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Biodiversity Record: New Singapore record of the singed nomad bee, *Nomada adusta*

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Subjects: Singed nomad bee, *Nomada adusta* (Insecta: Hymenoptera: Apidae).

Subjects identified by: John S. Ascher and Zestin W. W. Soh.

Location and date: Pulau Ubin, Jalan Noordin; 3 & 5 May 2022; during the day.

Habitat: Coastal forest.

Observers: Lim Yu Jun, Zestin W.W. Soh, Robin J. Southon, Justin C. H. Tan and John S. Ascher.

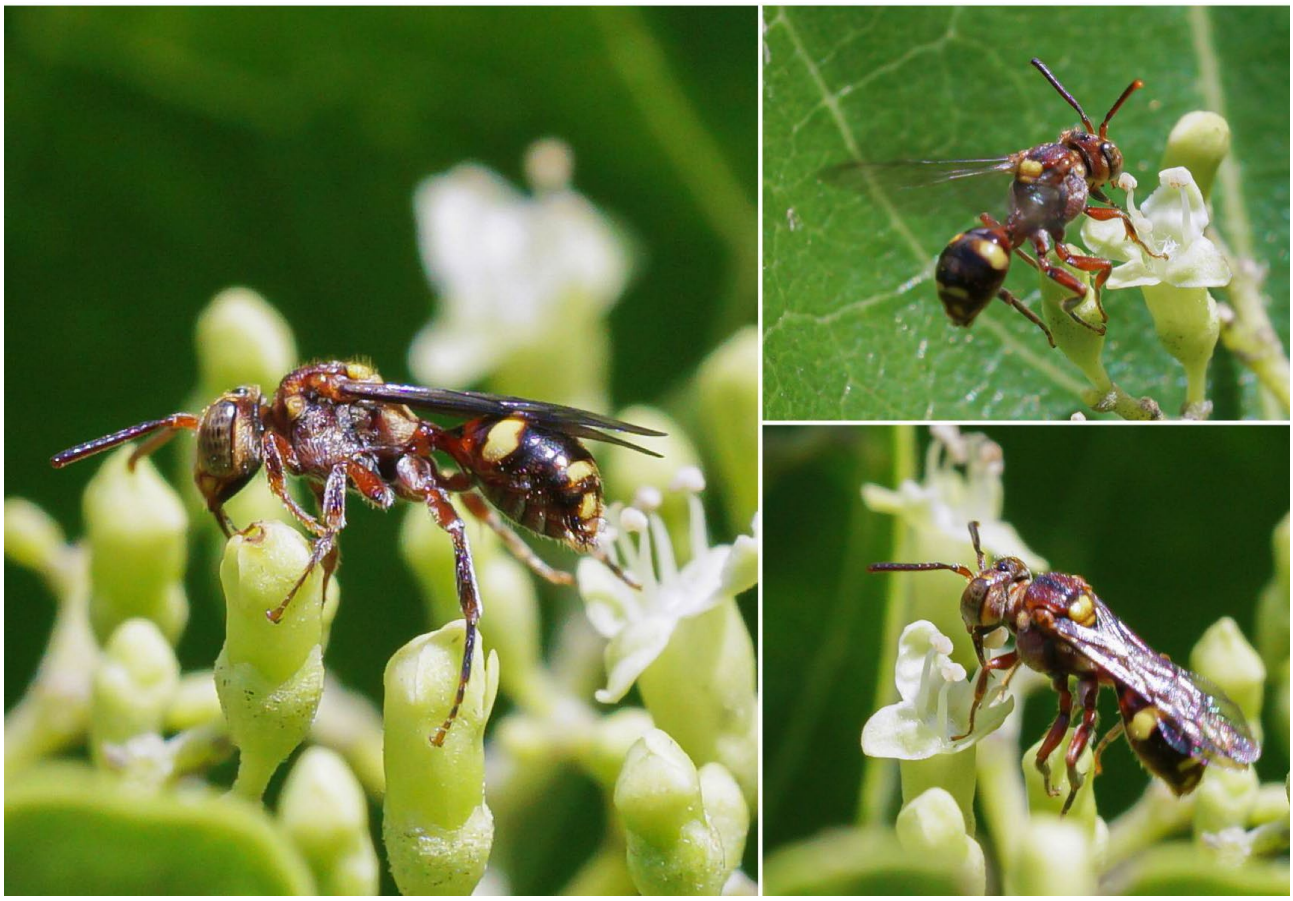

Fig. 1. Female *Nomada adusta* visiting flowers of *Premna serratifolia* at Pulau Ubin on 3 May 2022. (Photographs by: Lim Yu Jun)

Observations: On 3 May 2022, a female example of about 6 mm was photographed by Lim Yu Jun visiting a flowering bush of buas-buas (*Premna serratifolia*) at about 1240 hrs (Fig. 1). Subsequently on 5 May 2022, Zestin Soh, John Ascher, Robin Southon and Justin Tan revisited the site and recorded two female individuals at the same bush in the late morning. Examples of the sweat bee, *Lasioglossum albescens* (Hymenoptera: Halictidae), a potential host of *Nomada adusta*, were also observed at the site (Fig. 2).

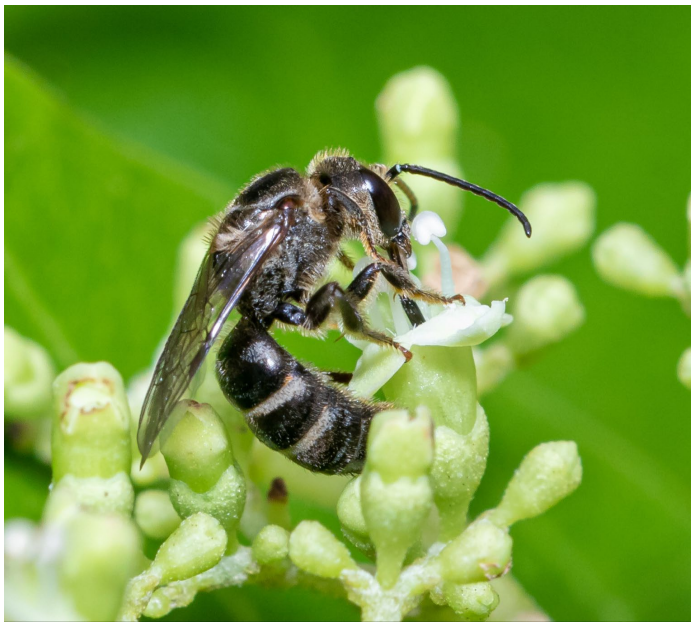

Fig. 2. An example of the sweat bee, *Lasioglossum* (*Ctenonomia*) *albescens*, a potential host of *Nomada adusta*, visiting *Premna serratifolia* at Pulau Ubin, Jalan Noordin on 5 May 2022. (Photograph by: Zestin W. W. Soh)

Remarks: Commonly known as nomad bees, the genus *Nomada* comprises wasp-like kleptoparasitic bees that exploit the nests of various ground-nesting bee species (Litman, 2019). Nearly 800 described species (Ascher & Pickering, 2022) occur globally, being diverse and abundant in the holarctic, but relatively rare and depauperate in tropical Southeast Asia with only one species-group '*furva*' represented (Alexander, 1994; Alexander & Schwarz, 1994; Michener, 2007). A recent phylogenetic study by Odanaka et al. (2022) places *Nomada adusta*, a species described from India, well within a monophyletic *Nomada* '*furva*' group, among a number of unidentified morphospecies. The *Nomada furva* group is part of a larger clade of exclusively Old World *Nomada*, that also includes the *Nomada armata* and *Nomada trispinosa* groups.

This is the first record of *Nomada adusta* in Singapore. Its discovery increases the country's known bee fauna to at least 140 species (updated from the 133, including morphospecies reported by Ascher et al. [2022]; several recently detected taxa in addition to *Nomada adusta* will be detailed elsewhere). It is also the first *Nomada* recorded for the island of Pulau Ubin. Species identification was based on descriptions of the type by Smith (1875) and the lectotype designated by Schwarz (1990) (Fig. 3). Identification characters include: labrum cordate with a strong central tooth near the apex, sometimes with an indistinct tooth on either side; antennae, head, scutum, base of T1 and legs rusty red; scutum with a black line longitudinally across the middle; scutellum and post-scutellum yellow; propodeum coarsely and irregularly wrinkled; T2 with large yellow blotches laterally; T4 and T5 with yellow band interrupted medially.

With the addition of *Nomada adusta* Smith (1875), five species of *Nomada* are now known to occur in Singapore with the status of all five considered 'Data Deficient' based on a recent conservation assessment and a guide to the bees of Singapore (Ascher et al., 2022; Soh & Ascher, 2020). Prior to the discovery of *Nomada adusta* in Singapore, the most recent record of the genus *Nomada* in Singapore is of a single female Malay nomad bee, *Nomada malayana*, from a remnant forest patch at Sentosa in 2014. *Nomada penangensis*, *Nomada polyodonta* and *Nomada sandacana* were last recorded in the 1970s by D. H. Murphy (Ascher et al. 2019, 2022; Soh & Ascher, 2020).

Nomada adusta is historically known from India, its type locality, as well as Sri Lanka, Nepal, and Myanmar (Schwarz, 1990; Ascher & Pickering, 2020). This contribution and other records within the last two years show that it is more widespread in Southeast Asia. John S. Ascher has identified specimens from Thailand in the collections in the laboratory of Natapot Warrit at Chulalongkorn University, Bangkok (see also image record in inaturalist https://www.inaturalist.org/observations/94564075), as well as from Selangor in Peninsular Malaysia. The hosts of *Nomada* in Southeast Asia are expected to primarily be halictid bees of the genus *Lasioglossum* whereas most *Nomada* of the Holarctic region parasitize *Andrena* (see Alexander, 1991; Michener 2007; Litman, 2019 and references therein). Given its relatively large size and its co-occurrence on Pulau Ubin with *Nomada adusta*, we suspect that *Lasioglossum albescens* is a potential host. This polytypic species also occurs widely and commonly across South Asia and the Indomalayan region (see maps at www.inaturalist.org), hence it is a plausible host across the entire range of *Nomada adusta*.

We propose the English name ‘singed nomad bee’ for *Nomada adusta*, based on a translation of the Latin specific epithet *adusta*, which means singed or sunburned. It is a reference to the rusty red background coloration of the species’ thorax and, legs, and base of the abdomen.

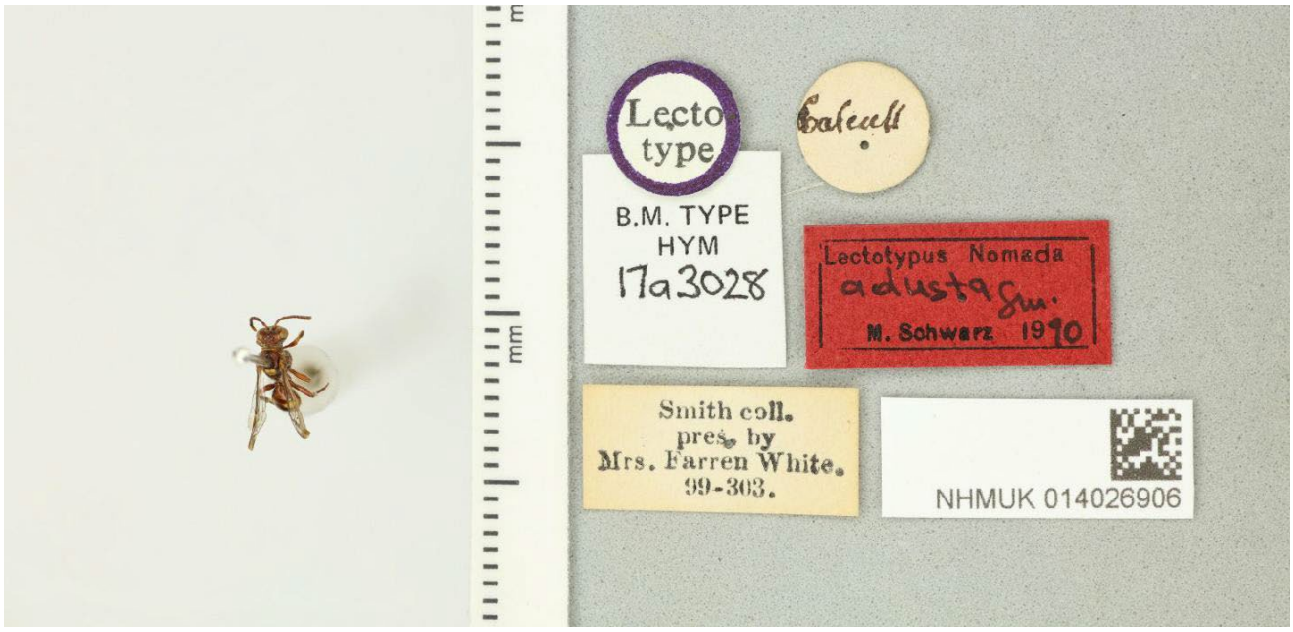

Fig. 3. Lectotype of *Nomada adusta* in the entomological collection of the Natural History Museum in London. Full details of the record are in the museum’s data portal and available at: https://data.nhm.ac.uk/object/ed959006-e43e-405e-833a-a8a6ead271f2. (Photograph courtesy of the Natural History Museum, United Kingdom).

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