

Ultrastructural comparison of three stingless bees species of Borneo

ABSTRACT

Three species of stingless bees were collected from Borneo. The species were *Geniotrigona lacteifasciata* (4 samples), *Tetragonula melanocephala* (2 samples) and *Tetragonula sirindhornae* (4 samples). Several features such as the morphology of mandible, the shape and size of corbiculae, and the hamuli number on both left and right wings were compared. Scanning electron microscopy (SEM) revealed all three species have the same structures of mandibles with two pointed tooth and one large blade, which could be considered as mildly aggressive. *G. lacteifasciata* showed a wider corbiculae compared to *T. melanocephala* and *T. sirindhornae*. The larger corbiculae is assumed to collect and carry heavier pollen load. SEM observation showed clear hamuli on both wings but with asymmetrical number for some. *G. lactefasciata* showed either 9 hamuli on both wings, or 9 hamuli on the left and 8 on the right wings, or 9 hamuli on the left and 10 hamuli on the right wings. *T. melanocephala* exhibited a similar number of hamuli, which was 5 hamuli on both wings. *T. sirindhornae* showed either 4 or 5 hamuli on both side of wings. It could be assumed that the stingless bees with more hamuli will fly further for foraging.

Keyword: Stingless bee; Mandible; Corbiculae; Hamuli