Native bees of Oceania

Fact sheet 2

August 2020

Bee diversity

While European honey bees (*Apis mellifera*) have a strong relationship with humans around the world, they are one species within a highly diverse group of organisms. Globally there are over 20,400 known bee species, with new species being described every year[1]. In Oceania, with its rich variation in bioregions, the bee fauna is myriad and unique. In Australia alone there are over 1650 documented native bee species[2,3]. New Guinea follows Australia in diversity, with a rich tropical bee fauna of 230 known species, while nearby the Solomon Islands has about 45 bee species[4]. New Zealand is home to 28 native bee species[5] and Vanuatu, New Caledonia and Fiji have smaller numbers of bee species, with approximately 23, 21, and 14 respectively[4]. In some places, like Australia and Papua New Guinea, new bee species are still regularly being discovered.

Solitary bees

Most of Oceania's bees are solitary species, meaning they don't live in colonies or make honey. Solitary bee females live by themselves, make their own nests, collect their own food and raise their own offspring. Solitary bees usually nest in tunnels, which they can find ready-made or excavate themselves. Most species nest in tunnels they dig in the ground. Others nest above ground, in tunnels in the dead wood or stems of plants. Most species find existing holes, originally made by beetles or other wood-boring insects, although some excavate the holes themselves by chewing with their jaws.

Wild Pollinator Count is a nationwide citizen science activity that anyone in Australia can get involved in. You can participate in the count every year in the second full week of April and November. Find out more at www.wildpollinatorcount.com.

Social bees

The Oceania geographic region has one of the most diverse and unique pollinator faunas in the world.

While the majority of Oceania's bees are solitary species, there are also semi-social and highly eusocial bees. Semi-social bees form small colonies, usually just a few females nesting together. The reed bees give examples of this form of sociality and make their nests by chewing cavities in the pith centres of dead plant stems. In Australia the *Exoneura* reed bees are a widespread group, and in tropical parts of Oceania the *Braunsapis* bees share a similar lifestyle. Oceania's biggest bees, the *Xylocopa* carpenter bees, can also live semi-social lives, in which a female bee may temporarily share her nest with a small number of adult offspring.

The peak of bee sociality, highly eusocial behaviour, is reserved for just a small number of charismatic bees. These are the bees that live in large colonies, have a true queen and workers, and make and store honey. In Oceania the only native highly eusocial bees are the stingless honey bees (Meliponini bees). In our region there are 19 described stingless bee species, found across subtropical and tropical parts of Australia, and in New Guinea, the Solomon Islands and nearby islands, but more remain undescribed[6,7]. Oceania also hosts two highly eusocial bee species that have been introduced from elsewhere: the true honey bees *Apis mellifera* and *Apis cerana*.

Apis mellifera is widespread through Oceania, while *Apis cerana* is found only in north-eastern Australia, New Guinea and the Solomon Islands[8].

Bees are vital pollinators that play essential roles in the functioning of terrestrial ecosystems, as well as providing crop pollination services to humanity. Not only do managed bees such as *Apis mellifera* and some stingless bees pollinate crops in Oceania, but a range of other native bee species are effective pollinators of a number of different crops (Fact sheet 3). Research into the benefits of native bee species to crop pollination continues across Oceania.

Bees predominantly eat pollen and nectar, so they rely on flowering plants to survive.

References: 1. Discover Life. 2020. www.discoverlife.org; 2. Australian Faunal Directory (2020) www.biodiversity.org.au/afd; 3. Houston. 2018. A Guide to the Native Bees of Australia; 4. Groom & Schwarz. 2011. Apidologie, 42: 759–770; 5. Donovan. 2007. Fauna of New Zealand 57, 295; 6. Heard. 2016. The Australian Native Bee Book; 7. Engel & Rassmussen. 2017. Journal of Melittology, 73: 1–16; 8. Koetz. 2013. Insects 4(4): 558–592. Picture credits: Tobias Smith.