



Dawson's Burrowing Bee *Amegilla dawsoni*



Female of *Amegilla dawsoni* (scale line = 1 cm)

This is one of the largest and handsomest of Australia's native bees, only some carpenter bees (*Xylocopa* spp.) being larger. It is a solitary, ground-nesting species and females burrow into bare clay flats to make their nests. Like many other 'solitary' bees, Dawson's Bee exhibits gregarious tendencies and females usually nest in close proximity to one another. An active nesting colony may contain up to 10,000 burrows and can provide one of the most exciting entomological experiences.



Part of a nesting aggregation in a bare clay ground. Each mound marks the entrance to a nest burrow.

The species is confined to Western Australia and inhabits the plains of the north-west and extends south to near Paynes Find. Adults occur only during the months of July to September when their forage plants, poverty bush (*Eremophila* spp.) and Rough Bluebell (*Trichodesma zeylanicum*), are in bloom. For most of the remainder of the year the species

exists as dormant larvae in underground brood cells (see image overleaf).



A mating pair: male (top) differs from female in having buff-brown fur and a yellowish lower face.

While females shelter in their burrows overnight, males roost on vegetation, gripping leaf tips or stems in their jaws and folding their legs beneath their bodies.



Male at exit hole of nest from the previous season awaiting the emergence of a young virgin female.

Males play no part in nest building and provisioning and serve only to ensure that all females are fertilised. They vary markedly in size and exhibit alternative mating strategies: large males fight to monopolize emergence holes at the nesting areas, seeking to mate with virgin females as they come to the surface; smaller males tend to patrol the forage plants. Competition for females at emergence holes is fierce and a female venturing out may be instantly enveloped in a buzzing, tumbling ball of males. Once mated, though, females cease

to attract males and are able to go about their nesting activities undisturbed.

When burrowing into the brick-hard clay, females first wet the soil with nectar to soften it, then bite it away with the jaws. The first soil excavated is used to construct a mud turret at the entrance and this serves to prevent soil tipped out from falling back in.



A female in her entrance turret surrounded by loose soil cast-out during her burrowing activities.



Unusually tall turret with most of tumulus stripped away by wind.

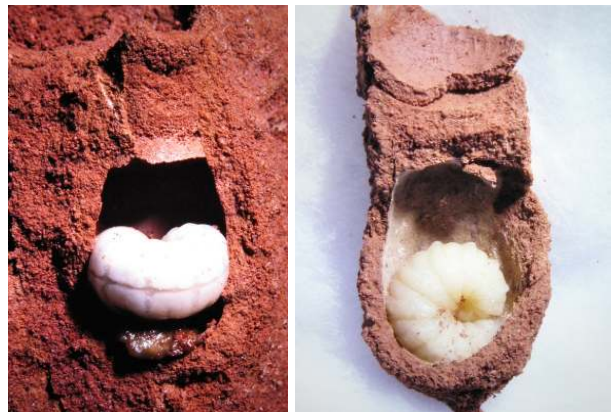
At the bottom of the shaft at depths of 15-30 cm, the female constructs an urn-shaped brood cell and waterproofs its walls with secreted wax. By means of several foraging trips, she half-fills the cell with nectar and pollen (the pollen settling to the bottom), then lays an egg on the surface of the nectar. Finally, she caps the cell and then commences to construct another slightly deeper. She may repeat this process up to seven times before filling in the shaft, sealing it with a mud plug and demolishing the turret. Exhausted by her labours, she may then die on the ground.

The eggs hatch within a few days and the tiny larvae commence swallowing the liquid food in which they float. They grow rapidly and consume all their provisions within a few weeks. At this stage

they are bloated white grubs nearly filling the cells. Then they pass faecal material which is smeared around the cell walls. When this process is completed they curl up and remain motionless and unresponsive until the following year. Transformation into a pupa and then an adult occurs still within the sealed cell. The young adults have to gnaw their way through the cell cap and burrow to the surface.



A brood cell with cap in place (left) and another with cap removed (right) to reveal egg floating on surface of liquid provision.



Cells opened to show near-fully fed larva (left) and a resting-phase larva (right).

Further reading:

Houston, T.F. (1991). Ecology and behaviour of the bee *Amegilla* (*Asaropoda*) *dawsoni* (Rayment) with notes on a related species (Hymenoptera: Anthophoridae). *Records of the Western Australian Museum* 15(3): 591-609.

More recently, J. Alcock, M. Beveridge, L. Simmons and J. Tomkins have published a number of papers on the mating system and other aspects of the species' biology.