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Bionomics and sociological aspects of *Euglossa fimbriata* (Apidae, Euglossini)

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ABSTRACT. The nesting biology and the social structure of *Euglossa fimbriata* were studied based on two original nests found on the campus of the University of São Paulo, Ribeirão Preto, Brazil. Nest 1 contained two inseminated females, 39 sealed cells, one cell being provisioned, and six old and empty cells. Nest 2 contained three inseminated females, 45 sealed cells, one cell being provisioned, and 27 old and empty cells. The cells of nest 1 were distributed into three clusters from which three new nests were set up in the laboratory and maintained in observation boxes from August 1993 to March 1994 in order to study the behaviors performed by the bees. The males left the nest immediately after emergence and did not return. Some females left the nest within a few days of eclosing, and others stayed in their original nests and began to reactivate them. The *E. fimbriata* colonies were small, with semi-social and eusocial organization. In these colonies one female becomes the dominant female, usually the oldest female, and the others behave as subordinate females. The subordinate females build their cells, provision and oviposit in them, while the dominant female becomes the major guard bee, and oviposits in cells oviposited in by subordinate females. Oviposition by the dominant female is always preceded by oophagy. Irrespective of the behavior displayed, all the females that we dissected had been inseminated. The

behavior displayed by the dominant female is characteristic of brood parasitism and fits the parental parasitism hypothesis developed as an alternative pathway by which insect sociality could have arisen.

Key words: *Euglossa*; Nesting behavior; Brood parasitism; Social structure; Social evolution

