

Thread-waisted wasp, *Isodontia diodon*, nesting in a bee hotel at HortPark

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Subjects: Thread-waisted wasp, *Isodontia diodon* (Insecta: Hymenoptera: Sphecidae);
Cockroach, *Blattella* sp. (Insecta: Blattodea: Ectobiidae).

Subjects identified by: Zestin W. W. Soh.

Location, date and time: Singapore Island, Hyderabad Road, HortPark; 8 February 2019; 1145 hrs.

Habitat: Semi-urban parkland near secondary forest.

Observers: Zestin W. W. Soh and Jacqueline L. E. Chua.

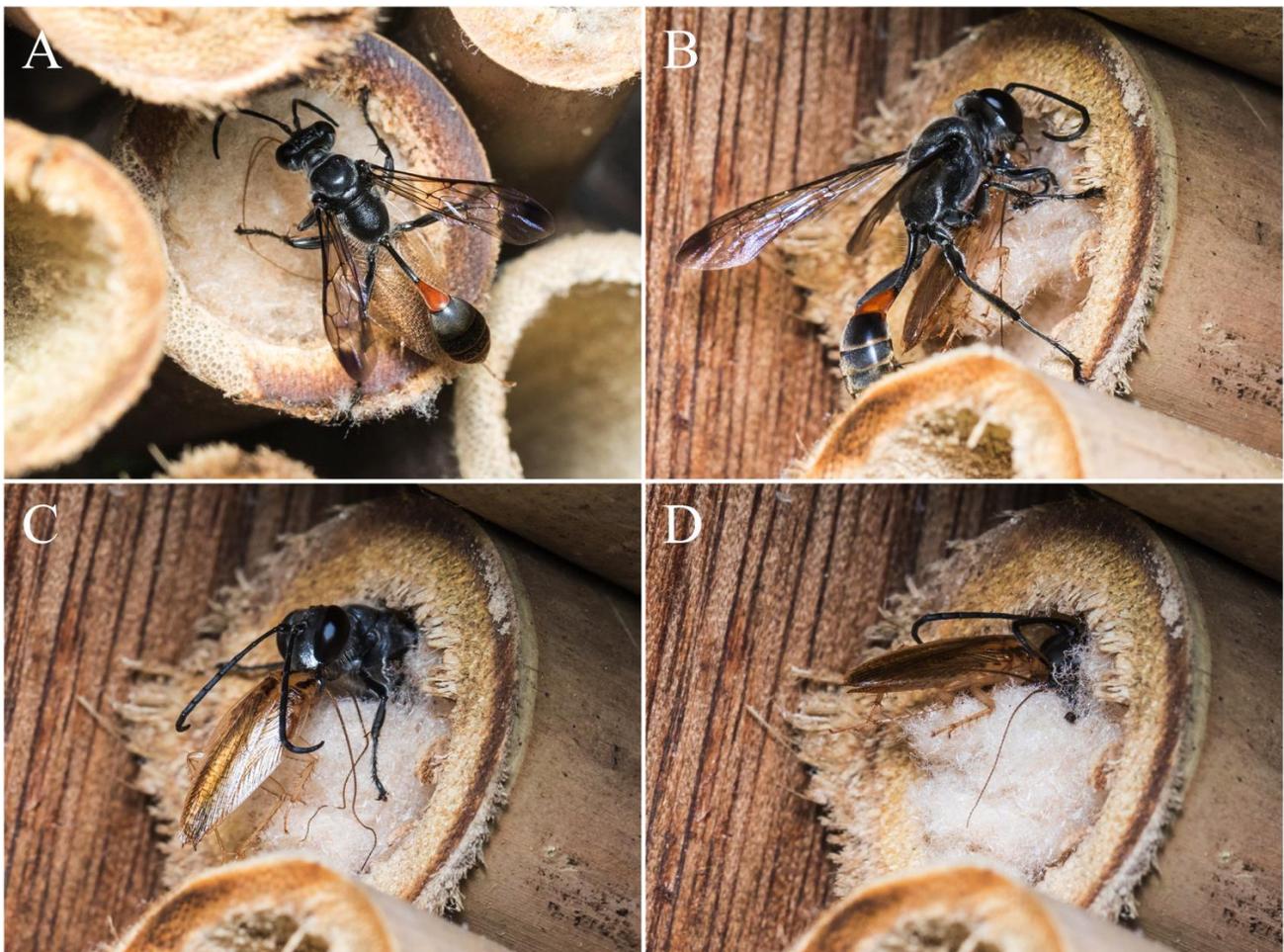


Fig A-D. A female *Isodontia diodon* provisioning her nest with a cockroach prey at a bee hotel in HortPark. Photographs by Zestin W. W. Soh.

Observation: Two female wasps (~10 mm length) were observed building and provisioning nests made in separate bamboo internodes inside a bee hotel situated along the Bee Trail in HortPark (NParks, 2020). Each wasp constructed a nest plug out of cotton-like material and provisioned their respective nests with small cockroaches (*Blattella* sp.). When bringing a cockroach prey to its nest, the wasp first enters by opening a small hole at the top of the plug (Fig. A & B), and then reaches back out to drag the cockroach in (Fig. C & D). The wasps were docile and unaggressive to the

observers despite them being in close proximity to their nests, which is typical of solitary wasps. Bamboo internodes chosen by the solitary wasps for nesting had a diameter of about ~15 mm, and a length of around 100 mm.

Remarks: Bee hotels are nesting sites for solitary bees, as well as docile solitary wasps. These present opportunities to study the behavior and ecology of these important insects (Tylianakis et al. 2006; MacIvor, 2016). The nesting biology of the solitary wasp *Isodontia diodon* has been well documented in Hong Kong by Barthélémy (2010), who similarly made observations at a trap nest using bamboo internodes. Nesting and cockroach provisioning of the related *Isodontia severini* were also documented in bamboo trap nests in Singapore by Soh (2014), although nesting of *Isodontia diodon* was not recorded in that study.

As shown in Barthélémy (2010), the cotton-like nesting material used by this wasp is in fact setae gathered from the underside of the leaves of plants, such as *Mallotus paniculatus* and *Vitis balanseana*.

References:

- Barthélémy C (2010) Nesting Biology of *Isodontia diodon* (Kohl, 1890) (Hymenoptera: Sphecidae), predator of cockroaches, in Hong Kong. *Hymenoptera*, 19 (2): 201-216.
- NParks (2020) Bee Trail. <https://www.nparks.gov.sg/gardens-parks-and-nature/parks-and-nature-reserves/hortpark/bee-trail> [Accessed on 20 May 2020]
- MacIvor JS (2016) Building height matters: nesting activity of bees and wasps on vegetated roofs. *Israel Journal of Ecology & Evolution*, 62 (1-2): 88-96.
- Soh EJY (2014) Diversity and trap-nesting studies of Singaporean *Megachile* bees to inform monitoring and management of tropical pollinators. Honours thesis, Department of Biological Sciences, National University of Singapore. <https://tinyurl.com/leafcutter-bees> [Accessed on 20 May 2020]
- Tylianakis JM, Klein AM, Lozada T & Tscharrntke T (2006) Spatial scale of observation affects α , β and γ diversity of cavity-nesting bees and wasps across a tropical land-use gradient. *Journal of Biogeography*, 33 (7): 1295-1304.