

Science for Saving Species

Research findings factsheet

Project 6.5



National Environmental Science Programme

A new citizen science tool for understanding the conservation opportunities and challenges facing Australia's possums and gliders

About the tool

Citizen scientists now have a new tool to help support the conservation of Australia's possums and gliders. The CAUL Urban Wildlife app has a dedicated module for sharing sightings, photos and videos of possums and gliders across Australia. The app also provides photos and information about Australia's 27 possum and glider species, and through location services the app shows users the species in their region, to help them correctly identify which species they are observing.

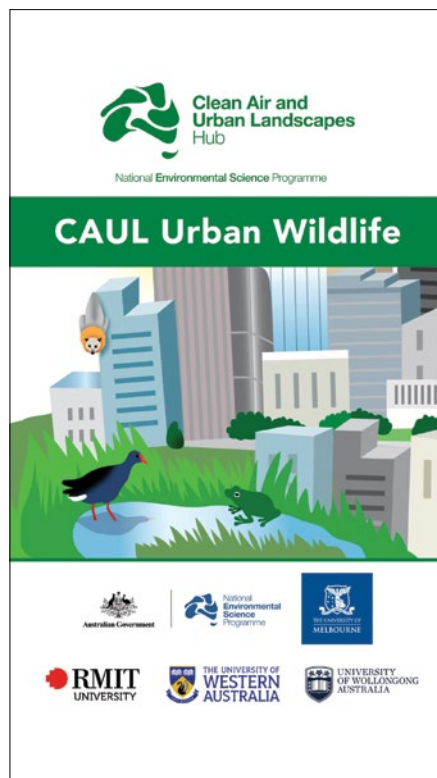
The CAUL Urban Wildlife App was developed by the Clean Air and Urban Landscapes (CAUL) Hub to enable citizen scientists to contribute to their Shared Urban Habitat research project. The data recorded about the behaviours and habits of urban wildlife will help CAUL Hub scientists better understand how to manage native wildlife and their habitats so that their populations can persist and co-exist with humans. Initially developed with modules for flying foxes, frogs and beneficial insects, this possum and glider citizen science project is a collaboration between the Threatened Species Recovery Hub and the Clean Air and Urban Landscapes Hub with funding from the Australian Government's National Environmental Science Program and the National Landcare Program through the South West Catchments Council. The app is free to download from the Apple App Store and Google Play.

Possums, gliders and the western ringtail

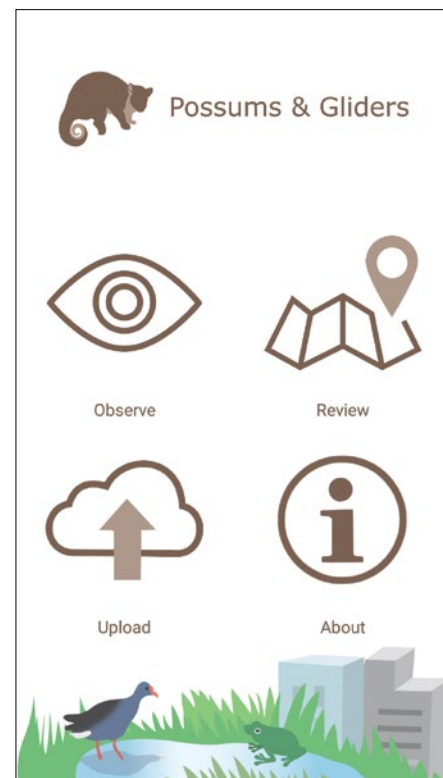
Many of Australia's possums and gliders share their habitat with people and some use urban environments. About one third are listed as threatened at state, territory and/or national levels. Australia's most threatened possum is the western ringtail (*Pseudocheirus occidentalis*); a critically endangered species recognised as a Top 20 Priority Mammal species by the Australian Government. This species is still regularly seen by the community in the backyards of Busselton and Bunbury, in Western Australia and

has been chosen as the flagship species for the module.

Data provided by the public through the app will assist on-going research on threatened possums and gliders in urban areas and rural areas. Data collected on the western ringtail possum will help researchers to learn more about its persistence in the urban environment. The data will also contribute to national (Atlas of Living Australia) and international (GBIF) biodiversity inventories.



Home page



User options for possums

Possums, gliders and the western ringtail (continued)

Citizen science and possums

Citizen science can benefit conservation research, planning and initiatives for threatened possums and gliders by:

- Helping to raise community awareness of the species in the areas where they occur.
- Harnessing people power to collect more data from more places and further learning about the world around us.
- Collecting data on private land which can be difficult for conservation managers to access.
- Improving understanding of the conservation implications of species that have become adapted to urban environments.
- Better understanding human-wildlife conflicts related to possums and gliders, such as possums eating backyard vegetation.

How to use the app

1. Download the CAUL Urban Wildlife App to your smart phone or tablet from Google Play or the Apple App Store.
2. Create a user profile and allow the app to access your location (important for surveys).
3. Open the app and choose the possum and glider module by tapping on the possum icon.
4. Select the species you are observing. To help you correctly identify species:
 - The app has high quality images and information on the distinguishing characteristics of each species.
 - The app will only show you the species that are likely to be encountered in your location
5. The date, time and location of the sighting will be automatically populated.

6. Complete other information about your sighting, including the type of location, what the animal is doing, and how it is using the surrounding environment.
7. Finally, if the animal is on your property, tell us about how you feel observing the species. We would like to hear all perspectives, whether good or bad.

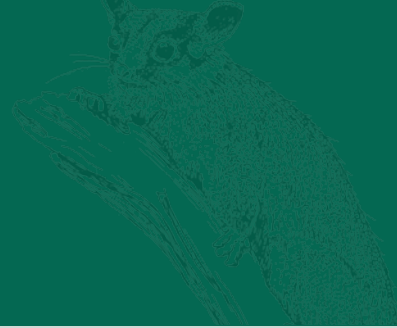
What we would like to learn

Some important questions we hope to answer about western ringtail possums and other species include:

- What do they eat in urban environments across their range?
- How do they use the urban environment across their range (built infrastructure, trees etc.)?
- Can we learn more about sources of conflict among possums, gliders and people?
- Do different human communities respond differently to possums or gliders in their region?



Possum in Darwin roof. Photo: Jaana Dielenberg



Western ringtail possums – locally common, globally threatened



Western ringtail possum
Photo: Stewart McDonald

The challenges for the western ringtail possums are many – but one of the biggest is convincing people they are at a very high risk of extinction. The main reason for this is that in parts of their range, they are encountered regularly by people. When you see something all of the time, it is hard to believe it is close to extinction. However, the western ringtail possum has undergone

huge declines in the non-urban parts of its range. While common in some parts of the South West of Australia, the species is probably in a state of flux due to landscape scale clearing for urbanisation, leaving many individuals making do in the urban landscapes of Bunbury, Busselton, Margaret River and Albany.

Some speculate that the western ringtail is attracted to urban areas due to the availability of well-watered and fertilised plants. As strict herbivores with a diet almost exclusively comprised of leaves, the remaining forests east of the human settled areas are drying rapidly, which could result in the vegetation being no longer suitable for their nutritional requirements.

Eating garden plants and taking up residence in household roof spaces tends to create human-wildlife conflicts for this species.

The CAUL Urban Wildlife App possum and glider module aims to learn more about how the species is using the various food and habitat resources of urban areas as well as identify what sources of conflict exist in different urban landscapes. Armed with a better understanding of the western ringtail possums urban ecology, we can direct education and awareness raising activities based on where the greatest need for these investments lies with a view to enhancing liveability for people and possums in urban areas.

Sugar gliders in Tasmania – when natives aren't native



Sugar glider
Photo: Tim Bawden

The CAUL Urban Wildlife App provides a unique opportunity to learn about many facets of conservation in Australia. The possum and glider module can help us learn more about those species that are under threat, but can also be used to learn more

about species that are threats to other biodiversity in particular regions, due to elevated populations or where they are not endemic.

For example, sugar gliders are a common native species in on mainland Australia, but they are not native to Tasmania. Sugar gliders were first taken to Tasmania in 1835 as pets, but then made their way to the wild. As their numbers grew, they caused devastating impacts on many hollow nesting species, such as the Critically Endangered swift parrot. When sugar gliders find a swift parrot nest they consume all of the eggs and 83% of the time they also kill and eat the

nesting female. The nomadic parrots nest in different areas each year in response to floral resources. In years when the nesting has been in areas with high sugar glider densities the results have been disastrous.

Managing a problem native species can present complex social and political issues. The CAUL Urban Wildlife App presents an opportunity to collect data on the urban ecology and distribution of sugar gliders in Tasmania, but also better understand how people feel about them, which is valuable for informing: communication campaigns about sugar glider management; and education and awareness programs.

New information about possums

Possum in Brisbane roof
Photo: Jaana Dielenberg



The CAUL Urban Wildlife App possum and glider module has already yielded some interesting findings in the short time it has been available. Between July and October, 43 users have submitted 96 observations of possums and gliders from the east to the west coasts. For the western ringtail possum, we have had records submitted in places that have not

had confirmed sightings since as far back as 1996! The forests north-west of Denmark on the south coast of Western Australia have few records for ringtails. We were also excited to see an app user has not only recorded the species on three separate occasions, but through the note-sharing ability of the app, was able to advise us that one of the individuals was deceased, and the body had been passed on to the Department of Biodiversity, Conservation and Attractions for their records. This particular instance is very sad, but it is amazing to see citizen scientists capturing new information about this threatened species and sharing it with multiple conservation stakeholders.

Another interesting finding citizen scientists are able to share with us is the use of human built infrastructure by possums and gliders in Australia. Of the 96 records submitted so far, 27% of possums or gliders were observed using either fencelines, powerlines or roofs. While not all 96 observations were made in strictly urban settings, this kind of information can help us build a picture of the landscape use by different species at the scale of cities, towns or even suburbs. Armed with this evidence, we can design these urban habitats to enable native species to continue to navigate the human environment while seeking strategies to minimise potential human-wildlife conflicts along the way through fauna sensitive urban design.

Further reading:

Heinsohn, R., Webb, M., Lacy, R., Terauds, A., Alderman, R., & Stojanovic, D. (2015). A severe predator-induced population decline predicted for endangered, migratory swift parrots (*Lathamus discolor*). *Biological Conservation*, 186, 75-82.

Molloy, S. W., Davis, R. A., & Van Etten, E. J. (2014). Species distribution modelling using bioclimatic variables to determine the impacts of a changing climate on the western ringtail possum (*Pseudocheirus occidentalis*; Pseudocheiridae). *Environmental Conservation*, 41(2), 176-186.

Steven, R., Barnes, M., Garnett, S. T., Garrard, G., O'Connor, J., Oliver, J. L., Robinson, C., Tulloch, A. & Fuller, R. A. (2019). Aligning citizen science with best practice: Threatened species conservation in Australia. *Conservation Science and Practice*, e100.

Stojanovic, D., Webb, M. H., Alderman, R., Porfirio, L. L., & Heinsohn, R. (2014). Discovery of a novel predator reveals extreme but highly variable mortality for an endangered migratory bird. *Diversity and Distributions*, 20(10), 1200-1207.

Stojanovic, D., Olah, G., Webb, M., Peakall, R., & Heinsohn, R. (2018). Genetic evidence confirms severe extinction risk for critically endangered swift parrots: implications for conservation management. *Animal conservation*, 21(4), 313-323.

Yokochi, K., & Bencini, R. (2015). A remarkably quick habituation and high use of a rope bridge by an endangered marsupial, the western ringtail possum. *Nature conservation*, 11, 79-94.

Further Information

Dr Rochelle Steven, The University of Queensland - r.steven@uq.edu.au