Hong Kong Bird Watching Society.
- Chantler, P. (1999). Apodidae (swifts) species accounts. **In:** del Hoyo, J., A. Elliott & J. Sargatal, eds. *Handbook of the Birds of the World. Volume 5. Barn-owls to Hummingbirds*. Page(s) 419-457. Barcelona: Lynx Edicions.
- Chantler, P. & G. Driessens (1995). *Swifts*. Robertsbridge, UK: Pica Press.
- Coates, B.J. (1985). *The Birds of Papua New Guinea. Volume 1*. Alderley, Queensland: Dove Publications.
- Coates, B.J. & K.D. Bishop (1997). *A Guide to the Birds of Wallacea Sulawesi, The Moluccas and Lesser Sunda Islands, Indonesia*. Alderley, Queensland: Dove Publications.
- Cooper, R.P. (1971). High flying swifts. *Australian Bird Watcher*. 4:79-80.
- Corben, C., G. Roberts & A. Smyth (1982). Roosting of a White-throated Needletail. *Sunbird*. 12:47-48.

- Coventry, P. (1989). Comments on airborne sightings of White-throated Needletails *Hirundapus caudacutus*. *Australian Bird Watcher*. 13:36-37.
- Crompton, A. (1936). Spine-tailed Swift *Hirundapus caudacutus*. *South Australian Ornithologist*. 13:183-184.
- Crowley, R.M. (2005). Stepping onto a moving train: The collision of illegal logging, forestry policy and emerging free trade in the Russian Far East. *Pacific Rim Law and Policy Journal* 14: 425-454.
- Davis, W.A. (1965). Field notes from South Gippsland. *Australian Bird Watcher*. 2:134-138.
- Dawson, P., D. Dawson, I. Reynolds & S. Reynolds (1991). Notes on the birds of Logan Reserve, southeast Queensland, 1967-1990. *Sunbird*. 21:93--111.
- Day, N. (1993). Tree perching and presumed roosting of White-throated Needletails *Hirundapus caudacutus*. *Australian Bird Watcher*. 15:43-44.
- del Hoyo, J., Elliott, A. & Sargatal, J. (1999). Handbook of the Birds of the World. Lynx Editions, Barcelona.
- Dement'ev, G.P. & N.A. Gladkov (1951). *Birds of the Soviet Union. Volume 1*. Jerusalem: Israel Program for Scientific Translations (1969).
- Draffan, R.D.W., S.T. Garnett & G.J. Malone (1983). Birds of the Torres Strait: an annotated list and biogeographic analysis. *Emu*. 83:207-234.
- Eastwood, C. & P. Gregory (1995). Interesting sightings during 1993 & 1994. *Muruk*. 7:128-142.
- Emison, W.B. & J.W. Porter (1978). Summer surveys of birds in the Mt Cobberas - Snowy River area of Victoria, Australia. *Emu*. 78:126-136.
- Emison, W.B., C.M. Beardsell, F.I. Norman, R.H. Loyn & S.C. Bennett (1987). *Atlas of Victorian Birds*. Melbourne: Department of Conservation (Forest & Lands) & Royal Australian Ornithological Union.
- Friend, G.R. (1982). Bird populations in exotic pine plantations and indigenous eucalypt forests in Gippsland, Victoria. *Emu*. 82:80-91.
- Gore, M.E.J. & P.-O. Won (1971). *The Birds of Korea*. Seoul, Korea: Taewon Publishing
- Green, R.H. (1989). *Birds of Tasmania*. Launceston, Tasmania: Potoroo Publishing.
- Hicks, R.K. (1990). Arrival and departure dates in the Port Moresby area of migrants from the north. *Muruk*. 4:91-105.
- Higgins, P.J. (ed.) (1999). *Handbook of Australian, New Zealand and Antarctic Birds. Volume Four - Parrots to Dollarbird*. Melbourne: Oxford University Press.

- Hull, C.L., Stark, E.M., Peruzzo, S. & Sims, C.C. (2013). Avian collisions at two wind farms in Tasmania, Australia: taxonomic and ecological characteristics of colliders versus noncolliders. *New Zealand Journal of Zoology* 40, 47-62.
- Learmonth, N.F. (1950). Observations on swifts near Portland, Vic., during summer, 1949-1950. *Emu*. 50:56-58.
- Learmonth, N.F. (1951). More observations on swifts. *Emu*. 51:151-152.
- Loyn, R.H. (1980). Bird populations in a mixed eucalypt forest used for production of wood in Gippsland, Victoria. *Emu*. 80:145-156.
- Madden, J.L. (1982). Avian predation of the Woodwasp, *Sirex noctilio* F., and its parasitoid complex in Tasmania. *Australian Wildlife Research*. 9:135-144.
- McAllan, I.A.W., B.R. Curtis, I. Hutton & R.M. Cooper (2004). The birds of the Lord Howe Island Group: a review of records. *Australian Field Ornithology*. 21:1-82.
- McMicking, F.V. (1925). Spine-tailed Swifts (*Hirundapus caudacutus*) feeding on grasshoppers. *Emu*. 25:41.
- Medway, L. & D.R. Wells (1976). *The Birds of the Malay Peninsula, Volume 5*. Witherby, London.
- Mitchell, A., J. Peter & G. McCarthy (1996). Birds of the Ironbark Basin. *Geelong Bird Report*. 1995:29-40.
- Newell, J., Lebedev, A., Gordon, D. & Rees, M. (2000). Plundering Russia's Far Eastern Taiga: Illegal Logging, Corruption and Trade. An Investigation into the Extent of Illegal Logging and Trade in the Region, along with Recommendations. Friends of the Earth Japan, Tokyo.
- Pescott, T. (1983). *Birds of Geelong*. Geelong: Neptune Press.
- Quested, T. (1982). Spine-tailed Swift landing in tree. *Australian Birds*. 16:64.
- Rand, A.L. & E.T. Gilliard (1967). *Handbook of New Guinea Birds*. London: Weidenfeld & Nicolson.
- Roberts, T.J. (1991). *The Birds of Pakistan. Volume 1, Non-passeriformes*. Karachi, Pakistan: Oxford University Press.
- Rose, A.B. (1997). Notes on the diet of swifts, kingfishers and allies in eastern New South Wales. *Australian Bird Watcher*. 17:203-210.
- Schodde, R., P. Fullagar & N. Hermes (1983). A review of Norfolk Island birds: past and present. *Australian National Parks and Wildlife Service Special Publication*. 8.
- Schulz, M. & K. Kristensen (1994). Notes on selected bird species on the south-western coast of Tasmania, between Port Davey and Cape Sorell. *Australian Bird Watcher*. 15:265-272.



- Sedgwick, E.H. (1978). A population study of Barrow Island avifauna. *West Australian Naturalist*. 14:85-108.
- Slater, K.R. (1964). Spine-tailed Swift in central Australia. *Emu*. 64:72.
- Smirnov, D.Y., Kabanets, A.G., Milakovsky, B.J., Lepeshkin, E.A. & Sychikov, D.V. (eds) (2013). Illegal Logging in the Russian Far East: Global Demand and Taiga Destruction. World Wildlife Fund, Moscow.
- Smythies, B.E. (1957). *Chaetura caudacuta* in Borneo. *Ibis*. 99:687-688.
- Smythies, B.E. (1981). *The Birds of Borneo*. Sabah, Kuala Lumpur: Sabah Society/Malayan Nature Society.
- Stokes, T. (1983). Bird casualties in 1975-76 at the Booby Island Lightstation, Torres Strait. *Sunbird*. 13:53-58.
- Stokes, T., W. Sheils & K. Dunn (1984). Birds of the Cocos - Keeling Islands, Indian Ocean. *Emu*. 84:23-28.
- Storr, G.M. (1987). Birds of the Eucla Division of Western Australia. *Records of the Western Australian Museum*. Suppl. 27.
- Storr, G.M., R.E. Johnstone & P. Griffin (1986). Birds of the Houtman Abrolhos, Western Australia. *Records of the Western Australian Museum Supplement*. 24.
- Tarburton, M.K. (1993). Radiotracking a White-throated Needletail to roost. *Emu*. 93:121--124.
- Tarburton, M.K. (2014). Status of the White-throated Needletail *Hirundapus caudacutus* in Australia: Evidence for a marked decline. *Australian Field Ornithology* 31, 122-140.
- Warham, J. (1961). A Spine-tailed Swift at Macquarie Island. *Emu*. 61:189-190.
- Warham, J. (1962). Bird islands within the Barrier Reef and Torres Strait. *Emu*. 62:99-111.
- Wells, D.R. (1999). *The Birds of the Malay Peninsula*. San Diego: Academic Press.
- Wheeler, J. (1965). A boy's care of an injured bird. *Australian Bird Watcher*. 2:152-153.
- Wheeler, W.R. (1959). Notes on Swifts, 1958-59. *Bird Observer*. 334:2-5.
- White, C.M.N. & M.D. Bruce (1986). The birds of Wallacea. *B.O.U. Check-list*. 7.
- Yamashina, Y. (1962). *Birds of Japan - A Field Guide*. Tokyo: Tokyo News Service.