Yuvarin Boontop 2008: Diversity of Stingless Bees and Host Plants in Thong Pha Phum District, Kanchanaburi Province. Doctor of Philosophy (Entomology), Major Field: Entomolgy, Department of Entomology. Thesis Advisor: Associate Professor Savitree Malaipan, Ph.D. 301 pages.

Stingless bee species, nest density and polliniferous plants were surveyed in Thong Pha Phum District, Kanchanaburi Province, Thailand, during 2004-2006. Stingless bees were observed in four types of undisturbed forest: Dry dipterocarp forest (DDF), upper mixed deciduous forest (UMDF), lower mixed deciduous forest (LMDF) and dry evergreen forest (DEF) by using honey-bait traps. Three genera and eleven species (*Trigona apicalis, T. canifrons, T. collina, T. fuscobalteata, T. melina, T. sirindhornae, T. terminata, T. thoracica, T. ventralis, Lisotrigona cacciae, Pariotrigona pendleburyi*) were recorded. Species diversity of stingless bees was analyzed by the Shannon-Weiner diversity index. Diversity indices ranged from 0.63(DDF) to 0.83(LMDF). Stingless bees were most abundant during the cooler, drier months of the year. The effect on stingless bee diversity and abundance of availability of nesting sites, nesting materials, and pollen resources, and of temperature, relative humidity, light transmittance and recent fire history were considered. A total of 103 stingless bee nests belonging to 15 species (*T. apicalis, T. artipes, T. canifrons, T. collina, T. fuscobalteata, T. thoracica, T. melanoleuca, T. melina, T. pagdeni, T. sirindhornae, T. terminata, T. ventralis, Trigona* sp.1, *L. cacciae* and *P. pendleburyi*) were located during a quantitative nest survey. Nests of *T. collina* were by far the most abundant (28.41 % of all nests), followed by *T. ventralis* (19.06 %) and *T. terminata* (12.58 %). Nest densities varied across the four forest types. Nest densities were significantly different between the types of forest over the three years of the study (in 2004: χ^2=44.44; N=103; df=3; p<0.01, in 2005: χ^2=41.94; N=91; df=3; p<0.01 and in 2006: χ^2=32.28; N=84; df=3; p<0.01) and ranged from 0.66 to 15.66 nests/ha. The 15.66 nests/ha of LMDF were outstanding and represent the highest stingless bee nest densities. The lowest nest densities were found in DEF (0.66 nests/ha). Nest density data for consecutive years of the study period indicated progressive and distinct reductions in the numbers of nests. Nest density was highest in 2004 (on average 8.58 nests/ha.) and decreased in 2005 and 2006 (7.58 and 7.0 nests/ha. respectively) (χ^2=9.21; N=278; df=2; p<0.01). Nest aggregation was extremely common.

Stingless bee pollen loads were collected for studies of pollen morphology and bee foraging behavior. All pollen were study by the acetolysis technique. The numbers of pollen types that were collected by stingless bees in the four types of forest were recorded. Bees nesting in LMDF collected pollen from the highest number of plant species (36 pollen types) followed by bees nesting in UMDF, DDF and DEF, (32, 27 and 16 respectively). Pollen data suggested that some species forage beyond the forest types in which they nest.

Yuvarin Boontop
Student's signature

Savitree Malaipan
Thesis Advisor's signature

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