



## SAVING OUR SPECIES

# Smoky Mouse

2021-2022 annual report card

### Overall status\*

- Populations at all sites are known to be on track.
- Threat management is known to be on track at all sites, and population status is unknown at one or more sites.
- Threat management is known to be off track at one or more sites, and population status is unknown at one or more sites.
- **Populations at one or more sites are known to be off track.**

\* For SoS priority management sites (may not include all locations where the species occurs in NSW)

### Summary

<b>Management sites</b>	Nullica; Priam Breeding Facility; South East NSW
<b>Action implementation</b>	7 (of 7) management actions were fully or partially implemented as planned for the financial year.
<b>Total expenditure</b>	\$518,788 (\$397,888 cash; \$120,900 in-kind)
<b>Partners</b>	Australian Government Bushfire Recovery Program; Environment and Heritage Group; Forestry Corporation of NSW; National Threatened Species Institute; NSW Department of Primary Industries - Vertebrate Pest Research Unit; Priam Australia



**Scientific name:**  
*Pseudomys fumeus*

**NSW status:**  
Critically Endangered

**Commonwealth status:**  
Endangered

**Management stream:**  
Site-managed species

Photo: Linda Broome

# Priority management site: Nullica

**Local government area:**  
Bega Valley

**Partners:**

Australian Government Bushfire Recovery Program; Environment and Heritage Group; Forestry Corporation of NSW; NSW Department of Primary Industries - Vertebrate Pest Research Unit

**Population outcome**

-  On track
-  On track (inferred)
-  Not on track (inferred)
-  **Not on track**

## Monitoring

*Species population monitoring by one or more methods indicates response to management over time and provides an outcome measure.*

<b>Monitoring metric</b>	Level of occupancy
<b>Annual target</b>	At least 4 sites have smoky mice present.
<b>Long term target</b>	In the long term (20 years) it is aimed to increase occupancy to 30% of monitoring sites annually and population size to the level that at least five females can be trapped on each occupied site.
<b>Monitoring result</b>	Smoky mice detected on 2 sites (7% of sites).
<b>Scientific rigour of monitoring method</b>	High
<b>Conducted by</b>	Environment and Heritage Group

## Investment

Participant	Cash	In-kind
Australian Government Bushfire Recovery Program	\$16,051	\$0
Environment and Heritage Group	\$66,634	\$15,100
Forestry Corporation of NSW	\$0	\$3,200
NSW Department of Primary Industries - Vertebrate Pest Research Unit	\$0	\$36,400

## Management actions

The following actions are those identified as being required in financial year 2021-2022 to secure the species in the wild.

Threat	Management action	Implemented as planned?
Dieback caused by cinnamon fungus ( <i>Phytophthora cinnamomi</i> ) - many of the heath plants in the habitat are highly susceptible.	Ensure boots and vehicles do not carry soil into uninfected areas.	Yes
Predation by foxes.	Replace fox baits at 25 bait stations monthly.	Yes
Predation from feral cats.	Trap cats using soft-catch traps (SoS funded). Conduct experimental aerial baiting trials (DPI funded by Environmental Trust Grant).	Partial implementation - logistical delays
Predation from feral cats.	Construct 10 smoky mouse release enclosures.	Yes
Too-frequent burning, such as 4-7 years for hazard reduction burning, is likely to be deleterious to the shrub and hypogeal fungi resource.	Monitor vegetation recovery post-burn on sites 16 and 20.	Partial implementation - Time delays due to COVID, lack of time availability for NPWS Ranger to help.

## Threat outcome

Assessment on the status of critical threats at this site.

Threat	Annual target	Threat status
Predation from feral cats.	Test feasibility of assessing cat relative abundance by camera monitoring.	Baseline data collection
Dieback caused by cinnamon fungus ( <i>Phytophthora cinnamomi</i> ) - many of the heath plants in the habitat are highly susceptible.	Prevent <i>P. cinnamomi</i> from spreading to uninfected sites.	On track
Too-frequent burning, such as 4-7 years for hazard reduction burning, is likely to be deleterious to the shrub and hypogeal fungi resource.	Habitat not burnt for at least ten years.	On track
Predation by foxes.	Test feasibility of assessing fox relative abundance by camera monitoring.	Not assessed
Senescing of understorey vegetation on long unburnt sites.	Understorey cover does not decline by >50% and key food species continue to produce seeds.	On track

## Site summary

Smoky mice were detected at only 2 of 28 Nullica monitoring locations in September-October 2021. One in the Integrated Forestry Operations Approval (IFOA) smoky mouse reserve in Nullica State Forest and one in South East Forests National Park, close to the site in the State Forest reserve. This is the only National Park site where smoky mice have been detected since 2013. Smoky mice were detected on 4 to 7 sites in the IFOA Reserve between 2015-2020, with the exception of 2017 when none were detected. The low numbers detected in 2021 may be an anomaly. It is recommended that monitoring be conducted again in 2022, with additional cameras on each site. Four cats and no foxes were trapped during May-June 2022. Sand pad monitoring for cats and foxes ceased after May 2018 due to a lack of National Parks and Wildlife Services (NPWS) staff resources. A trial of monitoring predators by cameras commenced in 2020-21 under an Environmental Trust funded feral cat monitoring and control study undertaken by the Department of Primary Industries. Results from this study are not yet available. The first release of 13 captive bred mice was conducted on Site 16 in May 2022.

# Priority management site: Priam Breeding Facility

## Local government area:

Queanbeyan-Palerang Regional

## Partners:

Australian Government Bushfire Recovery Program; Environment and Heritage Group; National Threatened Species Institute; Priam Australia

## Population outcome

-  On track
-  On track (inferred)
-  Not on track (inferred)
-  **Not on track**

## Monitoring

*Species population monitoring by one or more methods indicates response to management over time and provides an outcome measure.*

<b>Monitoring metric</b>	Number of captive bred individuals
<b>Annual target</b>	At least 20 offspring produced.
<b>Long term target</b>	Produce 40 individuals for release per year after five years.
<b>Monitoring result</b>	Twelve pairs established, six pairs bred during 2021-22 breeding season, 12 offspring produced, 5 survived until end of breeding season.
<b>Scientific rigour of monitoring method</b>	High
<b>Conducted by</b>	Environment and Heritage Group

## Investment

Participant	Cash	In-kind
Australian Government Bushfire Recovery Program	\$194,020	\$0
Environment and Heritage Group	\$61,145	\$12,000
National Threatened Species Institute	\$0	\$11,550
Priam Australia	\$0	\$26,250

## Management actions

The following actions are those identified as being required in financial year 2021-2022 to secure the species in the wild.

Threat	Management action	Implemented as planned?
Loss of site occupancy/low recruitment leading to metapopulation collapse.	Increase captive population by at least 20 individuals through breeding program. Conduct release on recipient site.	Partial implementation - The number of juveniles produced was less than the target of 20 individuals. However, the first release of 13 individuals to the recipient site was conducted.

## Threat outcome

Assessment on the status of critical threats at this site.

Threat	Annual target	Threat status
Loss of site occupancy/low recruitment leading to metapopulation collapse.	Conduct release on recipient site.	On track

## Site summary

During the 2021-22 breeding season at Priam 6 of 12 matched smoky mouse pairs produced 7 litters between October 2021 and January 2022. A total of 12 young were produced, with an average litter size of 1.7. Five young were weaned. Two new breeding rooms were added to the Priam breeding facility but work outside the rooms was not completed until December and this disturbance is thought to have contributed to the low survival rate of offspring due to parental stress. The proportion of pairs breeding (50%) was higher than in previous years. The size of breeding cages may have contributed to low survival of young; it was observed at the University of Canberra Research facility that males sometimes trampled on young when seeking post-partum mating from the mother and she was unable to exclude the male from her nest. Larger enclosures have been installed in one of the new breeding rooms at Priam for next breeding season. Inbreeding may also be a factor contributing to aggression between pairs and low survival of young. New founders will be sought in 2022-23.

Four pairs were established at the University of Canberra research facility. Three pairs bred, producing 7 litters between November and February totaling 23 young with an average litter size of 3.5. Eighteen young were weaned.

The first release of 5 females and 8 males to the Nullica recipient site was achieved on 18 May 2022. Monitoring is being carried out using micro-chip readers and IR cameras.

# Priority management site: South East NSW





## Local government area:

Bega Valley; Eurobodalla;  
Snowy Monaro Regional

## Partners:

Australian Government Bushfire  
Recovery Program;  
Environment and Heritage  
Group

## Population outcome

-  **On track**
-  **On track (inferred)**
-  **Not on track (inferred)**
-  **Not on track**

## Monitoring

*Species population monitoring by one or more methods indicates response to management over time and provides an outcome measure.*

<b>Monitoring metric</b>	Area of occupancy
<b>Annual target</b>	Locate smoky mice in at least one new Kosciuszko National Park survey block.
<b>Long term target</b>	Locate 2 new populations of smoky mice within 10 years.
<b>Monitoring result</b>	Smoky mice were detected in four cells in one new survey block.
<b>Scientific rigour of monitoring method</b>	High
<b>Conducted by</b>	Environment and Heritage Group

## Investment

Participant	Cash	In-kind
Australian Government Bushfire Recovery Program	\$60,037	\$0
Environment and Heritage Group	\$0	\$16,400

## Management actions

*The following actions are those identified as being required in financial year 2021-2022 to secure the species in the wild.*

Threat	Management action	Implemented as planned?
Uncertainty about the species' density and distribution throughout the area.	Continue comprehensive survey of Kosciuszko National Park.	Yes

## Threat outcome

*Assessment on the status of critical threats at this site.*

Threat	Annual target	Threat status
Uncertainty about the species' density and distribution throughout the area.	Locate smoky mice in at least one new Kosciuszko National Park survey block.	On track

## Site summary

A comprehensive survey of Kosciuszko National Park commenced in December 2020. Twenty six survey blocks were identified from vegetation associations. Each block was divided into 2 km<sup>2</sup> survey units (cells) with 4 cameras placed in each cell. Three personnel (1 threatened species officer and 2 contractors) commenced surveys in December 2020 and January 2021 and continued from November 2021 to March 2022. Four blocks (25 units each) were fully or partly surveyed and 38 sites were also surveyed in Bondo State Forest. Images are still being analysed and tagged. Smoky mice were identified on 9 cameras in 4 cells of one survey block, with 1 possible record of smoky mouse in another block.

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Saving our Species 2021-2022 annual report card for Smoky Mouse (*Pseudomys fumeus*). For more information refer to the specific strategy in the Saving our Species program.