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Paper on Bees: The Melittidae family

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Melittidae Bees

Introduction

The Melittidae bee family is the second smallest bee family, after the family Stenotritidae. There are 16 genus and about 200 species in the world, but the Melittidae bees were first classified in *Apis* and *Andrena* genus (Michez, et al., 2009).

The family is divided into 3 subfamilies: Dasypodainae (Afrotropical, Palaeartic and Nearctic regions), Meganomiinae (Afrotropical region) and Melittinae (Afrotropical, Palaeartic and Nearctic regions) (Encyclopédie de la langue française, n.d.).

Taxonomy and identification

Melittidae bees are wild bees, and their taxonomy structure is as follows:

Kingdom: Animalia
Phylum: Arthropoda
Class: Insecta
Order: Hymenoptera
Family: Melittidae

The identification of these bees consists of first identifying the rounded type pronotum at the base of the bee's neck, followed by the identification of body hairs and the hind legs having a broad first leg segment (called a tarsomere). The third step recognizes a jugal lobe shorter than a submedian cell, and finally a front wing has only two submarginal cells. However there are no abdominal scopa (hairs for carrying pollen) and the bee has a short tongue. They are small to moderate sized bees, and often have a shaggy scopae. (Chinery, 1993)

Behaviour and sociality

The nest of these bees is usually constructed in the ground (Figure 1). The nests are water resistant, as some chemicals are added to its structure (Michener, 2000).

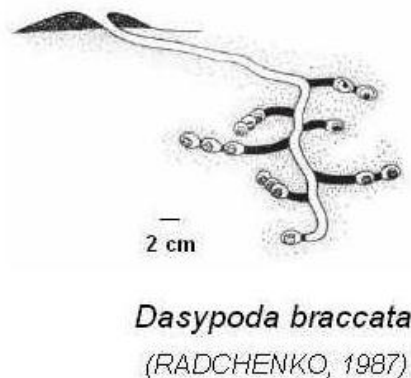


Figure 1 *Dasypoda braccata* nest

Two genera from the Melittidae family are known to collect oil from plants. Those two bee genera are *Rediviva* (Figure 2) and *Macropis*. The latter has "modified, finely branched-hairs on its fore and mid-legs" to collect the oil from *Lysimachia* spp. -Whose common name is the Yellow-Flowered Loosestrife -and to transport it (Michez, et al., 2009). *Rediviva* bees prefer the flowers from the Scrophulariaceae, Orchidaceae

and Iridaceae families, from which they collect oil. When added with pollen, the oil forms a ball. This mixture can be used by the bees to line the brood cells and to feed the larvae. This special interaction between the bees and specific plants is called a “host-plant preference”. On the other hand, pollen specialization is called oligolecty (Michez, et al., 2009). Of course, other plants are used as a food source as well. It is thought that this habit of oil collecting may be dated back ages ago. In fact a fossil (*Paleomacropis eocenicus*) found in Eocene amber had modified hairs, which are “typical of oil-collecting *Macropis*” (Michez, et al., 2007). Interesting fact: scientists have recently discovered *Melitta Americana* in Québec last year (Payette, 2013).



Figure 2 *Rediviva emdeorum* with elongated legs

Species and location

The Melittidae family is a small family. Some of the genera are rarely found because of their specific geographical location. Only 16 genera and about 200 described species are known today (Michez et al 2009). The genera that are less common are often restricted to one specific location. The *Samba*, *Ceratonomia* and *Meganomia* families are three good examples as they are found in only one country. They are respectively exclusively found in Kenya, Namibia and South Africa. Only one species is found in the *Ceratonomia* genus, and it is the *Ceratonomia rozenorum* (Figure 3). The genus that has the higher diversity is the *Melitta*, and there are 44 known species (Michez et al 2009). They are found mostly in Europe. One of the most common species from this genus would be the *Melitta leporine* (Figure 4), and it is found all over Europe. Other genera have a higher abundance, such as the case of *Dasyroda*. There are 33 known species (Michez et al 2009). It is common to see them in the Palaearctic region. The higher diversity is located around the Mediterranean Sea. The species with the highest abundance is *Dasyroda hirtipes* (Figure 5). It is found mainly around the Mediterranean Sea but is also present up to northern Europe. The *Macropis* genus is observed in several locations in the world. The highest diversity is located in Eastern Asia. The other species are in Europe and on the Eastern coast of USA and Canada. There are 16 known species in total. The species that are the most common in Europe are the *Macropis europaea* (Figure 6). This species is spread out in most parts of Western Europe.



Figure 3 *Ceratonomia rozenorum*



Figure 4 *Melitta leporina*



Figure 5 *Dasypoda hirtipes*



Figure 6 *Macropis europaea*

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