Nidification of *Polybia platycephala* and *Polistes versicolor* (Hymenoptera: Vespidae) on Plants of *Musa* spp. in Minas Gerais State, Brazil

by

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ABSTRACT

Social wasps are natural enemies of caterpillars and, therefore, they have potential to control insect pests in various crops. Three colonies of *Polybia platycephala* (Richards) and one of *Polistes versicolor* (Olivier) (Hymenoptera: Vespidae) were found on plants of banana (*Musa* spp.) in Minas Gerais State, Brazil. These colonies were at 3.50 m high, under the leaves, which provide shelter from environmental stress.

Key Words: Banana, biological control, nest, pest, social wasps.

INTRODUCTION

Social wasps have many functions in ecosystems as pollinators, predators of insects, bioindicators and nutrient cycling (Souza *et al.* 2010). Social wasps are agents of biological control (Prezoto & Gobbi 2005; Picanço *et al*. 2010), mainly of Lepidopteran caterpillars (Richter 2000; Prezoto *et al*. 2006). *Polistes dominulus* (Christ) (Eigenbrode *et al*. 2000); *Protonectarina sylveirae* (de Saussure), *Brachygastra lecheguana* (Latreille), *Polistes carnifex* (Fabricius), *Polistes melanosomes* (de Saussure), *Polistes versicolor* (Olivier), *Polybia ignobilis* (Haliday), *Polybia scutellaris* (White), *Protopolybia exigua* (de Saussure) (Desneux *et al*. 2010), *Polybia fastidosusculata* (de Saussare) *Prontonectarina sylveirae* (de Saussare) (Moura *et al*. 2000), *Polistes erythrocephalus* (Latreille), *Polistes canadensis* (Linnaeus) and *Polybia sericea* (Olivier)

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(Bellotti *et al*.1992) feed on larvae of forest and agricultural Lepidopteran pests (Zanuncio *et al*. 1993; Leite *et al*. 2001). The study of these insects is important in food webs because they can feed on herbivores (Gonring *et al*. 2003, Weiss *et al*. 2004).

Insect defoliators of banana plants include *Calligo illioneus* (Cramer) (Lepidoptera: Nymphalidae), *Antichloris eriphia* (Fabricius) (Lepidoptera: Arctiidae) and *Opogona sacchari* (Bojer) (Lepidoptera: Lyonetiidae), which may decrease fruit production (Watanabe 2007).

Wasps were collected in the campus of the Federal University of Viçosa (20°45'S 42°52'W) in Viçosa, Minas Gerais State, Brazil on plants of banana (*Musa* spp.) with entomological nets (Souza & Prezoto 2006). These insects were killed in ether vapor and preserved in 70% ethanol for identification.

Three colonies of *Polybia platycephala* and one of *P. versicolor* were found at 3.50 m high under leaves of banana plants, which are long and wide, providing protection against adverse environmental conditions.

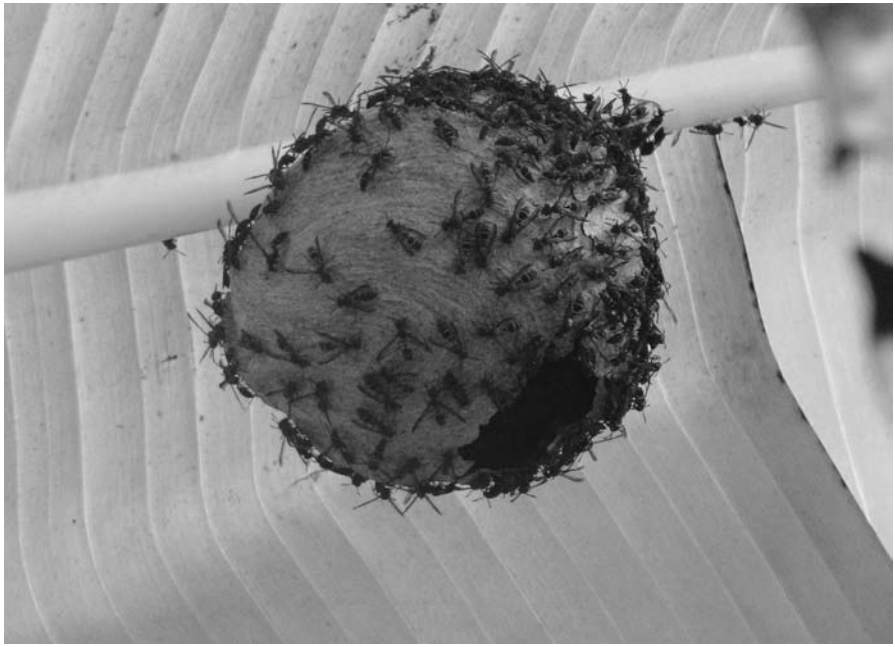

Fig. 1. Nest of the social wasp *Polybia platycephala* (Hymenoptera: Vespidae) on a *Musa* spp. (banana) plant.

The occurrence of *P. platycephala* enlarges the geographic distribution of this wasp, which was reported in the Brazilian States of Amazonas, Goiás, Mato Grosso, Minas Gerais, São Paulo and Rio de Janeiro and also in Peru and Suriname. Its nests have many horizontal combs built under leaves of perennial plants (Richards 1978, Lima & Prezoto 2003, Prezoto *et al*. 2005). The social wasp *P. platycephala* preys on different insects including *Spodoptera frugiperda* (J.E. Smith) (Lepidoptera: Noctuidae), *Mocis latipes* (Guennée) (Lepidoptera: Noctuidae), *Alabama argilacea* (Hübner) (Lepidoptera: Noctuidae), *Sciara* sp. (Diptera) and *Psilla* sp. (Heteroptera) playing an important role as biological control agent of insect pests in the field and urban environments (Prezoto *et al*. 2005).

Colonies of *P. versicolor* were reported on different substrates such as leaves, rocks, roots and abandoned nests of other wasps (De Oliveira *et al*. 2010). *Polistes versicolor* occurs from Amazonas to Rio Grande do Sul States in Brazil and its nests are formed by a single comb attached to the substrate by a peduncle (Richards 1978, Prezoto *et al*. 2006). This wasp has been reported preying on larvae of the following Lepidopterans: *Hedylepta indicata* (Fabricius), *Elasmopalpus lignosellus* (Zeller) (Pyralidae), *Spodoptera frugiperda* (JE Smith), *Heliothis virescens* (Fabricius), *Pseudoplusia includens* (Walker) (Noctuidae), *Chlosyne lacinia saundersii* (Doubleday & Hewitson) (Nymphalidae) and *Automeris* sp. (Saturniidae). Management of *P. versicolor* colonies in artificial shelters may be an effective strategy of pest control (Prezoto *et al*. 2006).

The presence of *P. platycephala* (Fig. 1) on banana plants should be monitored, because this wasp may spread bacterial disease of banana and heliconia caused by *Ralstonia solanacearum* (Smith) Yabuuchi *et al*. race 2, reported in Belize, Brazil, Colombia, Costa Rica, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Honduras, Jamaica, Mexico, Nicaragua, Panama, Peru, Suriname, Trinidad and Tobago, USA, Venezuela (America), Ethiopia, Libya, Malawi, Nigeria, Senegal (Africa), India, Philippines, Indonesia, Malaysia, Thailand and Vietnam (Asia) (Zoccoli *et al*. 2009). *Ralstonia solanacearum* may infect plants by contact with infected tools, root-root contact, soil-root contact (Zoccoli *et al*. 2009) or by flower visiting insects such as stingless bees *Trigona* spp., wasps *Polybia* spp. and fruit flies *Drosophila* spp. (Buddenhagen & Kelman 1964).

Wasp nests on plants of *Musa* spp. can be dangerous to workers in this culture, mainly during banana harvesting. This is the first record of the social wasps *P. platycephala* and *P. versicolor* nesting on banana plants, suggesting that further studies should be focused on prey preference of these wasps in banana plantations to determine if these species can be used in programs of integrated pest management, mainly of defoliating caterpillars.

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