

Bombus xelajuensis – a new species of bumblebee from Guatemala (Hymenoptera: Apidae)

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Abstract: A new bumblebee species from a single location in highland Guatemala is described based on a type series of 10 queens and 21 workers. *B. xelajuensis* is morphologically very close to *B. trinominatus* and seems also rare and restricted to a small area. Differences in colouring are obvious, however. Triangular graphing of several characters indicative of body proportions for queens of *B. xelajuensis* and *B. trinominatus* supports their being two separate species.

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Introduction

In recent years two new bumblebee species have been described from Central America: *Bombus macgregori* Labougle and Ayala and *Bombus krusemani* van Asperen de Boer. A new subgenus was erected based on the description of a male of the rare *Bombus digressus* Milliron (Lavery et al. 1984).

Bombus xelajuensis spec. nov. (fig. 1)

Type material

Holotype: ♀: Guatemala, east of Quetzaltenango on road CA 1 to Guatemala City at km 171, altitude c. 3100 m (map Instituto Geografico Militar), 17.xi.1989, on a short blue *Salvia* of the subgenus *Calosphace*. Paratypes: 9 ♀ and 20 ♂ taken in the same location 17, 19 and 20.xi.1989; 1 ♀ taken in the same location 12.xi.1988. All paratypes on the same *Salvia* as the holotype.

The holotype queen and a paratype worker are deposited in the Zoological Museum, Amsterdam, Department of Entomology. The other paratypes are in the author's collection.

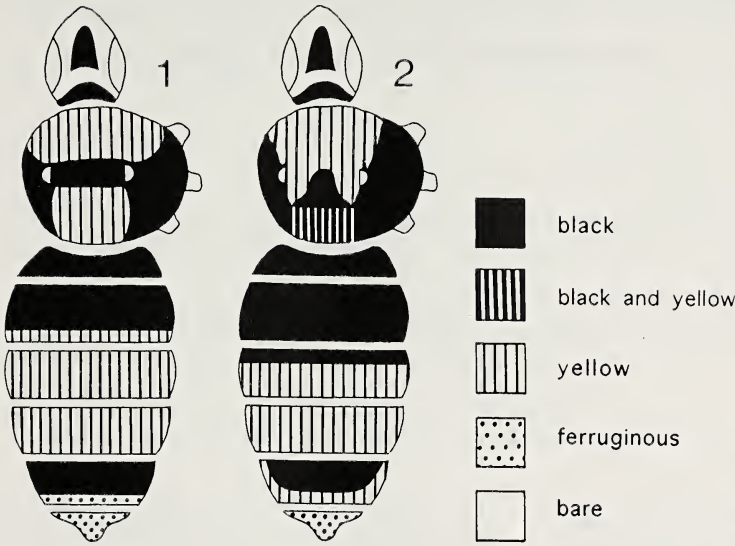
Description

Queen (holotype) (fig. 1): Length 18 mm. Distance between tegular margins (Te) 7.2 mm, average for the 10 queens available 7.3 mm, range 7.0-7.7 mm. Frontal outline of head little higher than wide. Ocelli in a very weak arc very close to the supraorbital line, median ocellus

noticeably larger. Clypeus approximately 1¼ times wider at base than high, strongly convex and well covered with moderately coarse irregular punctures except in the middle where they are mostly fine. Labral furrow rather wide and not sharply defined; prominently pointed tubercles. Malar space about equal to distal width, more than 1½ times the length of the third antennal segment. Pubescence uneven, long and dense. Very long on face and vertex. Metasomal tergite 6 (T6) shows a boss.

Colour pattern: Pile on face and vertex black with some pale, shorter and finer hairs. Thoracic dorsum light ochreous yellow except for a fairly narrow black interalar band intermixed with yellow hairs. The collar extends to the adjacent margin of the episternum where black hairs are intermixed. Pleura black. T1 black, T2 black with some yellow pile on distal margin, T3 and T4 light ochreous yellow with a few black hairs distally on T4, T5 black with finer brownish-ferruginous hairs on distal margin, T6 brownish-ferruginous. Venter light yellow. Legs black but pale yellow hairs on trochanters and femura and hairs on tibia mainly ferruginous. Wings slightly infuscated with brown.

The only colour variation seems to be in the amount of yellow on T2 and the admixture of black hairs basally on T3.



Figs. 1-2. Colour patterns of *Bombus*. 1, *B. xelajuensis* spec. nov., queen, holotype; 2, *B. trinominatus* Dalla Torre, typical queen and worker.

Worker: Length 11-13 mm, distance between tegular margins: average 4.0 mm, range 3.6-4.2 mm. Workers are structurally and in colour pattern similar to the queens although slightly more lemon-yellow.

Male: unknown.

Etymology

The name of the new species is derived from the word 'Xelaju' - designating in the Quiché language the city of Quetzaltenango - as the specimens were collected in the mountains above the plain in which that city is situated.

Discussion

B. xelajuensis is morphologically very close to *B. trinominatus* Dalla Torre, but the almost constant colouring is different on the notum and on T2 and T3. *B. trinominatus* usually has black hairs on T2 and basally on T3 (fig. 2). *B. xelajuensis* is obviously also a highland species in view of the long and shaggy coat and might be - as has been suggested for *B. trinominatus* by Labougle (1990) - associated with the 'Bosque de Pino'. In fact pine forest was present close to the only location of capture and the species was not observed in areas of com-

parable altitude in Guatemala without such forest.

The geographic separation from the Altos de Oaxaca in Mexico to which *B. trinominatus* is restricted (Labougle, 1990) is here taken as an argument in favour of the new bumblebee being a separate species rather than a subspecies of *B. trinominatus*. In order to illustrate the morphological differences between those two very similar species a number of characters indicative of body proportions was measured following Løken (1973). These parameters were: 'malar space' (A), 'radial length' (B), 'distance from lateral ocellus to preoccipital ridge' (D), 'distance from lateral ocellus to compound eye' (E); instead of 'interalar width', used by Løken, the 'distance between the tegular margins' (Te) - following Pekkarinen (1982) - was preferred. Measurements were made with a Zeiss IV stereomicroscope provided with a calibrated eyepiece at 25 X and 50 X magnification. In triangular graphing, the percentage contribution of each parameter to the sum of the lengths of three parameters is plotted. In fig. 3 the 'radial length', 'malar space' and 'Te' are plotted for 10 queens of *B. xelajuensis* and 9 small queens or large workers of *B. trinominatus* in the author's collection (Mexico, State of Oaxaca, Portillo El Cumbre, Route 175, 2600 m, 1.xi.1988) - no other mate-

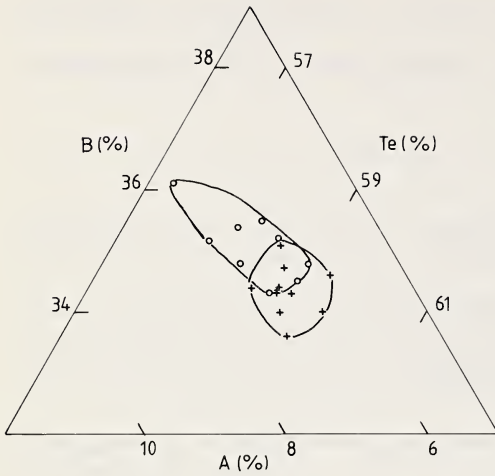


Fig. 3. Triangular graphing of 'malar space' (A), 'radial length' (B) and 'distance between tegular margins' (Te) for 10 queens of *Bombus xelajuensis* spec. nov. (+) and nine small queens or large workers of *B. trinominatus* Dalla Torre (o).

rial being available – and in fig. 4 the 'radial length' against 'D' and 'E'. In both graphs the spreading of the markings would indicate a specific difference, better separation being obtained with the second set.

Other bumblebees collected at this location were *B. ephippiatus formosus* Smith, *B. ephippiatus vauflavus* Cockerell, *B. nigrodorsalis nigrodorsalis* Milliron and abundant *B. wilmatiae* Cockerell, of all castes. A total of 12 hours collecting yielded 30 individuals of the new species, i.e. an average of 2½ per hour.

Acknowledgements

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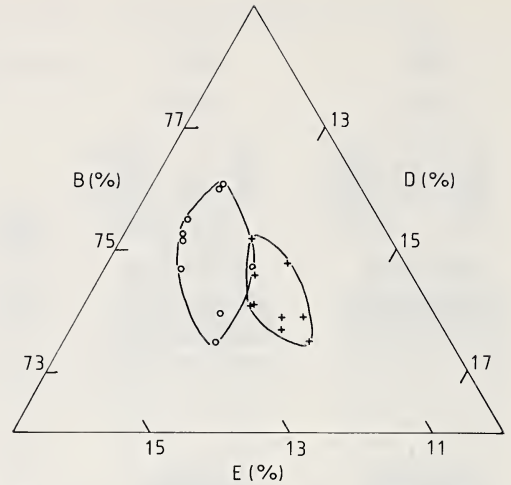


Fig. 4. Triangular graphing of 'radial length' (B), 'distance from lateral ocellus to preoccipital ridge' (D) and 'distance from lateral ocellus to compound eye' (E) for 10 queens of *Bombus xelajuensis* spec. nov. (+) and nine small queens or large workers of *B. trinominatus* Dalla Torre (o).

ing figs. 1 and 2 and to Dr. F. Adema of Leiden for helping towards identifying the *Salvia*. Prof. P. Rasmont kindly pointed out some morphological differences with *B. trinominatus*

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