



## Flightless Carcass Beetles (Trogidae)

Carcass beetles or 'trogids' are usually associated with carrion and are also known as 'hide beetles'. They are part of a large suite of insects which assist in breaking down and recycling materials from dead animals. Usually they are attracted to dry carcasses where both adults and larvae feed on dried skin and muscle, fur, or feathers. Australia is home to 53 known species in a single genus, *Omorgus* (formerly included in the genus *Trox*). Not all of these species, though, exhibit the usual behaviours.

Trogids belong to the scarab-like group of beetles (superfamily Scarabaeoidea) and, like other scarabaeoids, have characteristically short antennae with the terminal segments expanded to form a club. They range from about 10 mm to over 30 mm in length and their bodies are ornamented with ridges, tubercles and bristles. Larvae are white 'curl-grubs' similar to those of other scarabaeoid beetles and live in burrows in the soil beneath carcasses.



A flightless trogid beetle, *Omorgus rotundulus*. Scale line 5 mm. The wing cases are fused to form a hard outer shell. This species inhabits the northern deserts of Western Australia and other large flightless species occur elsewhere in the State.

Most people would consider these to be unattractive insects given where they live and feed, the fact that they are generally dull black, discoloured with soil or filth and, when handled, tend to exude a brown liquid from the mouth. However, not all trogids feed under dead animals: some have been found feeding and/or breeding in vertebrate burrows and nests, on the castings of predatory birds, in bat guano and on dead insects. Then there are the flightless trogids - relatively large species having the fore wings (elytra) fused and no functional hind wings. Nine of the largest Australian *Omorgus* species including *O. rotundulus* (pictured) are flightless and inhabit semi-arid to arid regions. Flightlessness (accompanied by increased size) is common in desert beetles and Scholtz (1981) suggested that it probably helps to reduce water loss. Flightlessness in trogids suggests a very different biology. Fully winged trogids are able to seek out isolated carcasses by their odour while on the wing but flightless species would be much more restricted in their foraging. Until recently, no information was available on the feeding and breeding habits of such species.

Houston *et al* (2009) reported that gut contents of *O. rotundulus* adults collected in the Little Sandy Desert of Western Australia consisted largely of ants, termites and

other ground-dwelling invertebrates. Whether the beetles had fed on live insects or scavenged dead ones was not clear. Some other flightless *Omorgus* species have been observed feeding on the droppings of predatory animals. Such droppings contain undigested fur and the hard parts of insects. This raises the possibility that *O. rotundulus* feeds on the droppings of termite- and ant-eating animals such as lizards and small marsupials. The larvae of the flightless trogids are completely unknown and it will be interesting to learn what constitutes their diet.



*Omorgus mariae*, a flightless carcass beetle from the Mid-West of Western Australia.

Many more observations will be required to clarify the diet and breeding habits of these interesting flightless beetles. To find them, one needs to search at night when they become active and trundle about over the surface of the ground. A few specimens have been excavated from shallow burrows in sandy soil so it appears that the beetles take refuge underground during the day. Generally, deep sandy soils are where the flightless trogids occur and they inhabit not only the northern and central desert regions of Western Australia but also parts of the Goldfields, the wheatbelt and south coastal regions.

**Further reading:**

- Houston, T.F., Zhang, J. & Hanich, B.P. (2010). Diet of the flightless trogid beetle *Omorgus rotundulus* (Haaf) (Coleoptera: Trogidae) in the Little Sandy Desert of Western Australia. *The Australian Entomologist* **36**(4): 207-212.
- Scholtz, C.H. 1981. Aptery in *Trox* (Coleoptera: Trogidae): morphological changes and their relationship to habitat. *Journal of the Entomological Society of Southern Africa* **44**: 83-87.
- Scholtz, C.H. 1986. Revision of the genus *Trox* Fabricius (Coleoptera: Trogidae) of the Australasian Region. *Australian Journal of Zoology Supplementary Series* **125**, 1-29.