

Leafcutter bee, *Megachile laticeps*, cutting leaf of *Dendrolobium umbellatum*

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Subjects: Broad-headed leafcutter, *Megachile laticeps* (Insecta: Hymenoptera: Apoidea: Megachilidae);
Petai laut, *Dendrolobium umbellatum* (Magnoliophyta: Fabales: Fabaceae).

Subjects identified by: John S. Ascher (bee) & Seah Wei Wei (plant).

Location, date and time: Singapore Island, Berlayer Creek, near Labrador Park; 20 January 2018; 1613 hrs.

Habitat: Back mangrove, along the boardwalk.

Observers: Eunice J. Y. Soh & Daniel J. J. Ng.

Observation: A female *Megachile laticeps* of about 12 mm body length was observed cutting the leaf of *Dendrolobium umbellatum* with her mandibles (Fig. 1, inset). A video of the behaviour can be viewed at <https://www.youtube.com/watch?v=FMZgRp9PtAw>. A piece of leaf was cut by the bee in an oblong shape (Fig. 1). Other oblong and circular cuts were seen on the same leaf and other leaves in the vicinity. After the bee flew away, the observers waited approximately 10 minutes at the site but she did not return.

Remarks: Twenty-one species of *Megachile* have been recorded in Singapore, of which *Megachile laticeps* is the most common leaf-cutting species, being found in various terrestrial habitats including urban areas (Ascher et al., 2016). Its colour pattern and body size resembles the Asian honey bee (*Apis cerana*) with which it may be mistaken from afar. The former can, however, be differentiated easily with the cream-and-orange scopal hairs under the abdomen of the female which is used to collect pollen. See Ascher et al. (2016) and the 'Biodiversity of Singapore' online portal: <https://singapore.biodiversity.online/species/A-Arth-Hexa-Hymenoptera-000109> for high resolution images of *Megachile laticeps* and its Müllerian mimics - *Megachile umbripennis* and the male (but not female) of *Megachile conjuncta*. A fascinating behaviour of female *Megachile* leafcutter bees is that they utilize leaves cut with their mandibles to line their brood cells (for photographs of the nest, see online species page: <http://taxo4254.wikispaces.com/Megachile+laticeps>), while other *Megachile* species line nests with resin.

Dendrolobium umbellatum is tolerant of salt spray (NParks Flora & Fauna Web, 2017) and flanks the Berlayer Creek boardwalk at the back mangroves. In places where this plant occurs, such as Hort Park and Pulau Ubin's Butterfly Hill (E. J. Y. Soh, personal observation), it is often observed to be cut by typical *Megachile* leafcutter bees that belong to 'Group 1' of Michener (2007), as recognized by their unique clean cuts that are either circular or oblong. These are distinct from insect herbivory, and from the more ragged cuts of the primitive leafcutter *Megachile atrata* which belongs to 'Group 3' of Michener (2007) (Soh, 2014). Aside from *Dendrolobium umbellatum*, *Megachile laticeps* had been observed to cut *Rosa* sp. (Rosaceae) at Namly Avenue (J. L. E. Chua, personal observation) and *Neolitsea zeylanica* (Lauraceae) at Fort Canning Park (K. K. L. Yap & Z. W. W. Soh, personal observations). Based on these two records and the observation described, we report three new bee-plant associations for *Megachile laticeps*.

Although they appear to damage foliage, *Megachile* leafcutter bees should not be considered as pests. Leaves are typically cut only on the edges. These are still able to photosynthesize and do not wither. It is only at localities where *Megachile* bees occur in high abundance, such as a nesting aggregation, that cuts may be more extensive and conspicuous, and the plant's ornamental value may be considerably reduced. *Megachile* bees do, however, play an integral role in the ecosystem as pollinators.

References:

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Fig. 1. A fresh leaf cut made on a *Dendrolobium umbellatum* leaf by the female *Megachile laticeps* as shown on the inset. Inset: Female *Megachile laticeps* bee in the process of cutting the *Dendrolobium umbellatum* leaf. Photographs by Eunice J. Y. Soh