

# THREATENED SPECIES SCIENTIFIC COMMITTEE

Established under the *Environment Protection and Biodiversity Conservation Act 1999*

---

The Minister approved this conservation advice and included this species in the Endangered category, effective from 11/05/2018.

## Conservation Advice

### *Antechinus argentus*

silver-headed antechinus

#### **Taxonomy**

Conventionally accepted as *Antechinus argentus* (Baker, Mutton & Hines 2013).

The silver-headed antechinus was formally described as a new species in 2013, having previously been overlooked as either *A. flavipes flavipes* (yellow-footed antechinus) or *A. mysticus* (buff-footed antechinus) (Baker et al. 2013).

#### **Summary of assessment**

##### **Conservation status**

Endangered: Criterion 2 B1a,b(ii,iii,v)+2a,b(ii,iii,v)

The highest category for which *Antechinus argentus* is eligible to be listed is Endangered.

*Antechinus argentus* has been found to be eligible for listing under the following categories:

Criterion 2 B1a,b(ii,iii,v)+2a,b(ii,iii,v): Endangered

Criterion 3 C2a(i): 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 information provided to the Threatened Species Scientific Committee (the Committee) to list *Antechinus argentus*.

##### **Public consultation**

Notice of the proposed amendment and a consultation document was made available for public comment for 30 business days between 6 June 2017 and 28 July 2017. Any comments received that were relevant to the survival of the species were considered by the Committee as part of the assessment process.

#### **Species information**

##### **Description**

The silver-headed antechinus is a small carnivorous marsupial. The species has a small head, large ears and narrow snout. The head, neck and shoulders are silver-grey, merging gradually through olive-grey to deep olive-grey on the flanks, rump and upper surface of the tail base. The belly is green-yellow-grey, grey to olive-grey. The species has pale, slightly broken eye rings and pale silver feet. The tail is bicoloured, darker on top and lighter underneath, with both sides getting darker towards the tip (Baker et al. 2013). Females have a pouch with eight nipples (Mason et al. 2016). The species is sexually dimorphic for size, with males two times heavier than females (Mason et al. 2016). Males weigh 40-46 g, while females weigh 20-23 g (E Mason pers. comm. 2017, unpublished data).

## Distribution

The silver-headed antechinus is known from three isolated subpopulations located in central-eastern Queensland - the plateau at the eastern escarpment of Kroombit Tops National Park, located 70 km south-west of Gladstone; Blackdown Tableland National Park, located 220 km west of Gladstone (Mason et al. 2016); and Bulburin National Park (A Baker pers. comm. 2017b; H Hines pers. comm. 2017), located 80 km south-east of Gladstone.

Within Kroombit Tops National Park, the species has been recorded from two sites, the 'northern' site and the southern 'Lookout' site, which are 5.5 km apart (Baker et al. 2013). The species has been recorded at several proximate sites on the plateau in Blackdown Tableland National Park (E Mason pers. comm. 2017, unpublished data; H Hines pers. comm. 2017). The species has been recorded at two sites on the Dawes Range within Bulburin National Park (A Baker pers. comm. 2017b; H Hines pers. comm. 2017).

Due to historic isolation of each subpopulation, the species has become genetically divergent between the three locations (A Baker pers. comm. 2017a, b). Genetic analysis of mitochondrial DNA (mitochondrial cytochrome b) indicated that the Bulburin National Park subpopulation is 0.4 percent divergent from the Kroombit Tops National Park subpopulation, and both these subpopulations are 1.5 percent divergent from the Blackdown Tableland National Park subpopulation (A Baker pers. comm. 2017b, e).

## Relevant biology/ecology

At Kroombit Tops National Park, the silver-headed antechinus occurs on an undulating sandstone plateau bounded on the eastern side by an escarpment with cliffs, at an elevation of 850-900 m asl (Baker et al. 2013; Mason et al. 2016). The habitats of both recorded sites are floristically and structurally similar, being *Eucalyptus montivaga* (a blackbutt) with subdominant *Corymbia trachyphloia* (brown bloodwood) shrubby tall open-forest. The shrub layer and ground cover of both sites vary in height, cover and species (Baker et al. 2013). However, sclerophyllous shrubs and *Xanthorrhoea* (grass trees) are more prevalent at the southern 'Lookout' site, with grasses and ferns more prevalent at the northern site (Mason et al. 2016). At Blackdown Tableland National Park and Bulburin National Park, the silver-headed antechinus occurs in similar wet, high altitude open forest habitat (A Baker pers. comm. 2017a, d; H Hines pers. comm. 2017), although this habitat is patchier at Bulburin National Park (A Baker pers. comm. 2017d; H Hines pers. comm. 2017). Ground cover is very high at Bulburin National Park (H Hines pers. comm. 2017).

There is limited information on the ecology of the species due to the limited number of individuals that have been captured (Baker et al. 2013). However, the biology of the silver-headed antechinus and its life-history characteristics are considered to be similar to other members of the genus (Mason et al. 2016). At Kroombit Tops National Park, the mating season occurs over a 1-3 week period between mid to late-June and early-July (Mason et al. 2016). Coinciding with the mating season, the species undergoes a synchronised annual male die-off, characteristic of *Antechinus* (Baker et al. 2013; Mason et al. 2016). A 30 day gestation period has been inferred (Baker et al. 2013), with females giving birth to eight young in late-July to early August (Mason et al. 2016). Young attach to the nipples and are carried in the pouch of the female (Baker et al. 2013). Juveniles disperse at 3-4 months of age and become 'adult' at seven months old (Baker et al. 2013).

The species is insectivorous and predominantly preys on beetles and cockroaches, but also consumes other insects including ants, crickets, grasshoppers, butterflies and spiders (Mason et al. 2015). Males live for a maximum of 11.5 months (Mason et al. 2015), while the maximum longevity of females is two years (A Baker pers. comm. 2017a).

## Threats

As the silver-headed antechinus is restricted to high altitude open-forest habitat and has reached its altitudinal limits within its known distribution, the key threatening process is altitudinal shift of suitable habitat as a result of human-induced climate change (A Baker pers. comm. 2017e). The species is likely to be highly habitat specific and sensitive to disturbance (Mason et al. 2016). Increased frequency and intensity of fire events and predation by introduced predators are suspected to threaten the abundance of silver-headed antechinus.

Several other threatening processes potentially impact the species, including habitat disturbance by feral herbivores and habitat modification by invasive flora (Baker et al. 2013; Mason et al. 2016).

Table 1 – Threats impacting the silver-headed antechinus in approximate order of severity of risk, based on available evidence.

Threat factor	Threat type and status	Evidence base
Fire		
Increased frequency and intensity of fire events	suspected current	<p>Studies of other <i>Antechinus</i> species show that abundance is positively related to complex vegetation structure and high litter cover (i.e. <i>A. flavipes</i>). Studies also show that abundance is negatively affected by fire in both the short- and long term (i.e. <i>A. minimus</i>) (Wilson et al. 2001; Kelly &amp; Bennett 2008; Mason et al. 2016).</p> <p>An increase in the frequency and intensity of wildfires or planned burns in silver-headed antechinus habitat is likely to threaten the species through the removal of large woody debris and vegetation cover, which are frequently used by the species for refuge and foraging (Baker et al. 2013; A Baker pers. comm. 2017a).</p> <p>Wildfires in October 2013 at Kroombit Tops National Park burnt the entire northern site and half the southern ‘Lookout’ site. Trapping studies in 2014 resulted in uneven capture rates between the sites with three captures (three individuals) at the northern site and 67 captures (16 individuals) at the southern ‘Lookout’ site. It is considered that the few captures at the northern site may be a result of a severe reduction in habitat complexity caused by the 2013 fire (Mason et al. 2016). However, the response of the species to different fire regimes and their interactions with other processes, such as climatic variability and predation, are not yet understood as surveys in 2017 at Kroombit Tops National Park resulted in no captures at the ‘Lookout’ site, and four individuals captured at the northern site (four year old post-fire regrowth) (A Baker pers. comm. 2017d).</p> <p>The removal of vegetation cover by fire is also likely to facilitate predation on small mammals by introduced species, particularly feral cats (McGregor et al. 2014; Leahy et al. 2016).</p> <p>Over time, the threat of bushfires is likely to increase for the silver-headed antechinus. It is projected with high confidence that climate change will result in a harsher fire-weather climate (CSIRO &amp; BoM 2017). That is, with climate change there is likely to be an increase in the frequency of very high and extreme fire risk weather days. Increased frequency and intensity of wildfires is likely to be detrimental to the silver-headed antechinus (Baker et al. 2013).</p>

Climate Change		
Altitudinal shift from rising temperatures and extreme events	suspected current/future	It is projected with very high confidence that average temperatures will continue to substantially increase across all seasons in the central and southern region of east Queensland. In addition, the intensity, frequency and duration of extreme weather events are projected to increase with high confidence (CSIRO & BoM 2017). The distribution of the silver-headed antechinus is suspected to have declined as a result of the species leaving lower altitude habitat and migrating to more suitable habitat at higher elevations (A Baker pers. comm. 2017a). As the species is occupying the highest elevation open-forest habitat within its known distribution, there is no opportunity for additional altitudinal shift by the species to compensate for the continued warming as a result of human-induced climate change (I Gynther pers. comm. 2017).
Invasive species		
Predation by cats ( <i>Felis catus</i> ) and foxes ( <i>Vulpes vulpes</i> )	suspected current	Cats and foxes occur at Kroombit Tops National Park (DEHP 2017a). Cats are present at Bulburin National Park (DEHP 2017b) and Blackdown Tableland National Park (DEHP 2017d). Cats and foxes pose a threat as they are likely to prey upon silver-headed antechinus (Mason et al. 2016; A Baker pers. comm. 2017a), as small dasyurids are frequently encountered in studies of the diet of cats and foxes in Australia (H Hines pers. comm. 2017). However, predation of silver-headed antechinus by cats and foxes has not been demonstrated.
Habitat disturbance and competition by pigs ( <i>Sus scrofa</i> )	potential current	Feral pigs are present in Kroombit Tops National Park (DEHP 2017a), Blackdown Tableland National Park (DNPRSR 2013) and Bulburin National Park (H Hines pers. comm. 2017). The foraging habits of pigs pose a potential threat to the silver-headed antechinus through disturbance and removal of ground cover and woody debris, which are used by the antechinus for foraging and denning. Pigs are also likely to prey upon invertebrates which poses a potential level of competition between pigs and the silver-headed antechinus (Baker et al. 2013). However, the threat of pigs to the species has not been demonstrated.
Habitat disturbance by feral cattle ( <i>Bos taurus</i> ) and horses ( <i>Equus caballus</i> )	potential current	Cattle and feral horses occur within silver-headed antechinus habitat at Kroombit Tops National Park and Blackdown Tableland National Park (H Hines pers. comm. 2017). Cattle and horses occur in Bulburin National Park (DEHP 2017b) but were absent from silver-headed antechinus habitat during surveys in June 2017 (H Hines pers. comm. 2017). Cattle and horses pose a potential threat to the silver-headed antechinus through the loss of ground cover and disturbance to woody debris, which are used by the antechinus for foraging and denning (Baker et al. 2013). There are likely impacts from cattle and horse grazing post-fire, with grazing greatly slowing the recovery of ground cover and likely increasing cat predation. There is a substantial difference between the height and cover of grasses between occupied sites at Kroombit Tops National Park (grazed – shortly cropped/open) and Bulburin National

		Park (ungrazed – dense, tall grasses) (H Hines pers. comm. 2017). However, the threat of cattle and horses to the silver-headed antechinus has not been demonstrated.
Habitat modification by lantana ( <i>Lantana camara</i> )	potential current	Lantana is a thicket-forming shrub and is a Weed of National Significance. It is increasing in prevalence in Kroombit Tops National Park (Baker et al. 2013) and occurs in Bulburin National Park (DEHP 2017c) and Blackdown Tableland National Park (DNPRSR 2013). Lantana poses a threat to the silver-headed antechinus through the potential to alter habitat structure, invertebrate populations and fire regimes (Baker et al. 2013).

**How judged by the Committee 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>	<b>≥ 90%</b>	<b>≥ 70%</b>	<b>≥ 50%</b>
<b>A2, A3, A4</b>	<b>≥ 80%</b>	<b>≥ 50%</b>	<b>≥ 30%</b>
<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>based on any of the following:</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:**

**Insufficient data to determine eligibility**

The species was described in 2013 from captures at Kroombit Tops National Park (Baker et al. 2013). Since 2014, a decline in the species' abundance has been observed at Kroombit Tops National Park with only four individuals captured during annual surveys in 2017 (A Baker pers. comm. 2017a, b). Climate change and fire are suspected to be drivers of population decline. However, due to insufficient survey effort, there is currently no estimate of population size reduction over the last ten years for the species.

The Committee considers that there is insufficient information to determine the eligibility of the species for listing in any category under this criterion. Additional population data over a longer time period are required to assess the population trend of the species.

<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:			
(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:**

**Eligible under Criterion 2 B1ab(ii,iii,v)+2ab(ii,iii,v) for listing as Endangered**

The extent of occurrence (EOO) is estimated at 1748 km<sup>2</sup>, and the area of occupancy (AOO) is estimated at 20 km<sup>2</sup> (DoEE 2017). These figures are based on the mapping of point records from 1997 to 2017, obtained from state and Commonwealth agencies, museums and non-government agencies. 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 (DoEE 2017).

The silver-headed antechinus occurs in an ecologically distinct area in which all subpopulations are threatened by climate change. As such, the species is considered to occur in a single location, making its geographic distribution very restricted.

The population appears to be in decline based on consistently low and decreasing capture records during surveys, and an observed contraction in the species distribution (A Baker pers. comm. 2017a). The area of occupancy and area, extent and quality of habitat for the species are considered to be declining due to the threat of fire, climate change and introduced species (A Baker pers. comm. 2017e; H Hines pers. comm. 2017).

The silver-headed antechinus population is considered to undergo fluctuations in the number of mature individuals as a result of the species' annual male die-off during the mating season (Mason et al. 2016). However, the species is not considered to undergo extreme fluctuations as the population is unlikely to experience a tenfold increase or decrease in numbers.

The Committee considers that the species' extent of occurrence and area of occupancy is restricted. The geographic distribution is precarious for the survival of the species because it occurs at a very restricted number of locations, and decline in area of occupancy, extent and quality of habitat and number of mature individuals has been observed and projected. Therefore, the species has met the relevant elements of Criterion 2 to make it eligible for listing as Endangered.

<b>Criterion 3. Population size and decline</b>			
	<b>Critically Endangered Very low</b>	<b>Endangered Low</b>	<b>Vulnerable Limited</b>
Estimated number of mature individuals	<b>&lt; 250</b>	<b>&lt; 2,500</b>	<b>&lt; 10,000</b>
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)	<b>Very high rate 25% in 3 years or 1 generation (whichever is longer)</b>	<b>High rate 20% in 5 years or 2 generation (whichever is longer)</b>	<b>Substantial rate 10% in 10 years or 3 generations (whichever is longer)</b>
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:			
(i) Number of mature individuals in each subpopulation	<b>≤ 50</b>	<b>≤ 250</b>	<b>≤ 1,000</b>
(a) (ii) % of mature individuals in one subpopulation =	<b>90 – 100%</b>	<b>95 – 100%</b>	<b>100%</b>
(b) Extreme fluctuations in the number of mature individuals			

#### **Evidence:**

#### **Eligible under Criterion 3 C2a(i) for listing as Vulnerable**

The silver-headed antechinus population is considered to be low in abundance. The number of mature individuals in the Kroombit Tops National Park subpopulation is estimated to be low (less than 250) based on the low number of capture records at this location (A Baker pers. comm. 2017d). It is estimated that there is a limited number of mature individuals (< 1000) in each of the Bulburin National Park and Blackdown Tableland National Park subpopulations due to patchiness of appropriate habitat at these locations (A Baker pers. comm. 2017d).

However, due to insufficient survey effort at both Bulburin National Park and Blackdown Tableland National Park, the number of mature individuals in each subpopulation is uncertain, and a more precise figure is not available (A Baker pers. comm. 2017d).

The silver-headed antechinus population appears to be in decline based on an observed contraction in its distribution and consistently low and decreasing trapping records (A Baker pers. comm. 2017a). However, there is currently no estimate of population size reduction for the species.

The total number of mature individuals in the silver-headed antechinus population is considered to be low (< 2500), the population appears to be declining and there is a limited number of mature individuals in each subpopulation (< 1000). Therefore, the species has met the relevant elements of Criterion 3 to make it eligible for listing as Vulnerable.

Criterion 4. Number of mature individuals			
	Critically Endangered Extremely low	Endangered Very Low	Vulnerable Low
D Number of mature individuals	< 50	< 250	D1. < 1,000

#### Evidence:

#### Insufficient data to determine eligibility

The number of mature individuals is estimated to be less than 250 in the Kroombit Tops National Park subpopulation, and less than 1000 in each of the Bulburin National Park and Blackdown Tableland National Park subpopulations (A Baker pers. comm. 2017d). The total number of mature individuals in the silver-headed antechinus population is estimated to be less than 2500. However, due to insufficient survey effort at Bulburin National Park and Blackdown Tableland National Park, a more precise figure is not available, and there are insufficient data to assess the species against the thresholds of Criterion 4.

The Committee considers that there is insufficient information to determine the eligibility of the species for listing in any category under this criterion. Additional surveys are required to more accurately assess the population size of the species.

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 for the species.

### Conservation actions

#### Recovery plan

The Committee recommends that there should not be a recovery plan for silver-headed antechinus, as an approved Conservation Advice provides sufficient direction to implement priority actions and mitigate against key threats.

#### Primary conservation actions

The primary conservation action for the silver-headed antechinus is to maintain high value breeding and foraging habitat for the species by undertaking active fire management and predator control at all locations.

#### Conservation and management priorities

##### Fire

- Fires must be managed to ensure that prevailing fire regimes do not disrupt the life cycle of the silver-headed antechinus; that they support rather than degrade the habitat necessary to the species; that they do not promote invasion of exotic flora species; and that they do not increase impacts of predation and feral herbivores.

- Implement a fire management strategy of infrequent, patchy, low-medium intensity fire sufficient to retain hollow logs and large woody debris on the ground.
- Ensure that a high proportion of the habitat is maintained with a post-fire age sufficient to provide adequate cover for the silver-headed antechinus.
- Physical damage to the species' habitat must be avoided during and after fire suppression operations.

#### Invasive species

- Undertake control programs to reduce the number of cats, foxes, pigs, cattle and horses within silver-headed antechinus habitat to reduce the impact of predation and habitat loss and disturbance on the species. Ensure immediate and ongoing post-fire predator control within silver-headed antechinus habitat when fires occur. Use of 1080 baits should be avoided.
- Using appropriate methods to avoid damage to the species' habitat, undertake weed control for lantana at infested sites, occupied or potentially occupied by the species.

#### Breeding, propagation and other ex situ recovery action

- Develop a plan for establishing and resourcing a captive breeding program to maintain an insurance population in the event of further decline in the wild.

#### Stakeholder Engagement

- Liaise with organisations who are undertaking research on silver-headed antechinus, to ensure up-to-date population information informs the implementation of conservation actions.
- Liaise with the Queensland Parks and Wildlife Service to ensure appropriate management activities/programs are undertaken at all known locations to manage threats to silver-headed antechinus.

#### **Survey and monitoring priorities**

- Regularly monitor known subpopulations to more precisely assess population size, distribution and population trends.
- Monitor the response of subpopulations to fire events, using appropriate measures (e.g. occupancy, population abundance, individual mortality, ranging behaviour, breeding success) to improve understanding of the silver-headed antechinus' response to fire.
- Undertake surveys in suitable habitat to locate any additional occurrences of the species.
- Monitor the progress of conservation actions, including the effectiveness of management actions, and adapt them if necessary.

#### **Information and research priorities**

- Investigate trapping methods and species specific lures to improve capture rates of silver-headed antechinus during surveys and monitoring.
- Continue to investigate the use of specially trained detection dogs to improve species detectability during surveys and monitoring.
- Investigate options for supporting gene flow and enhancing current silver-headed antechinus subpopulations, and options for establishing additional subpopulations.
- Continue to investigate the ecological requirements of silver-headed antechinus, and undertake habitat modelling, to improve understanding about the species' susceptibility to climate change.

## Recommendations

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

*Antechinus argentus*

## AND

- (ii) The Committee recommends that there not be a recovery plan for this species.

Threatened Species Scientific Committee

21 November 2017

## References cited in the advice

- Baker AM, Mutton TY & Hines HB (2013) A new dasyurid marsupial from Kroombit Tops, south-east Queensland, Australia: the Silver-headed Antechinus, *Antechinus argentus* sp. nov. (Marsupialia: Dasyuridae). *Zootaxa* 3746(2), 201-239.
- Commonwealth Scientific and Industrial Research Organisation & Bureau of Meteorology (CSIRO & BoM) (2017) East Coast North Projection Summaries. Commonwealth Government.
- Department of National Parks, Recreation, Sport and Racing (2013) Blackdown Tableland National Park Management Statement 2013. Queensland Government.
- Kelly LT & Bennett AF (2008) Habitat requirements of the yellow-footed antechinus (*Antechinus flavipes*) in box-ironbark forest, Victoria, Australia. *Wildlife Research* 35, 128–133.
- Leahy L, Legge SM, Tuft K, McGregor HW, Barmuta LA, Jones ME & Johnson CN (2016) Amplified predation after fire suppresses rodent populations in Australia's tropical savannas. *Wildlife Research* 42, 705–716.
- Mason ED, Burwell CJ & Baker AM (2015) Prey of the silver-headed antechinus (*Antechinus argentus*), a new species of Australian dasyurid marsupial. *Australian Mammology* 37, 164-169.
- Mason ED, Firn J, Hines HB & Baker AM (2016) Breeding biology and growth in a new, threatened carnivorous marsupial. *Mammal Research* DOI 10.1007/s13364-016-0303-z
- McGregor HW, Legge S, Jones ME & Johnson CN (2014) Landscape management of fire and grazing regimes alters the fine-scale habitat utilisation by feral cats. *PLoS One* 9:e109097.
- Wilson B, Aberton J & Reichl T (2001) Effects of fragmented habitat and fire on the distribution and ecology of the swamp antechinus (*Antechinus minimus maritimus*) in the eastern Otways, Victoria. *Wildlife Research* 28, 527–536.

### **Other sources cited in the advice**

- Baker A (2017a) Personal Communication via telephone. 5 May 2017. Queensland University of Technology.
- Baker A (2017b) Personal Communication via email. 13 June 2017. Queensland University of Technology.
- Baker A (2017c) Personal Communication via email. 6 October 2017. Queensland University of Technology.
- Baker A (2017d) Personal Communication via telephone. 10 October 2017. Queensland University of Technology.
- Baker A (2017e) Personal Communication via telephone. 31 October 2017. Queensland University of Technology.
- Department of Environment and Heritage Protection (DEHP) (2017a) *Wetland/Info*. Introduced animals of Kroombit Tops National Park. Queensland Government. Viewed on 8 May 2017. Available on the internet at: <https://wetlandinfo.ehp.qld.gov.au/wetlands/facts-maps/wildlife/?ArealD=national-park-kroombit-tops&Kingdom=animals&SpeciesFilter=Introduced>
- Department of Environment and Heritage Protection (DEHP) (2017b) *Wetland/Info*. Introduced mammals of Bulburin National Park. Queensland Government. Viewed on 11 October 2017. Available on the internet at: <https://wetlandinfo.ehp.qld.gov.au/wetlands/facts-maps/wildlife/?ArealD=national-park-bulburin&Kingdom=animals&Class=mammals&SpeciesFilter=Introduced>
- Department of Environment and Heritage Protection (DEHP) (2017c) *Wetland/Info*. Introduced plants of Bulburin National Park. Queensland Government. Viewed on 11 October 2017. Available on the internet at: <https://wetlandinfo.ehp.qld.gov.au/wetlands/facts-maps/wildlife/?ArealD=national-park-bulburin&Kingdom=plants&SpeciesFilter=Introduced>
- Department of Environment and Heritage Protection (DEHP) (2017d) *Wildlife Online Extract*. Introduced species of Blackdown Tableland National Park. Queensland Government. Viewed on 8 May 2017. Available on the internet at: <https://environment.ehp.qld.gov.au/report-request/species-list/>
- Department of the Environment and Energy (DoEE) (2017) *Area of Occupancy and Extent of Occurrence for *Antechinus argentus**. Unpublished report, Australian Government Department of the Environment and Energy, Canberra.
- Gynther I (2017). Personal Communication via email. 5 December 2017. Queensland Department of Environment and Science.
- Hines H (2017) Personal Communication via email. 13 December 2017. Queensland Department of Environment and Science.
- Mason E (2017) Personal Communication via email. 8 March 2017. Queensland University of Technology.