

Bats undervalued as insect controllers

by Margrit Beemster

BATS are very much an under-rated controller of insects in agricultural areas.

According to ecologist Craig Grabham from Charles Sturt University's Institute for Land, Water and Society' even though Australia has done some of the best research on bats in the world, there was much we still don't know. "We are only just starting to realise how important they are in controlling insects especially across agricultural land," says Craig who has completed an honours research project investigating the diversity and activity of insectivorous bats across six habitat types of a fragmented rural landscape in south-eastern Australia.



A Freetail Bat Mormopterus sp

"Bats eat up a third to half their body weight in one night which is quite amazing. For example in controlled conditions a myotis bat was recorded capturing 1200 tiny fruit flies in one hour, not bad for an animal that only weighs about 12g.

"Bats are undervalued and need to be promoted as a natural biological controller of insects." With at least 1000 species worldwide bats, which comprise more than 20% of mammal species, have successfully colonised almost every region of the earth. They are the world's second most common mammal group after rodents.

There are two distinct types of bats: the Megachiroptera (flying foxes or blossom bats) and Microchiroptera (insectivorous bats). Australia has about 90 species of the two types (at least 78 species of microbats, and 12 species of megabats). Every night, bats are out in force, feeding on insects and nectar or sometimes both. Some even feed on small mammals and fish.

Habitat Values

Craig's study, in particular, investigated the habitat value of native revegetation to insectivorous bats and how it compared to other habitat types across this landscape. While Craig's research focussed on the Eastern Billabong Catchment (Holbrook, Benambra National Park, Walla Walla and Culcairn) his findings are relevant to much of Victoria. "We designed the study as a case study of different landscape structures that would be relevant to the broader region of south-eastern Australia," says CSU's Professor Nick Klomp, Craig's partner in bat research. "Much of the rural landscape of rural Australia will support bat communities, we just need to know how."

Craig found that while revegetation was important for bats, remnant vegetation was critical as it provides a variety of habitat required for roosting, breeding and foraging. During the day bats can be found sleeping in hollows of old trees or under loose bark. Revegetation is important because it compensates for the loss of previous vegetation that has been removed. However, because young trees don't have hollows they provide only a limited range of habitat for bats, mostly for foraging.

He investigated six habitat types - cleared paddocks, linear revegetation, patch revegetation, linear remnants, patch remnants and continuous remnants – and found bats use revegetation more than cleared paddocks but less than remnant vegetation. Activity was significantly higher in all remnant habitats and particularly so in large remnants. Significantly higher levels of activity were recorded in linear revegetation compared to revegetation patches.

Echolocation calls

Craig collected data over 16 months using sophisticated echolocation equipment (Anabat System) which picks up on the bats echolocation calls. "All but one of the insectivorous bats are inaudible to humans," says Craig who used six echolocation units at a time, in different locations, allowing him to compare habitat types. "The White-striped Mastif Bat is the only insectivorous bat that we can hear in flight. It makes a sound very similar to teaspoons hitting one another. Bats use their surrounding landscape to navigate. Every couple of seconds, they send out hundreds of sound waves which bounce off solid objects and return to the bats giving them a three dimensional image in their brains which they use to navigate. Sonar operates in a similar way but bats use a far more complicated form. Dolphins and some whales use a very similar technique".

Species

While bat populations in Australia are unknown, it can be assumed that because their habitat is declining so too are their numbers.

Craig recorded 13 of the 15 bat species that live in this region including threatened species such as yellow Bellied Sheath Tail, the Large Bent Wing, Fishing Bat and Little Pied bat. The region encompasses a number of different environments (sub-Alpine, semi-arid, tablelands and ranges) which creates diversity of species.



Craig Grabham with a harp trap in background.

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