



Consultation Document on Listing Eligibility

Pteropus brunneus (Percy Island Flying-fox)

You are invited to provide your views and supporting reasons related to the eligibility of *Pteropus brunneus* (Percy Island Flying-fox) for inclusion on the EPBC Act threatened species list in the **Extinct** category.

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.

Responses are to be provided in writing either by email to:
species.consultation@environment.gov.au

or by mail to:

The Director
Marine and Freshwater Species Conservation Section
Biodiversity Conservation Division
Department of Agriculture, Water and the Environment
PO Box 787
Canberra ACT 2601

Responses are required to be submitted by 11 September 2020.

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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/system/files/pages/d72dfd1a-f0d8-4699-8d43-5d95bbb02428/files/tssc-guidelines-assessing-species-2018.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 Commonwealth, 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 Commonwealth, 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.

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.

Pteropus brunneus

Percy Island Flying-fox

Taxonomy

Conventionally accepted as *Pteropus brunneus* Dobson, 1878.

Species/Sub-species Information

Description

Pteropus brunneus (Percy Island Flying-fox) is known from one male specimen held in the Museum of Natural History, London. This specimen was similar in appearance to *Pteropus scapulatus* (Little Red Flying-fox) but differentiated through its smaller size and buff-coloured glandular tufts at the side of the neck. The Percy Island Flying-fox had a head and body length of approximately 210 mm, a forearm length of 118 mm, and a probable weight of 200 g. The dorsal surface was barely darker than the ventral surface, both coloured mid-brown with a reddish-gold tinge due to pale tips on hairs. The mantle across the shoulder area was a slightly lighter brown and the head was a paler golden-brown colour. The dorsal surface of the tibia was furred along three-quarters of its length (Condor 2008).

Distribution

The only specimen of the Percy Island Flying-fox was collected on South Percy Island (Percy Isles) in the Northumberland group, Queensland. The Island group lies 55 km off the mainland coast from Mackay and has a total area of 44 km² (Woinarski et al. 2014). The distribution range may also have included parts of mainland Queensland, with Condor (2008) reporting that the species was observed flying over the nearby Australian coast in the late-19th century.

Extinction date

The presumed extinction decade of the Percy Island Flying fox is the 1890s (Woinarski et al. 2014), with the only specimen collected between 1854–1874.

Relevant Biology/Ecology

Almost nothing is known about the biology of the Percy Island Flying-fox (Woinarski et al. 2014). However, Pierson & Rainey (1992) identified commonalities between all known *Pteropus* (flying-fox) species, which are likely to have been shared by the Percy Island Flying-fox. Australia has six extant flying-fox species (Churchill 1998; Van Dyck & Strahan 2008; Woinarski et al. 2014) and in particular, ecological traits are likely to have been shared with the morphologically similar Little Red Flying-fox, whose distribution range includes likely shared habitat along the Queensland coast.

In general, flying-foxes have a low rate of population growth, having one young per year, with a gestation period of 140–192 days. Births are seasonal and highly synchronised, with newborns sparsely haired and dependent on their mothers to maintain their body temperature for several weeks. Adults do not reach sexual maturity until they are 1.5–2 years old and the maximum life-span recorded is 31 years (in captivity) (Pierson & Rainey 1992).

Flying-foxes often have marked differences between roosting and feeding habitats. However, for small islands (like the Northumberland group) these distinctions are less evident. Flying-foxes tend to show considerable fidelity to traditional roost sites and can form large aggregations on exposed tree branches. For example, the Little Red Flying-fox relies heavily on native forests for both roosting and food, with congregations recorded up to one million individuals (Nelson 1989; Pierson & Rainey 1992; Churchill 1998).

Australian flying-foxes are primarily nocturnal and are known to forage in groups (Pierson & Rainey 1992). They are predominantly flower eaters and the seasonal patterns of movements

are correlated with the availability of blossom, largely that of *Eucalypt* species (Nelson 1989). Apart from blossoms, the Little Red Flying-fox supplements its diet with fruit, sap and insects (Churchill 1998). Foraging areas are almost always separated from roosting areas, and animals may travel 40–60 km to reach feeding areas. Off-shore Island species are known to travel several kilometres across water to reach mainland foraging sites (Pierson & Rainey 1992).

The habitat in the Mackay Islands Protected Areas, which includes the Percy Isles, is composed of eucalypt low woodlands or open-forest (dominated by *Eucalyptus fibrosa* (ironbark) and *Corymbia xanthope* (bloodwood) species) over a grassy ground layer containing grasstrees and cycads, particularly *Cycas ophiolitica* (Marlborough Blue) (DNPRSR 2013).

Likely Causes of Decline and Extinction

Likely causes of decline and extinction are surmised from threats known to have occurred from the 19th century and an assumption that the threats that affect many flying-foxes would also impact on the Percy Island Flying-fox.

Table 1: Probable causes of decline towards extinction for the Percy Island Flying-fox in approximate order of impact, based on available evidence.

Threat factor	Threat status and severity*	Evidence base
Habitat loss and fragmentation		
Habitat degradation and resource depletion by livestock	<ul style="list-style-type: none"> – Status: Historical – Confidence: Suspected – Consequence: Severe – Extent: Across the entire range 	<p>The Percy Isles have a long history of grazing and agriculture, including the introduction of feral goats (<i>Capra hircus</i>) in the late-19th century (DNPRSR 2013).</p> <p>By the mid-19th century, nearly all of the areas suitable for pastoralism on mainland eastern Queensland (which was possible foraging habitat for the Percy Island Flying-fox) were settled (Fensham 2008), with grazing reaching a peak in 1894 (Irvin 2016). Grazing impacts include deforestation, the spreading of pest plants and soil erosion (DNPRSR 2013).</p> <p>The removal of native plants species used for both roosting and foraging is a significant threat to extant Australian flying-fox species, with population declines since the mid-20th century attributed extensively to forest clearing (Pierson & Rainey 1992).</p>
Habitat degradation and resource depletion through natural disasters (cyclones)	<ul style="list-style-type: none"> – Status: Historical – Confidence: Suspected – Consequence: Severe – Extent: Across the entire range 	<p>Severe tropical storms are a reoccurring phenomenon that hit the Australian mainland and islands off the Queensland coast. Storms can severely damage both roosting and foraging sites, with the risk of severe population reduction or extinction increased on islands that have already experienced extensive deforestation and/or population reduction. Storm damage can decrease food resources and force bats to forage on the ground, from where they are unable to take flight and are extremely vulnerable to predation (Pierson & Rainey 1992).</p>

Epidemics		
Disease	<ul style="list-style-type: none"> – Status: Historical – Confidence: Suspected – Consequence: Severe – Extent: Across the entire range 	Disease has been identified as decimating populations of flying-fox species. The cause of these epidemics is unknown, but the high fatality rate generally indicates that the responsible agent may have been introduced by domestic animals or humans (Pierson & Rainey 1992).

Status: “historical/ current/ future” – identify the temporal nature of the threat

Confidence: “suspected/ inferred/ known” – identify the extent to which we have confidence about that threat

Consequence: “severe/ moderate/ low/ unknown” – identify the severity of that threat

Trend: “decreasing/ static / increasing / unknown” – identify the extent to which it will continue to operate on the species

Extent: “across the entire range/across part of its range / unknown.” – identify its spatial context

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

The Percy Island Flying-fox is known from only one specimen collect between 1854-1874 on South Percy Island (Percy Isles), Queensland. So little information is available on the Percy Island Flying-fox that the decade of extinction cannot be readily estimated. However, Woinarski et al. (2014) put a presumed extinction decade of the 1890s.

The species is listed Extinct under the Queensland *Nature Conservation Act 1992* (DES 2018), the IUCN Red List (Richards & Hall 2008) and in the Action Plan for Australian Mammals (Woinarski et al. 2014). The Percy Island Flying-fox was previously listed Extinct under the *EPBC Act* but was removed on the basis that it was not a native species. Despite an ongoing lack of clarity on the species’ taxonomic status, the Australian Biological Resources Study now recognises the Percy Island Flying-fox as an Australian native (ABRS 2018).

Biological surveys conducted on the Percy Isles have not detected the Percy Island Flying-fox (EA 1999; Richards & Hall 2008). In addition, a search for a colony on nearby Akens Island (reported in 1991) did not sight the bat or find evidence of the colony’s existence (Hall and Richards pers com., cited in EA 1999).

Given the reported abundance of the species on Percy Island in the 19th century (Condor 2008), and that the roosting habits of all six extant Australian flying-fox species are strongly colonial (Pierson & Rainey 1992), it is likely that the Percy Island Flying-fox formed colonies. This behaviour makes the species less likely to escape detection during biological surveys and reduces the likelihood that the species would go unobserved during foraging forays to the mainland. Therefore, the lack of records of (in all probability) an easily detected species supports the likelihood of the species being extinct.

Condor (2008) proposes that the Percy Island Flying-fox was represented by a small population in the Percy Isles, which was vulnerable to habitat alteration and destruction of food sources within its distribution range. This dependence on restricted tracts of native forest for roosting and feeding was likely compounded by the low reproductive rate of flying-fox species, making recovery from a catastrophic event less likely (Pierson & Rainey 1992).

The data presented above appear to demonstrate that the species is **eligible for listing as Extinct**. 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.

Collective list of questions – your views

Information to aid listing assessment

1. Do you have further information on past or potential searches or research activities for the species?
2. Can you provide information on specimen records, including collection location and date?
3. Can you provide additional information on the range or location of populations, or a historic range (national extent)?
4. Do you have any additional information in regard to the ecology or biology of the species?
5. Do you further information on the historic threats that faced the species?
6. Are you aware of other knowledge (e.g. indigenous ecological knowledge) that may help better understand the species?
7. Are you aware of any cultural importance or use that the species had?

Any other information

8. Do you have comments on any other matters relevant to the assessment of this species?

References cited in the advice

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Richards G & Hall L (2008). *Pteropus brunneus*. The IUCN Red List of Threatened Species.

Viewed: 14 August 2019 Available at: <https://www.iucnredlist.org/species/18718/8509718>