Leioproctus muelleri

Bees are the workhorses of the agricultural sector, pollinating the flowers of many different types of plants that we rely on for food. And the vast majority of pollinating is done by just one species, the honeybee (*Apis mellifera*). Honeybees were introduced to Australia by colonialists to provide high-energy nutrients and to pollinate crops and ornamental flowers. But, long before the introduction of honeybees, native bees flourished in the Australian environment, producing an array of different species found nowhere else on Earth. Some have been used by Aboriginal people as a source of honey – a delicious treat in an environment with limited food resources.

Colletidae is the biggest Australian bee family. With nearly 900 named species, it represents more than half of the species found in Australia. Many are quite small and rarely seen by the casual observer, but they play a vital role in the maintenance of healthy ecosystems by pollinating a variety of native plants. Unlike the honeybees, whose queens make a nest using her offspring as workers, most Australian bees are solitary, and females mate with one or more males and lay eggs in a brood cell in the ground or galleries in dead wood or plant stems.

Although new Australian bee species are being regularly found by taxonomists, it's not often that a bee comes along that stumps the experts. And that's exactly what happened when bee expert Dr Terry Houston, then Curator of Insects at the Western Australian Museum, and Museum volunteer Otto Mueller, were collecting in Forrestdale on the outskirts of Perth. Otto spotted an insect entering a hole in the ground and collected it as it re-emerged. They quickly netted a male flying close by. It turned out to be a bee about the size of a honeybee but with an unusually large head. Terry knew that they had found an extraordinary new species of Colletidae. Evolutionary biologists love solving puzzles, and Terry was instantly curious about the reasons behind the big head and jaws. Do they use these features for defence? Do they grip the females during courtship and mating? Or do males fight with each other to gain access to females? Well, he found that while a female excavates her burrow and brood chamber, her male suitor positions himself below the burrow entrance looking upward. And good luck to any male who dares to approach his girl. The male's enlarged head and mandibles enable him to repel any would-be adversaries so he can retain sole mating rights with his chosen mate. This type of behaviour had previously not been recorded for a solitary bee species, making this one of the most interesting species to be discovered in Australia in recent years.

The scientific paper reporting the discovery of this bee, known by common name 'megamouth bee', was published in late 2012 by Terry and Dr Glynn Maynard, another Australian bee specialist. In recognition of Otto's contribution to the discovery of the bee, they named the species *Leioproctus muelleri*, and included it in an entirely new subgenus, *Ottocolletes*. It's a fitting reward for Otto's initial observation of an insect flitting into a hole in the ground. This discovery highlights how locations close to Perth can be treasure-troves for fascinating animals with unusual life histories.

Above Megamouth bees have unusually large heads.

Below A pair of megamouth males in combat. *Photos – Bryony Fremlin*

Discovered is a regular series prepared by scientists at the Western Australian Museum (Department of Culture and the Arts) and Western Australian Herbarium (Parks and Wildlife). Each article highlights new and noteworthy discoveries of plants and animals in WA, and offers insights into the work of the scientists whose jobs involve discovering, naming and describing WA's marvellous living riches.