



Conservation Advice for *Chalinolobus dwyeri* (Large-eared Pied Bat)

In effect under the *Environment Protection and Biodiversity Conservation Act 1999* from 23 November 2021.

This document provides a foundation for conservation action and further planning.



Chalinolobus dwyeri (Large-eared Pied Bat) © Copyright: Antics Film & Photographic Productions

Conservation status

Chalinolobus dwyeri (Large-eared Pied Bat) is listed in the Vulnerable category of the threatened species list under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwth) (EPBC Act) effective from 4 April 2001.

The main factors that make the species eligible for listing in the Vulnerable category are its very restricted geographic distribution, the low number of nursery roosts, and the presence of numerous actual and potential threats.

Species can also be listed as threatened under state and territory legislation. For information on the current listing status of this species under relevant state or territory legislation, see the [Species Profile and Threat Database](#).

Species information

Taxonomy

Conventionally accepted as *Chalinolobus dwyeri* Ryan, 1966.

Description

Chalinolobus dwyeri (Large-eared Pied Bat) is a medium-sized insectivorous bat measuring approximately 100 mm including the head and tail and weighing 7-12 g (Hoye & Dwyer 1995). It has shiny, black fur on the body and a white stripe on the ventral side of the torso where it adjoins the wings and tail. The ears are large and lobes of skin adorn the lower lip and between the corner of the mouth and the bottom of the ear (DERM 2011). The species can be distinguished from *Chalinolobus picatus* (Little Pied Bat) and *Chalinolobus nigrogriseus* (Hoary Wattled Bat) by larger ears and longer forearms, and *Chalinolobus gouldii* (Gould's Wattled Bat) by larger ears and white fringe between ventral body and wings (Hoye & Schulz 2008).

Distribution

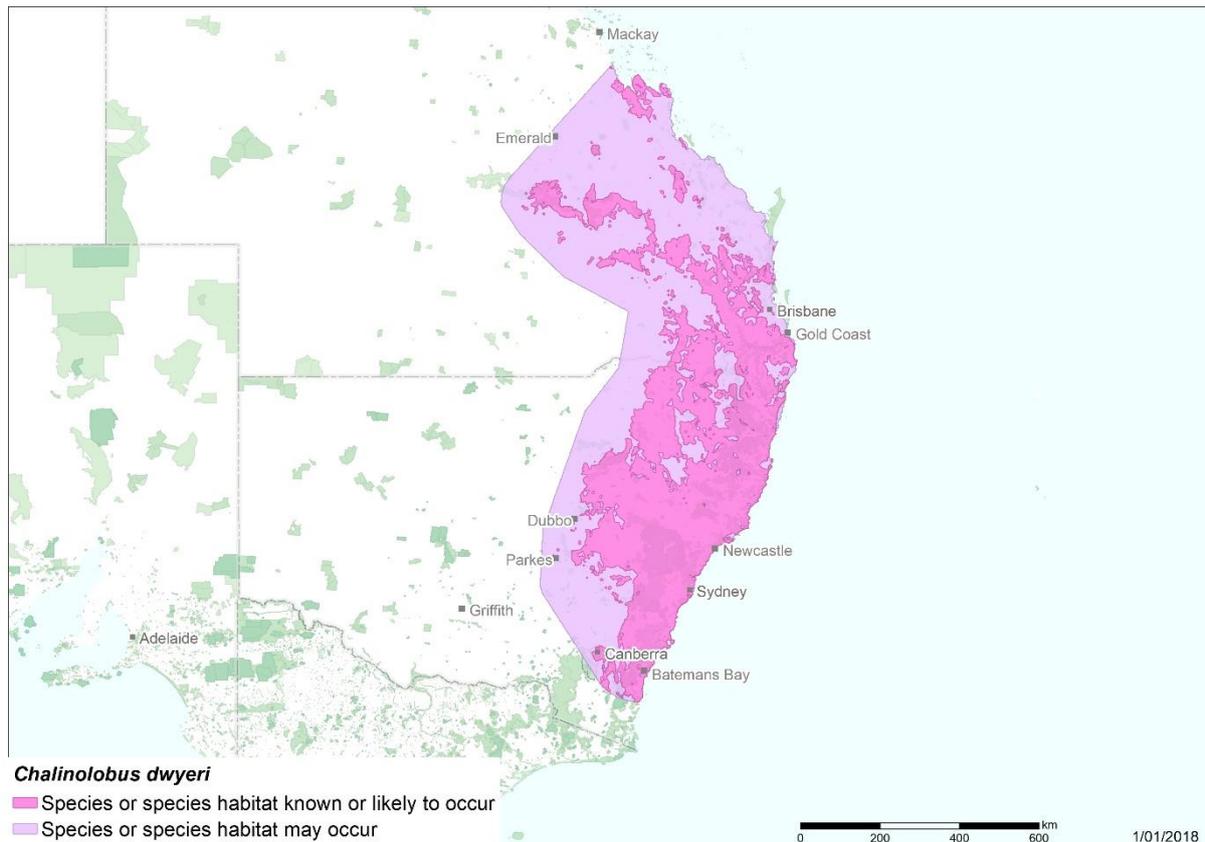
The Large-eared Pied Bat is patchily distributed in central-eastern New South Wales (NSW) and south-eastern and central Queensland, from the area bounded by Shoalwater Bay, north of Rockhampton (QLD), south to Ulladulla, NSW (DERM 2011). The population structure and number of locations are poorly known. As the species' Area of Occupancy (AOO) is defined by the area supporting maternity roost sites, this is considerably smaller than its Extent of Occurrence (EOO). The species' AOO is estimated to be 1500 km² and its EOO is estimated to be 280 000 km² (Woinarski et al. 2014). The species distribution may be considered severely fragmented given that most individuals occur in small and relatively isolated subpopulations.

Much of the known distribution of the Large-eared Pied Bat occurs in NSW (DERM 2011). Its main strongholds are in the Sydney sandstone region and Pilliga region (Woinarski et al. 2014) where it is uncommon and patchily distributed (DERM 2011; Pennay et al. 2011). In the NSW north-east at Coolah Tops, Mt Kaputar and Warrumbungle National Park it is present in areas of volcanic strata (DERM 2011). The species has been tentatively identified from recorded echolocation calls further west at Tottenham, west of Narromine NSW (Shelley 2001).

Records in Queensland are known from sandstone escarpments in the Carnarvon and Expedition Ranges, Blackdown Tablelands (DERM 2011) and Cania Gorge (Woinarski et al. 2014). It is likely that these areas support a high proportion of Queensland populations. Additional records exist in the Scenic Rim near the NSW/Queensland border (DERM 2011) (Map 1).

The species' total population size is estimated to be less than 20 000 individuals (Woinarski et al. 2014). There are some accounts of subpopulation size for a number of individual locations, with the largest known maternity colonies containing 20-40 females (Woinarski et al. 2014; Pennay 2008). Across its range, the Large-eared Pied Bat is infrequently recorded. Pennay et al. (2011) note that in the area with its highest recording the species comprised only 6% of all bat observations.

Map 1 Modelled distribution of the Large-eared Pied Bat



Source: Species distribution data [Species of National Environmental Significance](#) database, base map Geoscience Australia

Caveat: The information presented in this map has been provided by a range of groups and agencies. While every effort has been made to ensure accuracy and completeness, no guarantee is given, nor responsibility taken by the Commonwealth for errors or omissions, and the Commonwealth does not accept responsibility in respect of any information or advice given in relation to, or as a consequence of, anything containing herein.

Species distribution mapping: The species distribution mapping categories are indicative only and aim to capture (a) the specific habitat type or geographic feature that represents to recent observed locations of the species (known to occur) or preferred habitat occurring in close proximity to these locations (likely to occur); and (b) the broad environmental envelope or geographic region that encompasses all areas that could provide habitat for the species (may occur). These presence categories are created using an extensive database of species observations records, national and regional-scale environmental data, environmental modelling techniques and documented scientific research.

Cultural and community significance

The cultural significance of the Large-eared Pied Bat is not well understood. Consultation with Indigenous communities and Traditional Owners should be considered in recovery and management across the species distribution range. Indigenous organisations identified are listed in the national recovery plan for the Large-eared Pied Bat (DERM 2011).

Relevant biology and ecology

The modelled distribution of the Large-eared Pied Bat revealed a close association with sandstone escarpment (for roosts) and fertile valleys (for foraging), particularly where the valleys support box gum woodland. This is a relatively restricted combination of habitat factors, and the extent of woodlands on fertile soils within its range has been greatly diminished by clearing (Pennay 2008). The presence of suitable caves or overhangs may be more important than the precise geology, as Large-eared Pied Bats roost in rhyolite cliffs in south-east

Queensland (Williams and Thomson, unpublished data). The Large-eared Pied Bat is dependent on the presence of diurnal roosts for shelter. Roosts are also used at night when bats are not feeding, as well as used for raising young. The species is known to roost in caves, overhangs, disused mine shafts, and abandoned *Petrochelidon ariel* (Fairy Martin) nests (Schulz 1998). The value of mine shafts and disused Fairy Martin nests as roost sites has not been evaluated, but may offer important roost sites in areas where natural roosts are uncommon or absent, allowing the Large-eared Pied Bat to inhabit and/or disperse through otherwise unsuitable areas. The number of known breeding sites is limited and the structure of maternity roosts appears to be very specific (arch caves with dome roofs). Caves need to be high and deep enough to allow juvenile bats to learn to fly inside and have indentations in the roof. Roosting bats cluster in these indentations, most likely to allow the capture of heat. These physical characteristics are uncommon in the landscape and their scarcity poses a limiting factor in the distribution of the Large-eared Pied Bat (Pennay 2008). The species has been recorded foraging in a range of vegetation types, including dry and wet sclerophyll forest, grassy woodland, *Callitris* dominated forest, tall open eucalypt forest with a rainforest sub-canopy, subtropical rainforest and small clearings adjacent to rainforest, sub-alpine woodland and sandstone outcrop country (Hoye & Dwyer 1995, Pennay 2002, DECC 2007). The occurrence of high-fertility forest or woodland near suitable roosting habitat is rare in the landscape, which implies that the species may always have been uncommon; however preferential clearing of fertile forests and woodlands has almost certainly reduced the amount of available habitat considerably (DECC 2007, Pennay 2008).

Much of the information on the ecology of the Large-eared Pied Bat comes from studies of the population at the type locality at Copeton, NSW during the early 1960s (Dwyer 1966). Breeding at the site was recorded during two summers with no breeding recorded for the following two years. Females were pregnant in October and by early December they had all given birth (mostly to twins) and were lactating. The nursery colony was established in September by both adult females and males with the majority of adult males leaving by the time the young were born in early summer. During late February and March juveniles left the roost, with adult females leaving the roost after juveniles, leaving the site abandoned during the winter months. Females are able to breed at one year of age (DERM 2011). Females return to the same maternity sites in successive years. The generation length 4-5 years (reproductive maturity for insectivorous bats is approximately 10 months, and longevity is 8-10 years).

Information on breeding has also been recorded from several sites in sandstone caves near Coonabarabran NSW. Caves visited in mid-November over several years had between 15 and 40 adult females and their young (Pennay 2008). Another small group of lactating females and young were found in a disused gold mine near Barraba NSW (P. Spark pers. comm. 2011, cited in DERM 2011). Post-lactating females (i.e., recently ceased lactating) have been captured in SE Qld in January (Gynther & Venz unpubl. data).

Diet has not been examined in the Large-eared Pied Bat. Wing morphology suggests that it is a relatively slow-flying manoeuvrable species. Almost all records are within several kilometres of cliff lines or rocky terrain. It is likely that critical foraging resources are also located in these areas (DERM 2011). A study by Williams and Thomson (2018) found Large-eared Pied Bats foraged along forest edges at mid-to-upper-canopy height and on the outer canopy of individual trees within the forest. Females had larger foraging areas than males, but both showed high fidelity to preferred foraging areas. Females roosted separately from males, showing less roost fidelity and roosting at a greater distance from the foraging area (Williams & Thomson 2018).

Habitat critical to the survival

It is not practicable to describe habitat critical to the survival of this species. Large areas of potential habitat for this species are unsurveyed and confirmation as habitat can only be achieved through detection-based presence /absence field surveys. In the absence of confirmed occupancy, potential habitat can be identified as necessary to support the recovery of this species through verification of the presence of habitat attributes. The species eligibility for listing and key threat being the loss, degradation and fragmentation of habitat suggests that all habitat for the species either now or at some point in the near future is likely to be critical to the survival of the species.

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat.

Important populations

In this section, the word population is used to refer to subpopulation, in keeping with the terminology used in the EPBC Act and state/territory environmental legislation.

Further survey work is required throughout the species' known range to determine the size and distribution of existing populations.

At this point in time there is insufficient information available to be able to describe, with spatial information, important populations of this species. Further research is needed to do this, if practicable to do so (see conservation actions). Until such information is available, all populations of this species should be considered important due to their likely role in maintaining population connectivity and genetic diversity necessary for the evolutionary potential of the species.

Threats

Threats to the Large-eared Pied Bat include habitat loss and fragmentation, mismanaged fire and invasive species. These are further outlined in Table 1.

Table 1 Threats impacting the Large-eared Pied Bat

Threat	Status and severity ^a	Evidence
Habitat loss and fragmentation		
Destruction of and interference with maternity roosts and other roosts	<ul style="list-style-type: none"> • Status: historical / future • Confidence: known • Consequence: major • Trend: static • Extent: across part of its range 	Due to its dependence on roost sites for shelter and breeding, the Large-eared Pied bat is particularly vulnerable to threats that impact these sites. Up to 100 individuals may be present at such roosts, possibly representing a substantial proportion of a local population (DERM 2011). There has been a demonstrated loss of at least two roost sites (due to flooding after dam construction) (Duncan et al. 1999, Dennis 2012 both cited in Woinarski et al. 2014).

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Vegetation clearance in the proximity of roosts	<ul style="list-style-type: none"> • Status: historical / current / future • Confidence: suspected • Consequence: major • Trend: static • Extent: across part of its range 	Clearing or harvesting of vegetation in or around roosts for agriculture or development has the potential to affect availability of foraging resources and fragmentation of the surrounding vegetation. This is likely to be particularly detrimental in the vicinity of maternity roosts where pregnant and lactating females require close proximity to sufficient food resources to raise young. The microclimate within roosts may also be altered through clearing and logging altering solar radiation and groundwater levels in the vicinity of roosts (DERM 2011).
Mining/closure of roosts	<ul style="list-style-type: none"> • Status: future • Confidence: suspected • Consequence: major • Trend: static • Extent: across part of its range 	Disused mines are often re-mined, as they become economical, or are filled in for safety reasons (DERM 2011). The Large-eared Pied Bat was originally described from a population roosting within a disused diamond mine at Copeton, NSW (Ryan 1966). Another known breeding site occurs in a disused mine at Barraba, NSW. Such roosts may be important, particularly in areas where caves are uncommon or not suitable for roosting.
Mine induced subsidence of cliff lines	<ul style="list-style-type: none"> • Status: future • Confidence: inferred • Consequence: major • Trend: static • Extent: across part of its range 	Portions of the Large-eared Pied Bat range occurs in mining leases for underground coal in both NSW and Queensland. Much of its habitat occurs in sandstone escarpments, large parts of which are underlain by coal seams and potentially at risk of collapse from underground and longwall mining. Large areas of sandstone cliff line have collapsed from longwall mining within known forage habitat of the Large-eared Pied Bat, though roost destruction is inferred due to lack of knowledge prior to collapse. If a nursery roost collapsed, especially during the breeding season, this could cause large losses to a local population. The timing of this type of collapse cannot be controlled (M Pennay pers. comm. 2010, cited DERM 2011).
Mismanaged Fire		
Fire in the proximity of roosts	<ul style="list-style-type: none"> • Status: historical / current • Confidence: known • Consequence: moderate • Trend: unknown • Extent: across the entire range 	<p>The Department of Agriculture, Water and Environment (DAWE) estimates that 26.6% of the species habitat occurs within areas affected by the 2019-2020 wildfires (Legge et al. 2021). The impact of these fires is yet to be thoroughly assessed.</p> <p>Individuals congregate to roost and raise young which places a reasonable proportion of a local population at a single locality. Most known cave roosts are in shallow caves or in the outer reaches of deeper mines or caves. As such, individuals are potentially susceptible to direct mortality from heat and smoke from fires. Mortality can be expected to be higher during high intensity fires or where fires occur on a regular basis. Mortality is potentially higher for creched young unable to escape smoke as adults may be able to.</p> <p>The longer-term impacts of fire frequency and intensity on the Large-eared Pied Bat are unknown. Foraging resources may be</p>

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		impacted through changes in vegetation composition and structure. Factors potentially impacting prey species include changes in floristics, invasion of weed species and loss of a mosaic of vegetation of different age classes (DERM 2011).
Invasive species		
Habitat disturbance by other animals, including livestock and feral animals	<ul style="list-style-type: none"> • Status: historical / current • Confidence: known • Consequence: moderate • Trend: static • Extent: across part of its range 	<p>Large-eared Pied Bats roosts are increasingly inhabited by feral Goats. This is particularly the case in sandstone escarpment areas where caves are used as shelter by feral Goats. There is some evidence that feral Goats destroy roost sites or disturb roosting bats in some cave and cliff locations (Pennay 2008, Dennis 2012, cited in Woinarski et al. 2014).</p> <p>Bats were observed abandoning one of the few known nursery caves after it was disturbed by macropods (DERM 2011).</p>
Predation by introduced predators	<ul style="list-style-type: none"> • Status: unknown • Confidence: inferred • Consequence: moderate • Trend: unknown • Extent: across the entire range 	<p>Predation by introduced predators, such as Cats (<i>Felis catus</i>), European Red Foxes (<i>Vulpes vulpes</i>) and Rats (<i>Rattus</i> sp.) on the Large-eared Pied Bat has not been investigated. It is possible that predation may occur where roosts are limited and bats are forced to roost close to the ground. At several known roosts, individuals roost within 1.5 m of the ground, which would appear to make them vulnerable to attack from Cats, Foxes and possibly Rats (DERM 2011).</p>

Miscellaneous		
Impact of diseases	<ul style="list-style-type: none"> • Status: unknown • Confidence: inferred • Consequence: unknown • Trend: unknown • Extent: across part of its range 	The impact of diseases, including but not limited to, White-nose syndrome (WNS) is a potential threat to the species. WNS is caused by the fungus <i>Pseudogymnoascus destructans</i> . It has not yet been detected in Australia but is a threat to cave-dwelling bats in other parts of the world and could have a significant impact of this species if it is introduced to Australia. The threat would be expected to be more severe in colder parts of the species' range as " <i>P. destructans</i> grows best between 5°C and 10°C and ceases growth above 20°C" (Qld DAF 2016).
Disturbance from human recreational activities	<ul style="list-style-type: none"> • Status: unknown • Confidence: inferred • Consequence: unknown • Trend: unknown • Extent: across part of its range 	Recreational activities such as bushwalking, caving and abseiling have the potential to disturb Large-eared Pied Bat in their cave or mine roosts. Repeated disturbance could potentially lead to bats abandoning roosts, as well as possible mortality from the burning of winter fat stores during arousal from torpor (Speakman et al. 1991). This scenario is most relevant where roosts occur in easily accessible situations (DERM 2011).
Use of pesticides	<ul style="list-style-type: none"> • Status: unknown • Confidence: inferred • Consequence: unknown • Trend: unknown • Extent: across the entire range 	The use of certain pesticides for agricultural purposes may indirectly impact this species (NSW OEH), possibly by reducing the prey availability or via bioaccumulation.

Status—identify the temporal nature of the threat;

Confidence—identify the extent to which we have confidence about the impact of the threat on the species;

Consequence—identify the severity of the threat;

Trend—identify the extent to which it will continue to operate on the species;

Extent—identify its spatial content in terms of the range of the species.

Each threat has been described in Table 1 in terms of the extent that it is operating on the species. The risk matrix (Table 2) provides a visual depiction of the level of risk being imposed by a threat and supports the prioritisation of subsequent management and conservation actions. In preparing a risk matrix, several factors have been taken into consideration, they are: the life stage they affect; the duration of the impact; and the efficacy of current management regimes, assuming that management will continue to be applied appropriately. The risk matrix and ranking of threats has been developed in consultation with experts and using available literature.

Table 2 Large-eared Pied Bat risk matrix

Likelihood	Consequences				
	Not significant	Minor	Moderate	Major	Catastrophic
Almost certain	Low risk	Moderate risk	Very high risk Fire in the proximity of roosts	Very high risk Destruction of / interference with maternity roosts and other roosts	Very high risk

Likelihood	Consequences				
	Not significant	Minor	Moderate	Major	Catastrophic
Likely	Low risk	Moderate risk	High risk Habitat disturbance by other animals, including livestock and feral animals	Very high risk	Very high risk
Possible	Low risk	Moderate risk	High risk	Very high risk Mining of roosts Mine induced subsidence of cliff lines Vegetation clearance in the proximity of roosts	Very high risk
Unlikely	Low risk	Low risk	Moderate risk	High risk	Very high risk
Unknown	Low risk	Low risk	Moderate risk Predation by introduced predators Disturbance from human recreational activities Use of pesticides Impact of diseases	High risk	Very high risk

Priority actions have been developed to manage the threat particularly where the risk was deemed to be ‘very high’ or ‘high’. For those threats with an unknown or low risk outcome it may be more appropriate to identify further research or maintain monitoring.

Conservation and recovery actions

Primary conservation objective

By 2030 the distribution and the abundance of the species populations is maintained.

Conservation and management priorities

Habitat loss, disturbance and modifications

- Protect and prevent impacts to habitat which is important to the survival of the species in the planning, construction and post construction phases of developments. Important components of this action are:
 - Preventing vegetation clearing or logging of high value foraging habitat within the vicinity of known or potential roosts.

- Ensuring robust field survey guidelines are available, which account for the species' detectability, to identify habitat areas important to the survival of the species.
- Develop conservation covenants on lands with maternity roosts or high value foraging habitat.
- Develop disturbance prevention and management guidelines for important roost and maternity sites.
- Manage recreational activities such as bushwalking, caving and abseiling in the vicinity of known or potential roosts.
- Reduce the use of pesticides, and consider alternatives where available, in the vicinity of known habitat.

Fire

- Undertake surveys in known habitat to determine the impact of the 2019-2020 wildfires on the species.
- Establish fire prescriptions for areas around each identified priority roost or maternity site to protect known habitat from burning at too-frequent intervals, or too intensely.

Invasive species (including threats from grazing, trampling, predation)

- Control introduced species, such as goats, cats and foxes, where necessary.
- Reduce the impacts of grazing by sheep, cattle or goats in the vicinity of known or potential roosts to reduce disturbance to these sites.

Stakeholder engagement/community engagement

- Encourage ongoing and effective coordination among stakeholders to support the species' conservation.
- Engage and involve Traditional Owners in all conservation actions, including survey, monitoring and management actions.
- If appropriate, engage interested nature conservation, community and industry groups in participating in surveys or monitoring for the species.
- Develop a communication plan for stakeholder groups and the broader public to increase awareness of species' requirements related to its survival and advise of recovery progress.
- Develop specific information sheets for rock-climbing and speleological (caving) groups to increase awareness of the risk of roost disturbance, and the risk of spreading White Nose Syndrome from clothing, shoes, caving gear or other equipment that has been used overseas and not properly cleaned.

Survey and monitoring priorities

- Undertake targeted surveys throughout the range of the Large-eared Pied bat to clarify its distribution and abundance, and to identify priority sites for management actions.
- Establish and maintain a monitoring program across representative localities/segments of the species' range to:
 - document post-fire recovery;

- determine preferred fire regime;
 - determine trends in population size and distribution;
 - determine threats and their impacts (e.g., impact of predation, impact of vegetation clearing for agricultural purposes); and,
 - monitor the effectiveness of management actions and the need to adapt them if necessary.
- Identify and locate roost structures such as cave systems, old mine sites and geological formations that require surveying to confirm whether the bat uses them or not. Surveys for maternity roosts should be undertaken during the breeding season, in mid spring to summer.
 - Continue to define fine-scale distribution patterns and the number of individuals (or relative abundance) in populations.

Information and research priorities

- Identify priority colonies and sites for conservation management and protection.
- Improve understanding of the attributes of winter roosting sites and male roosting sites.
- Collect and analyse genetic material from individuals across geographic range of Large-eared Pied Bat to facilitate analysis of population genetics and population connectivity.
- Assess extent of contamination with chemicals used in agriculture.
- Assess impacts of habitat fragmentation on viability of subpopulations.
- Assess extent and impacts of feral Goat disturbance or damage at important roost sites.
- Assess life history parameters, and the factors affecting reproductive success and survivorship.
- Identify key food resources.
- Identify key (roosting and foraging) habitat requirements, and their availability.
- Assess home range, dispersal patterns and site fidelity.
- Assess and identify important populations and areas of habitat that are critical to the survival of the species.

Links to relevant implementation documents

[Commonwealth Listing Advice on *Chalinolobus dwyeri* \(Large-eared Pied Bat\) \(2012\)](#)

[National recovery plan for the large-eared pied bat *Chalinolobus dwyeri* \(2011\)](#)

[NSW Saving Our Species - *Chalinolobus dwyeri* \(Large-eared Pied Bat\) Profile](#)

Conservation Advice references

Department of Environment and Climate Change (DECC) (2007) *Terrestrial vertebrate fauna of the Greater Southern Sydney region: Volume 2 Species of conservation concern and priority pest species*. A joint project between the Sydney Catchment Authority and the Parks and Wildlife Division of the Department of Environment and Climate Change by the

Information and Assessment Section, Metropolitan Branch, Climate Change and Environment Protection Group, Department of Environment and Climate Change, NSW.

Department of Environment and Resource Management (DERM) (2011) National recovery plan for the Large-eared Pied Bat *Chalinolobus dwyeri*. Report to the Department of Sustainability, Environment, Water, Population and Communities, Canberra.

Dwyer PD (1966) Observations on *Chalinolobus dwyeri* (Chiroptera: Vespertilionidae) in Australia. *Journal of Mammalogy* 47, 716–718.

Hoye GA & Dwyer PD (1995) Large-eared pied bat *Chalinolobus dwyeri*, in R Strahan (ed.), *The Mammals of Australia*. Reed Books. Chatswood, NSW. pp. 510–511

Hoye GA & Schulz M (2008) Large-eared Pied Bat *Chalinolobus dwyeri* Ryan, 1966, in S Van Dyck & R Strahan (eds), *The Mammals of Australia Third Edition*. Reed New Holland. Chatswood, NSW.

Legge S, Woinarski JCZ, Garnett ST, Geyle H, Lintermans M, Nimmo DG, Rumpff L, Scheele BC, Southwell DG, Ward M, Whiterod NS, Ahyong S, Blackmore C, Bower D, Brizuela Torres D, Burbidge AH, Burns P, Butler G, Catullo R, Dickman C.R, Doyle K, Ensby M, Ehmke G, Ferris J, Fisher D, Gallagher R, Gillespie G, Greenlees MJ, Hayward-Brown B, Hohnen R, Hoskin C, Hunter D, Jolly C, Kennard M, King A, Kuchinke D, Law B, Lawler I, Loyn R, Lunney D, Lyon J, MacHunter J, Mahony M, Mahony S, McCormack R, Melville J, Menkhorst P, Michael D, Mitchell N, Mulder E, Newell D, Pearce L, Raadik T, Rowley J, Sitters H, Spencer R, Lawler, S, Valavi R, Ward M, West M, Wilkinson D, and Zukowski S (2021). *Estimates of the impacts of the 2019-2020 fires on populations of native animal species*. Report by the NESP Threatened Species Recovery Hub. Brisbane, Australia.

Pennay M (2002) Large Pied Bat *Chalinolobus dwyeri*. Brigalow Belt South Stage 2 Vertebrate Fauna Survey, Analysis and Modelling Projects. Appendix 2. Resource and Conservation Division, Planning NSW, Sydney. pp 38–39.

Pennay M (2008) A maternity roost of the large-eared pied bat *Chalinolobus dwyeri* (Ryan) (Microchiroptera: Vespertilionidae) in central New South Wales Australia. *Australian Zoologist* 34, 564–569.

Pennay M, Law B & Lunney D (2011) Review of the distribution and status of the bat fauna of New South Wales and the Australian Capital Territory. in B Law, P Eby, D Lunney & L Lumsden (eds), *The Biology and Conservation of Australian Bats*. Royal Zoological Society of NSW, Mosman NSW. pp 226–256.

Ryan RM (1966) A new and imperfectly known Australian *Chalinolobus* and the taxonomic status of African *Glauconycteris*. *Journal of Mammalogy* 47, 86–91.

Shelly D (2001) *Flora and Fauna of the Tottenham/Bobadah District*. Department of Land Water Conservation, Dubbo, NSW.

Schulz M (1998) Bats and other fauna in disused Fairy Martin *Hirundo* arial nests. *Emu* 98, 184–191.

Speakman JR, Webb PI & Racey PA (1991) Effects of disturbance on the energy expenditure of hibernating bats. *Journal of Applied Ecology* 28, 1087–1104.

Williams ER & Thomson B (2018) Aspects of the foraging and roosting ecology of the Large-eared Pied Bat (*Chalinolobus dwyeri*) in the western Blue Mountains, with implications for conservation. *Australian Mammalogy* 41 (2), 212–2019.

Woinarski J, Burbidge AA & Harrison PL (2014). *The Action Plan for Australian Mammals 2012*. CSIRO Publishing, Collingwood, NSW.

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