The Minister approved this conservation advice and transferred this species from the Critically Endangered to Vulnerable category, effective from 07/12/2016

Conservation Advice

Saccolaimus saccolaimus nudicluniatus

bare-rumped sheathtail bat

Note: The information contained in this conservation advice was primarily sourced from 'The Action Plan for Australian Mammals 2012' (Woinarski et al., 2014). Any substantive additions obtained during the consultation on the draft have been cited within the advice. Readers may note that conservation advices resulting from the Action Plan for Australian Mammals show minor differences in formatting relative to other conservation advices. *These reflect the desire to efficiently prepare a large number of advices by adopting the presentation approach of the Action Plan for Australian Mammals, and do not reflect any difference in the evidence used to develop the recommendation.*

Taxonomy

Conventionally accepted as *Saccolaimus saccolaimus nudicluniatus* (De Vis 1905).

Saccolaimus saccolaimus (Temminck 1838) was first described from Java. It comprises five valid subspecies (Simmons 2005) and is distributed widely from the Solomon Islands and tropical Australia to India (Csorba et al., 2008).

The taxonomic status of the two Australian populations of *Saccolaimus saccolaimus* is unresolved. The taxon *S. s. nudicluniatus* was first described from Queensland (as *Taphozous nudicluniatus*, De Vis 1905). Both the Queensland and Northern Territory (including Kimberley) populations are considered as *S. s. nudicluniatus* under the EPBC Act 1999, but Hall et al. (2008) attributed the Northern Territory population to the nominate *S. s. saccolaimus* of Indonesia. Other previous authors have not attributed the Northern Territory population to either subspecies (McKean et al., 1981; Thomson 1991; Duncan et al., 1999; Schulz & Thomson 2007). Including populations outside Australia, the taxon, *nudicluniatus*, has been considered at the species level (De Vis 1905; Troughton 1925; Corbet & Hill 1980; Nowak & Paradiso 1983), the subspecies level (Koopman 1984, 1994; Flannery 1995, Hall et al., 2008), as well as being synonymised with the nominate (e.g. Goodwin 1979). Its extralimital distribution is also unclear. Flannery (1990) attributed those in New Guinea and the Solomon Islands to *nudicluniatus*, but he later (Flannery 1995) considered that this taxon occurred only in Australia and New Guinea, with the form in the Solomon Islands being *S. s. saccolaimus*.

Milne et al. (2009) demonstrated similarity between the two Australian geographic groups using genetic and morphological analyses. Taxonomic work currently underway, using more powerful nuclear markers, is investigating these groups in the context of the entire species complex (Armstrong pers. comm., cited in Woinarski et al., 2014) and may shed further light on the taxonomic groupings.

For the treatment here, whilst recognising the possibility that current taxonomic studies may conclude differently, we consider that only one taxon occurs in Australia (*S. s. nudicluniatus*), with that taxon also occurring beyond Australia (including New Guinea).

Conservation status

Vulnerable

The bare-rumped sheathtail bat was listed as Critically Endangered under the EPBC Act in 2001. Following a formal review of the listing status of the bare-rumped sheathtail bat, the Threatened Species Scientific Committee (the Committee) has determined that there is sufficient evidence to support a change of status of the subspecies under the EPBC Act from Critically Endangered to Vulnerable.

Species can be listed as threatened under state and territory legislation. For information on the listing status of this species under relevant state or territory legislation, see http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl.

Reason for conservation assessment by the Threatened Species Scientific Committee

This advice follows assessment of new information provided to the Committee to reassess the listing status of *Saccolaimus saccolaimus nudicluniatus*, for potential removal from the list.

Relevant part of the EPBC Act for amending the list of threatened native species

Section 186 of the EPBC Act states that:

"(2A) The Minister must not delete (whether as a result of a transfer or otherwise) a native species from a particular category unless satisfied that:

(a) the native species is no longer eligible to be included in that category; or

(b) the inclusion of the native species in that category is not contributing, or will not contribute, to the survival of the native species."

Public Consultation

Notice of the proposed amendment and a consultation document was made available for public comment for 32 business days between 29 February 2016 and 15 April 2016. Any comments received that were relevant to the survival of the species were considered by the Committee as part of the assessment process.

Species/Subspecies Information

Description

The bare-rumped sheathtail bat is a large insectivorous bat, with a head and body length of 81−97 mm and a weight of 48−55 g (Hall et al., 2008). It has reddish-brown to dark brown fur on its back and is slightly paler beneath. It can be distinguished from other Australian sheathtail bats (Emballonuridae) by the irregular white flecks of fur on its back and the naked rump (Churchill 1998; Menkhorst & Knight 2001), although not all specimens display these features (Hall et al., 2008). A throat pouch is present in males and is rudimentary in females. Compared to individuals from north-eastern Queensland, those from the Northern Territory may be slightly larger, darker (almost black) on the dorsal fur, with whitish belly fur and lacking the pronounced bare rump (Troughton 1925; McKean et al., 1981; Hall et al., 2008).

Distribution

The bare-rumped sheathtail bat is known to occur in north-eastern Queensland and the monsoonal tropics of the Northern Territory (Milne et al., 2009), and is likely to occur in areas of the Kimberley in Western Australia (Milne pers. comm., cited in Woinarski et al., 2014). In Queensland, it occurs from Ayr to the Iron Range (Dennis 2012), including Magnetic and possibly Prince of Wales Islands (Schulz & Thomson 2007). Most records are near-coastal, but one record (at Jasper Gorge, Northern Territory) has been found 150 km inland (Milne et al., 2009).

There are relatively few records of the subspecies across this extensive range, either suggesting that the subspecies is rare or it has a fragmented distribution. However, issues relating to its detection currently compromise the precise delineation of the subspecies' range and subpopulations: it is morphologically very similar to the yellow-bellied sheathtail bat (*Saccolaimus flaviventris*); is difficult to capture as it mostly flies above the canopy; and its echolocation call pattern is difficult to distinguish from freetail bats and other sheathtail bats within its range.

In 2009, genetic analyses of misidentified specimens of the closely related yellow-bellied sheathtail bat (*Saccolaimus flaviventris*) held at the Northern Territory Museum increased the species' extent of occurrence in the Northern Territory (Milne et al., 2009). In 2011, morphological analyses of four *S. flaviventris* specimens held at the Western Australian Museum indicated that they had been misidentified and are likely to belong to the species *S. saccolaimus* (Milne pers. comm., 2013). The bare-rumped sheathtail bat is therefore likely to be distributed through the Kimberley region of Western Australia as far west as Broome, however this has not been confirmed through genetic analyses (Milne pers. comm., 2013).

Identification of diagnostic characters from full spectrum echolocation recordings has led to further records of the bare-rumped sheathtail bat in new locations in Queensland (Coles et al., 2012). Other potentially useful diagnostic echolocation characters have been reported (Milne et al., 2009; Corben 2010; Ford et al., 2012), but there has not yet been publication of a detailed acoustic comparison of all Australian *Saccolaimus* species (Armstrong pers. comm., cited in Woinarski et al., 2014). If a reliable method for separating them acoustically can be developed, there is potential to better define the range and population size of the bare-rumped sheathtail bat from new surveys and the re-analysis of previous recordings.

Based on the scarcity of records in the previous 16 years, Duncan et al. (1999) considered that the range had probably declined, although were uncertain about their inference: 'it is not clear whether the species [bare-rumped sheath-tail bat] still exists in its former range, or whether the range has changed.' However, given the substantial number of recent records, derived largely from more intensive sampling and better diagnostic capability, there is no substantial evidence of any decline in range.

Relevant Biology/Ecology

In Australia, the bare-rumped sheathtail bat has been recorded mostly in eucalypt forests and woodlands, generally in near-coastal areas. In Queensland, it is known to be associated with coastal lowland rainforests, and more open forests dominated by *Eucalyptus* or *Corymbia* species interspersed with coastal lowland rainforest.

Overseas, the bare-rumped sheathtail bat has been observed roosting in a range of environments, including various hollow-bearing tree species and geological formations, such as caves. However, surveys of caves in Queensland and the Northern Territory have failed to locate this subspecies (Schulz & Thomson 2007). The small number of roosts recorded in Australia have all been found in deep tree hollows of the following species: poplar gum (*Eucalyptus platyphylla*), Darwin woollybutt (*E. miniata*), Darwin stringybark (*E. tetrodonta*) and weeping paperbark (*Melaleuca leucadendra* syn. *leucodendron*) (McKean et al. 1981; Compton & Johnson 1983; Churchill 1998; Murphy 2002; Clague pers. comm. 2013). Hollows in these tree species have also been used as breeding roosts. Such roosts are susceptible to damage by termites and by fire (Churchill 1998; Murphy 2002). Roosts may be used regularly, but individuals may use several roosts, and roost numbers at any site may vary over time (Whybird pers. comm., cited in Woinarski et al., 2014).

The subspecies is insectivorous and forages for flying insects above the canopy (Churchill 1998), although beyond Australia Csorba et al. (2008) considered that it also forages 'close to the ground'. It has been observed foraging within metres of the canopy in riverine gallery forest and *Melaleuca* dominated swamps in Queensland (Clague pers. obs., cited in Woinarski et al.,

2014). It is known to fly at altitudes up to and above 400 m and is likely capable of moving long distances (Clague pers. comm. 2015).

Females give birth to a single young, with birth records from Queensland in December and January (Compton & Johnston 1983), and from the Northern Territory from December to about April (Compton & Johnson 1983; Churchill 1998; Milne et al., 2009). Across its global range, the bare-rumped sheathtail bat is considered to be an 'adaptable' subspecies, tolerating some level of disturbance (Csorba et al., 2008).

Generation length is assumed to be 3−5 years, derived from a mean of age at sexual maturity (estimated at 1−2 years) and longevity (probably around 5−8 years), but no detailed information is available for this subspecies.

Threats

Threats to the bare-rumped sheathtail bat are outlined in the table below (Woinarski et al., 2014). Further detail on known and likely threats are in Schulz & Thomson (2007).

Threat factor	Consequence rating	Distributional extent over which threat may operate	Evidence base
Habitat loss and fragmentation	Severe	Localised	The preferred habitat (tall eucalypt open forest) is subject to localised development, mostly for horticulture and urban development (Duncan et al., 1999). The small number of confirmed roosts located in Australia have been in tree hollows; roost sites in trees have been destroyed during clearing (Compton & Johnson 1983).
Competition for tree hollows by bees, non-native and native birds	Minor	Minor	Not demonstrated, but possible (Schulz & Thomson 2007). The spread of the Asian honey bee (*Apis cerana*) in Queensland will increase the competition for hollows in Queensland (Hyatt 2012).
Disease	Unknown	Unknown	Not demonstrated, but possible. Congeners are known to carry the Australian bat Lyssavirus, but the consequences are unknown (Schulz & Thomson 2007; Dennis 2012).
Too frequent burning	Minor	Entire	Not demonstrated, but there are possible impacts on prey abundance and/or availability of large hollow trees used for roosting; its preferred open forest habitat has a very high fire frequency.

How judged by the Committee in relation to the EPBC Act Criteria and Regulations

Criterion 1. Population size reduction (reduction in total numbers)
Population reduction (measured over the longer of 10 years or 3 generations) based on any of A1 to A4

	Critically Endangered Very severe reduction	Endangered Severe reduction	Vulnerable Substantial reduction
A1	**≥ 90%**	**≥ 70%**	**≥ 50%**
A2, A3, A4	**≥ 80%**	**≥ 50%**	**≥ 30%**

A1 Population reduction observed, estimated, inferred or suspected in the past and the causes of the reduction are clearly reversible AND understood AND ceased.

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.

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*]

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.

based on any of the following:

(a) direct observation [*except A3*]

(b) an index of abundance appropriate to the taxon

(c) a decline in area of occupancy, extent of occurrence and/or quality of habitat

(d) actual or potential levels of exploitation

(e) the effects of introduced taxa, hybridization, pathogens, pollutants, competitors or parasites

Evidence:

Insufficient data to determine eligibility

Previous assessments of the conservation status of the bare-rumped sheathtail bat in Australia have been constrained by taxonomic uncertainty and lack of information about its distribution and range. A study by Milne et al. (2009) has clarified some taxonomic issues, substantially increased the subspecies' known range, and provided more information on its abundance. However, the population size and population trend of the subspecies remain poorly known.

There are relatively few Australian records of the bare-rumped sheathtail bat, especially in Queensland in recent decades (Whybird et al., 2011). However, it is difficult to interpret this meagre information as rarity, as the subspecies is difficult to catch (due to its high flight), and identification was previously constrained by lack of information about call characters that diagnosed it from the more abundant yellow-bellied sheathtail bat *S. flaviventris* (Milne et al., 2009).

Reardon et al. (2010) reviewed the status and distribution records, and undertook additional surveys, for ten microchiropteran bat species on Cape York Peninsula. They noted that most of the priority microbat species on Cape York Peninsula have small and restricted distributions within Cape York Peninsula, and do not appear to face the major threats that typically affect microbats. They further noted that genuine population trends in any species could not be detected, as previous research and monitoring of bats on Cape York Peninsula has been sporadic in time and location.

Habitat loss in some locations can be inferred to have led to, and continue to lead to, some decline in population size which may approach a rate of 10 percent in a three generation period (9−15 years) (Woinarski et al., 2014). However, as the distribution, habitat preferences and biology of the species in Australia remain poorly known (Schulz & Thomson 2007), there is little available information by which to assess whether a decline in distribution or population size may be occurring, or at what rate.

The Committee considers that, based on the information available, it is unlikely that the decline in population size exceeds 50 percent, and the subspecies would probably not meet the eligibility criteria for Endangered or Critically Endangered under this criterion. There is insufficient information to determine the eligibility of the subspecies for listing as Vulnerable under this criterion.

Criterion 2.	**Geographic distribution as indicators for either extent of occurrence AND/OR area of occupancy**		
	Critically Endangered Very restricted	**Endangered Restricted**	**Vulnerable Limited**
B1. Extent of occurrence (EOO)	**< 100 km²**	**< 5,000 km²**	**< 20,000 km²**
B2. Area of occupancy (AOO)	**< 10 km²**	**< 500 km²**	**< 2,000 km²**
AND at least 2 of the following 3 conditions:			
(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:

Insufficient data to determine eligibility

It is difficult to provide a robust estimate of the current EOO or AOO, as there are few records across its wide distribution, and the number and location of tree-roosts suitable for habitat are likely to vary over time. Based on the mapping of point records from 1976 to 2016, the extent of occurrence is estimated at 1 579 652 km^2, and the area of occupancy estimated at 140 km^2. Point records were obtained from state governments, museums and CSIRO. 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).

Woinarski et al. (2014) considered that the AOO, which they estimated to be 32 km^2, is an under-estimate due to limited sampling across the occupied range, and is likely to be greater than 2000 km^2. The subspecies occurs at more than five locations (Woinarski et al., 2014). A decline in population is inferred from loss of habitat.

The Committee considers that, based on the information available, the AOO is likely to be somewhere between 140 km^2 and 2000 km^2. The subspecies does not meet the eligibility criteria for Endangered or Critically Endangered under this criterion as it occurs at more than 5 locations and no extreme fluctuations are known to occur. However, it may meet the criteria for Vulnerable as the number of locations may be less than 10 and a continuing decline in habitat is inferred, but there is insufficient information to determine this.

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**
	(ii) % of mature individuals in one subpopulation =	**90 – 100%**	**95 – 100%**	**100%**
(b)	Extreme fluctuations in the number of mature individuals			

Evidence:

Insufficient data to determine eligibility

There is no robust estimate of population size. Population data are limited as only a small number of roost sites have been found in Australia.

Churchill (1998) noted a record of 40 individuals in one tree roost, and Milne et al. (2009) noted another tree roost containing about 100 individuals. A tree roost noted in Cairns in 2012 contained at least 77 individual bats during peak occupation (Clague pers. comm., cited in Woinarski et al., 2014). A PhD study by Broken-Brow (pers. comm., 2016) found that on Cape York Peninsula known records of the species are limited to 2 or 3 specific locations (despite relatively significant effort across Cape York in the past few years to obtain new records), and the species occurs in extremely low abundance with dusk sightings recording approximately 10 individuals at any one location.

Woinarski et al. (2014) and Armstrong (pers. comm., 2016) suspect the number of mature individuals to be greater than 10 000, given that there is likely to be good roosting potential for the species in a significant proportion of the available habitats across its broad distribution. However, given the limited data available, the number of roost sites and average number of individuals per roost site across the subspecies' distribution cannot be reliably estimated.

The Committee considers that there is insufficient information to determine the eligibility of the species for listing in any category under this criterion.

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

Evidence:

Not eligible

Although there is no robust estimate of population size, considering the subspecies' wide distribution, the number of mature individuals is very likely to be greater than 1000 (see also Criterion 3).

The Committee considers that the total number of mature individuals is likely to be greater than 1000 which is not considered extremely low, very low or low. Therefore, the species has not been demonstrated to have met this required element of this criterion.

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:

Insufficient data to determine eligibility

Population viability analysis has not been undertaken.

Consideration for delisting

The bare-rumped sheathtail bat was listed as Critically Endangered under the EPBC Act under Criterion 1 in 2001. The assessment presented in this Conservation Advice suggests that the subspecies may no longer be eligible to be listed under the EPBC Act, as it may not satisfy the listing criteria in any category. New information shows that its range is larger than previously thought, and there is no evidence of a substantial, severe or very severe reduction in population size.

However, the assessment also indicates a deficiency in data for this subspecies. There were insufficient data to assess the subspecies against criteria 1, 2, 3 or 5 to determine whether it meets the eligibility criteria for listing. Assessments against criteria 1 and 2 indicate that the subspecies is unlikely to meet the eligibility criteria for listing as Endangered or Critically Endangered, but may meet the eligilibility criteria for listing as Vulnerable.

The population size and population trends of the subspecies are poorly known, and there are no robust estimates of extent of occurrence or area of occupancy. It is rarely encountered and there are few records; it may be very rare, or more common but rarely reported due to difficulties in low detectability. Considering its habitat requirements, the population may be declining due to habitat quality degradation and habitat loss. Given the uncertainty in the assessment and the suspected population trajectory, there is insufficient evidence to demonstrate that the bare-rumped sheathtail bat should not be included on the threatened species list under the EPBC

Act, as it is possible it may satisfy the criteria for Vulnerable when further information becomes available.

Inclusion of the bare-rumped sheathtail bat in the threatened species list may be contributing to its survival, as the EPBC Act requires project proponents to refer a proposal for assessment if it may have a significant impact on a threatened species/subspecies. Where necessary, the Department has issued conditions requiring proponents to avoid, minimise or mitigate impacts on the bare-rumped sheathtail bat.

Conservation Actions

Recovery Plan

A recovery plan for this species is currently in place. The *National recovery plan for the bare-rumped sheathtail bat* Saccolaimus saccolaimus nudicluniatus (Schulz & Thomson 2007) was developed by the State of Queensland and adopted as a national recovery plan under the EPBC Act in 2008.

The recovery plan includes the following objectives:

- develop more effective detection techniques (including obtaining echolocation reference calls) and undertake systematic surveys to enable a more comprehensive assessment of distribution, population size, status and habitat preferences;
- increase protection of known roosts both on and outside reserved lands;
- better determine roosting requirements and document foraging requirements of the subspecies, including potential seasonal and distributional differences and the identification of threatening processes;
- establish monitoring sites to investigate population trends in the subspecies; and
- clarify the taxonomic status of the subspecies.

Some of these objectives have been achieved, most notably some clarification of its taxonomic status (Milne et al., 2009; Armstrong pers. comm., cited in Woinarski et al., 2012), the characterisation of diagnostic echolocation calls (Clague pers. comm., cited in Woinarski et al., 2012); and more intensive sampling in Cape York Peninsula to improve knowledge of its distribution and status (Reardon et al., 2010). However, no roosts are currently protected from known threatening processes, and habitat critical to survival has not been identified. The plan is scheduled to cease in 2018.

The Committee recommends that the existing recovery plan not be renewed after it ceases in 2018, as its continuation would not add significant benefit above an approved Conservation Advice. This Conservation Advice provides sufficient direction to implement priority actions, mitigate key threats and enable recovery of the subspecies.

Primary Conservation Actions

1. Undertake targeted surveys to identify important subpopulations, roost sites and habitat requirements.
2. Protect important subpopulations, roost sites and mature trees within the subspecies' distribution.
3. Maintain the quality of habitat, particularly around roost sites.
4. Assess trends in population and distribution, and the relative impacts of threats.

Further habitat destruction from activites such as land clearing and mining, in areas containing important subpopulations and roost sites, is likely to have a significant impact on the subspecies. Prior to any clearing or development within the subspecies' distribution, targeted surveys for the bare-rumped sheathtail bat should be undertaken.

Conservation and Management Actions

There are no specific management actions targeted at the bare-rumped sheathtail bat. Parts of its range are included in conservation reserves, where fire management is a priority.

There is no monitoring program specifically for the bare-rumped sheathtail bat. However, there is increased survey and monitoring effort prompted by attempts to resolve the conservation status of poorly-known bat species (e.g. Reardon et al., 2010) and by requirements for environmental impact assessments.

Recent advances in resolving diagnostic features in its echolocation calls have increased the capability to monitor this subspecies using broadband bat detectors, although diagnosis from other *Saccolaimus* species may still not be entirely unambiguous (Armstrong pers. comm., cited in Woinarski et al., 2014). It is not readily caught in harp traps or mist nets set below the canopy. Its use of large trees in forested areas (rather than caves) as roosting sites limits the ability to monitor populations at fixed large roosts. However, if located, roost trees can be monitored by regular stag watches to provide reliable counts of colony size at dusk emergence.

Recommended conservation and management actions are outlined in the table below (Woinarski et al., 2014).

Theme	Specific actions	Priority
Active mitigation of threats	Protect all known roosts and their surrounds within and outside conservation reserves.	High
	Prevent extensive tree clearing in areas occupied by this subspecies; and/or ensure mature trees and corridors are retained.	High
	Reduce the frequency, extent and intensity of fires.	Medium
Captive breeding	N/a	
Quarantining isolated populations	N/a	
Translocation	N/a	
Community engagement	Involve Indigenous ranger groups in survey, monitoring and management.	Medium
	Collaborate with landholders and other stakeholders to prevent loss and disturbance of roost sites.	Medium

Survey and monitoring priorities

Theme	Specific actions	Priority
Survey to better define distribution	Undertake fine-scale sampling to identify and circumscribe important subpopulations (and roost sites), and assess the population size of these.	High
	Undertake broad-scale surveys to assess distribution and abundance.	Medium
Establish or enhance monitoring program	Design an integrated bi-annual monitoring program across its range (including at known roost sites) to determine population trends; surveys should be undertaken in both the wet and dry seasons.	Medium-high
	Implement an integrated monitoring program linked to an assessment of management effectiveness.	Medium-high

Information and research priorities

Theme	Specific actions	Priority
Assess relative impacts of threats	Identify the extent to which suitable roost sites are limiting population size.	Medium
	Identify the population-level responses to a range of fire regimes, and model population viability across all fire scenarios (including consideration of fire impacts on roost site availability).	Medium
	Assess the impact of recently invading insects that may interfere with hollow use (notably Asian honey bees).	Medium
	Assess population-level impacts of clearing on the availability of roost sites.	Low-medium
	Examine patterns of persistence or occurrence in now fragmented habitat.	Low-medium
Assess effectiveness of threat mitigation options	Assess the extent to which tree and/or corridor retention may allow for persistence of this subspecies in modified landscapes.	Medium
	Assess the efficacy and impacts of management options to reduce fire frequency, extent and intensity.	Low-medium
Resolve taxonomic uncertainties	Undertake genetic studies to establish the subspecies' relationships with extralimital forms (Reardon et al. 2010); currently being undertaken by K. Armstrong.	Medium
Assess habitat requirements	Investigate seasonal and spatial patterning of foraging habitat use.	Medium
	Characterise roosting requirements, including maternity and non-breeding roosts.	Medium
Assess diet, life history	Investigate key dietary components	Low-medium
	Assess the extent to which food availability may be affected by fire regimes.	Low-medium

Recommendations

(i) The Committee recommends that the list referred to in section 178 of the EPBC Act be amended by **transferring** from the Critically Endangered category to the Vulnerable category:

Saccolaimus nudicluniatus nudicluniatus

(ii) The Committee recommends there not be a recovery plan for the species.

Threatened Species Scientific Committee

06/09/2016

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