



UNIVERSITI PUTRA MALAYSIA

TAXONOMY OF STINGLESS BEE IN MALAYSIA

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SERDANG, SELANGOR DARUL EHSAN**

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TAXONOMY OF STINGLESS BEE IN MALAYSIA

BY

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A project report submitted to Faculty of Agriculture, Universiti Putra Malaysia, in fulfillment of the requirement of PRT4999 (Final Year Project), for the award of the degree of Bachelor of Agriculture Science

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Certification

This project entitled “**Taxonomy Of Stingless Bees In Malaysia**” is prepared by Nazatul Syafiqah Binti Md Subahai and submitted to the Faculty of Agriculture in partial fulfillment of the requirement of PRT4999 (Final Year Project), for the award of the degree of Bachelor of Agriculture Science.

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ABSTRAK

Objektif kajian ini adalah untuk mengenal pasti spesis lebah kelulut di Malaysia, membina kekunci bagi spesis lebah kelulut di Malaysia dan memperihalkan setiap spesis lebah kelulut. Persampelan kelulut telah dijalankan di Pusat Genom Malaysia, Bangi. Sebanyak 5-10 ekor lebah dikumpulkan di hadapan pintu masuk sarang setiap spesis kelulut dengan menggunakan jaring sapuan. Sampel segar dimasukkan ke dalam balang pembunuh yang mengandungi etil asetat untuk mematikan lebah kelulut itu. Selepas itu, spesimen telah dipindahkan ke dalam bekas kaca yang mengandungi 70% alkohol untuk tujuan pengawetan dan dilabel sebelum dipinkan di dalam makmal. Kemudian, spesimen dikeringkan. Dari kajian ini, sebanyak lapan genus dan 16 spesies telah dikenalpasti. Kekuncinya bagi peringkat genus telah dibina dan setiap spesis telah diperihalkan dengan terperinci.

ABSTRACT

The objectives for this study were to identify the stingless bee species in Malaysia, to construct key for stingless bee species in Malaysia and to describe each species of stingless bee. Sampling was conducted in Malaysia Genome Institute, Bangi. Five to ten individuals of stingless bees were collected from the nest entrance by using a sweep net. Fresh samples were inserted to the killing jar containing ethyl acetate to kill the stingless bee. After that, the specimens were transferred into glass container containing 70% alcohol for preservation purposes and labeled before pinning in the laboratory. Then, the specimens were dried. From this study, a total of eight genus and 16 species were obtained. The key to genus was constructed and each species was described in details.

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CHAPTER 1

INTRODUCTION

Stingless bees are from the family 'Apidae' and closely related to honey bee. It has variable body size between 2 to 14mm. In Malaysia, it is known that 38 species were identified and *Tetragonula fuscobalteata* is known as the smallest stingless bee that can be found in Malaysia (Schwarz, 1939 ; Sakagami *et.al.*, 1985 ; Osawa and Tsubaki, 2003). Stingless bees are active the whole year and usually have a small entrance to the hollow trunk. It does not sting because they were stingless. Building cement cavities, rock crevices, old drums and water pipes can become their nests. Stingless bees collect pollen, nectar and also plant resin as their daily consuming (Heithaus, 1979). In South East Asia, stingless bee is used in pollination including Malaysia and Phillipines. (Cortopassi-Laurino *et al.*, 2006).

Stingless bee is a new potential industry in Malaysia and around the world. It is widely important in some of pollination activities in a few crops such as starfruits and strawberries industries. It may produce honey but only in a small amount, which is about less than 1 liter per year. Nowadays, the price of honey from stingless bees, in market wholesale can reach up to RM300 per kg (Kelly *et. al.*, 2014). It has high demand of honey worldwide.

Meliponini are a remarkable tribe in the family Apidae, consisting of 33 genera and 397 species, as proposed by Moure et al. (2007). However, this estimate varies with authors, who recognize the difficulty of knowing the actual number of species, given the

lack of taxonomic revision for this tribe and the large number of cryptic species (Michener, 2007). Therefore it is very crucial to have a good illustrated key to guide the researchers of stingless bee to identify the species. Furthermore an accurate identification is important in the pollinator conservation program.

Identification of stingless bee in Malaysia

A user-friendly-illustrated key will help the bee keepers in Malaysia to easily identify their stingless bee species.

Therefore, the objectives of this study were:

1. To identify the stingless bee species in Malaysia.
2. To construct a key for stingless bee species in Malaysia.
3. To describe each species of stingless bee.

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