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Scientific note

A scientific note on first report of *Apis laboriosa* F Smith, 1871 in Vietnam

LQ Trung, PX Dung, TX Ngan

Bee Research and Development Center, Langha, Dongda, Hanoi, Vietnam

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In Vietnam, four honey bee species namely *Apis cerana* Fabricius 1793, *Apis dorsata* Fabricius 1793, *Apis florea* Fabricius 1787 and *Apis andreniformis* F Smith 1958 were found (Ha and Lap, 1992). However, in July 1996, colonies of honey bees which were morphologically and biologically different from the bees mentioned above were observed nesting in the rocky mountains of Sonla and Hoabinh provinces (about 20°47'N and 104°48'E, at an altitude of 1 270 m) in northwestern Vietnam. Local honey hunters have collected honey from the bee nests for a long time, but it is only in 1996 that research started on these new bees. According to our hypothesis, the new bee species could be *Apis laboriosa* F Smith 1871 in Himalayas as described by Sakagami et al (1980).

To test this hypothesis, 150 workers of new bees from three different colonies located in rocky holes were collected. The same number of *A dorsata* worker bees from three different colonies nesting in valleys of the same provinces were also collected. Various body parts of worker bees were examined and measured (table I). The significance of morphological differences between the two honey bee types was checked by *t*-test. In addition, nesting and migration behaviours of the bees were also studied and compared to those of *A laboriosa* in Himalayas.

The new worker bees were generally bigger than *A dorsata* ones (table I). The forewing length of the former was about 8.5% longer than that of the latter, similar to the findings of Sakagami et al (1980) based on Himalayan giant honey bee samples. Similarly, the length of sternite 3 and proboscis length of the new bees were respectively 7.4% and 5.7% longer than those of *A dorsata*. In addition we counted 13–14 ($m = 13.5 \pm 0.5$) pairs of barbs on 30 sting lancets of the new bees while *A dorsata* worker bees ($n = 30$) had around 11 ($m = 11.03 \pm 0.3$). This corresponds to the results of Sakagami et al (1980). The significant difference in cubital indexes of these two types of bees (37.8%) was nearly identical to that reported by Sakagami et al (1980) with 37.2%.

The color and shape of the abdomen of both bee types are also different. The tergites of new worker bees are brown-black as compared to a bronze colour in *A dorsata*. Likewise, each tergite has a white stripe which was lacking in the latter. The abdominal tip is somewhat rounded. In contrast, *A dorsata* workers have a pointed abdominal tip. The description is the same as that of Roubik et al (1985).

The bees build their nests of open single comb on overhanging cliff ledges in the high rocky mountains. Their nesting sites do not overlap and are higher than those of *A dorsata*. The bees migrate yearly to establish their combs in the mountainous provinces of Sonla and Hoabinh in April and leave their empty combs for overwintering or for another flowering place in August. These behaviours are similar to the observations of Roubik et al (1985) and Underwood (1986) for *A laboriosa* in the Himalayas.

Sakagami et al (1980), Roubik et al (1985), Underwood (1990), and Batra (1996) reported *A laboriosa* nesting in high mountainous areas of the Himalaya massif, which include parts of India, Nepal, Bhutan, China (Tibet and Yannan). These habitats of the bees range from 1 000 m to

Table I. Comparative morphological characters between workers of new bees and *A dorsata*.

Characters	*New bees*	A dorsata	P
Proboscis length (mm)	6.956 ± 0.023	6.560 ± 0.030	$P < 0.05$
Forewing length (mm)	14.139 ± 0.035	12.933 ± 0.055	$P < 0.05$
Cubital indexes	8.489 ± 0.324	5.278 ± 0.182	$P < 0.05$
Length of sternite 3 (mm)	3.985 ± 0.013	3.689 ± 0.016	$P < 0.05$

4 000 m in altitude with the temperature sometimes dropping below 0 °C (Ruttner, 1988; Otis, 1996).

Morphological and biological similarities confirm that the new bee species in Vietnam, which we studied, is also *A laboriosa* F Smith. However further studies should be carried out on morphology and other aspects of geographical distribution, migration, disease, enemies, etc, of the bees in Vietnam.

Note scientifique sur le premier signalement d'*Apis laboriosa* F Smith, 1871 au Viêt-nam

Wissenschaftliche Notiz über den ersten Fund von *Apis laboriosa* F Smith, 1871 in Vietnam

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