Survey Techniques

for Citizen Scientists

Table 1. The suggested minimum sampling effort based on the size of study areas for a fauna and flora survey (adapted from Murray et al. 2002).

Fauna survey

Size of study area (hectares)	Minimum sampling effort
0-1	1 study site for each vegetation community.
1-10	1 study site for each vegetation community and 1 replicate study site for each vegetation community that is more than 5 ha in size.
11-50	1 study site for each vegetation community and 1 replicate study site for each vegetation community that is greater than or equal to 5 ha in size.
>50	2 study sites for each vegetation community.

Flora survey

refer to Chapter 6 for more information on flora survey

Size of study area (hectares)	Minimum sampling effort
0-1	Between 1-2 transects and 1 quadrat* for each vegetation community.
1-10	**Surveying simple vegetation structures** 3 transects and 1 quadrat for each vegetation community, and 1 replicate quadrat for each vegetation community that is more than 5 ha in size. **Surveying complex vegetation structures** 3 transects and 2 quadrats for each vegetation community, and 1 replicate quadrat for each vegetation community that is more than 5 ha in size.
11-50	**Surveying simple vegetation structures** Between 4-6 transects and 1 quadrat for each vegetation community, and 1 replicate quadrat for each vegetation community that is more than 5 ha in size. **Surveying complex vegetation structures** 6 transects and 2 quadrats for each vegetation community.
>50	Between 7-10 transects and 2 quadrats for each vegetation community, and 1 replicate quadrat for each vegetation community that is more than 10 ha in size.

** See section on sampling methods below for an explanation of transects and quadrats.*

Pedestrian-based spotlighting:

- Pedestrian-based spotlighting surveys are conducted using hand-held spotlights along a transect line. Wayne et al. (2005) recommend a transect line 600 m in length when spotlighting.
- Due to the sensitivity of spotlight detection, the travel speed needs to be tightly controlled (Goldingay & Sharpe 2004; Wayne et al. 2005). A stopwatch and a distinct reflective marker every 50 m along a transect line will ensure a consistent search speed of 1 km/h. When monitoring for small gilders (i.e. feathertail gliders) a slower speed of 500 m/h is recommended (Goldingay & Sharpe 2004).

Vechicle-based spotlighting:

- Travel at an average speed of ~ 5 km/h and use two spotlights per vehicle, each spotlight concentrating on one side of the road.
- Position spotlighters either on the back of utility vehicles or on a specially-adapted double seat fitted to the roof-rack of a four-wheel-drive station wagon.
- Ensure the scanning speed of both spotlighters is kept consistent.
- During a vehicle-based spotlighting session, avoid shining the spotlight in the direction of the driver's view at all times for safety. The bright glare from the spotlight can be obstructive to a driver.

Active monitoring

Microchiropterans

Echolocation call surveys are particularly effective for recording those bat species that have strong calls. These species generally correspond with those that feed at or above the forest canopy and which are not readily captured in harp traps.

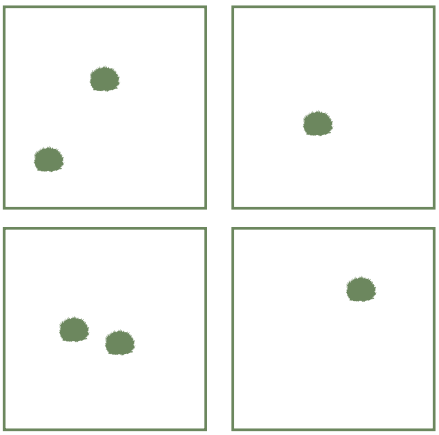
When using a hand-held recorder, walk a transect line holding the unit at an angle of approximately 30 degrees to record the echolocation calls of passing microbats.

Megachiropterans

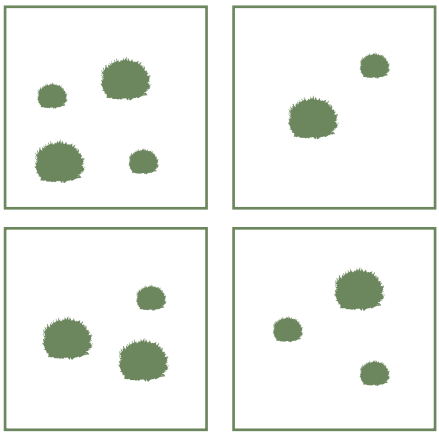
For bigger bats (flying foxes and fruit bats) surveys can be conducted by visually scanning the night sky for passing or feeding individuals during a spotlighting survey. This should be done at the entrance of roost-sites or camps and above vegetation.

Using photo-plots and photo-points

Using photographs as evidence while surveying vegetation is a good way to keep a visual record to monitor individuals or populations, especially for long-term studies. The two common techniques are ‘photo-plots’ and ‘photo-points’.



Amount of vegetation at the start of bush regeneration.



Six months after bush regeneration.

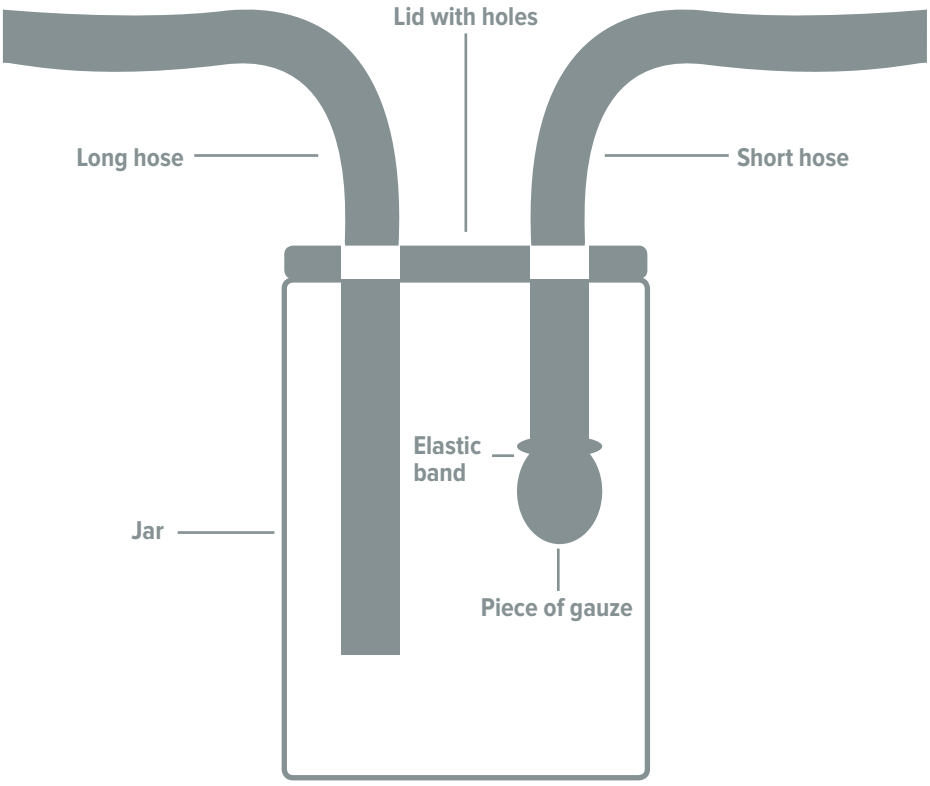
Photo-plots

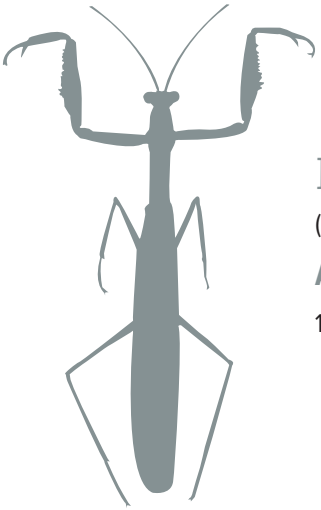
Photo-plots involve the use of photographs taken of small defined areas (i.e. plots) that are normally the same size or slightly smaller than the size of a photograph frame. The photographs are usually taken from a specific height and look directly down at a defined location on the ground (Elzinga et al. 1998). This can then be used to monitor annual changes and also serve as a great historical record. The photo-plot technique can be used in conjunction with quadrats when monitoring or evaluating environmental disturbances such as fire, weed invasion, climate change influences, and trampling (Sutherland 2006).

Make your own pooter

Alternatively you can easily make your own pooter.

- Find an appropriate jar or container
- Drill two holes in the lid.
- Insert two pieces of hose into each hole making sure the holes are airtight.
- One hose should be longer than the other.
- Attach a piece of gauze with an elastic band over the end of the short hose in the jar.





MANTODEA - (Praying Mantis)

(Greek name, ‘mantis’ = prophet)

Approximate number of species:

1,800 in the world, 118 in Australia

Description

Adults of this order are well-adapted to survive in their environment by using their natural camouflage to resemble sticks, leaves or twigs. In addition, their eggs can often look like plant seeds. Their body design is suitable for their predatory diet with their spiny long front legs adapted for catching and holding prey. Their colouration also enables them to hide effectively in plant foliage.

A unique feature of Mantids is their ability to move their head from side to side without moving other parts of their body.

Diet

Insects in this order feed on insects, and sometimes small frogs, lizards and even birds.

Distinguishing features of adults:

- Triangular shaped head.
- Chewing mouthparts.
- Well-developed compound eyes.
- Antennae: Thread-like.
- Large elongate body with spiny long front legs.
- Five segmented tarsi.