

## SCIENTIFIC NOTE

Prey Captured and Used in *Polistes versicolor* (Olivier) (Hymenoptera: Vespidae) NourishmentFÁBIO PREZOTO<sup>1</sup>, HELBA H. SANTOS-PREZOTO<sup>2</sup>, VERA L.L. MACHADO<sup>3</sup> AND JOSÉ C. ZANUNCIO<sup>4</sup><sup>1</sup>Depto. Zoologia, Programa de Pós-Graduação em Ciências Biológicas, Comportamento e Biologia Animal – ICB, Univ. Federal de Juiz de Fora, Campus Universitário-Martelos, 36.036-900, Juiz de Fora, MG, fabio.prezoto@ufff.edu.br<sup>2</sup>Programa de Pós-Graduação em Ciências Biológicas, Comportamento e Biologia Animal, Univ. Federal de Juiz de Fora, MG, helba.santos@ig.com.br<sup>3</sup>Centro de Estudos de Insetos Sociais, UNESP, Rio Claro, SP<sup>4</sup>Depto. Entomologia, Univ. Federal de Viçosa, MG, zanuncio@ufv.br*Neotropical Entomology* 35(5):707-709 (2006)Presas Capturadas e Utilizadas na Alimentação por *Polistes versicolor* (Olivier) (Hymenoptera: Vespidae)

RESUMO - As vespas sociais são predadoras de muitas espécies de insetos e o estudo de suas presas pode revelar seu potencial para programas de controle biológico de pragas. Foram realizadas 240h de coleta de presas em 32 colônias de *Polistes versicolor* (Olivier) no município de Juiz de Fora, MG, de março de 2000 a fevereiro de 2001. As presas capturadas por *P. versicolor* foram, principalmente, das ordens Lepidoptera (95,4%) e Coleoptera (1,1%) além de 3,4% de indivíduos não identificados. A espécie mais coletada foi *Chlosyne lacinia saundersii* Doubleday & Hewitson (13,5%) (Lepidoptera: Nymphalidae) e o número total estimado de presas capturadas por colônia de *P. versicolor* foi de 4.015 indivíduos por ano. Isso mostra que a espécie pode ser utilizada em programas de manejo integrado de pragas de insetos herbívoros, principalmente lagartas desfolhadoras.

PALAVRAS-CHAVE: Vespa social, atividade forrageadora, presa, controle biológico

ABSTRACT - The social wasps are predators of many insect species and the study of their preys can reveal the potential of these natural enemies in biological control programs. A total of 240h of collections of preys in 32 nests of *Polistes versicolor* (Olivier) was carried on in Juiz de Fora, Minas Gerais State, Brazil, from March 2000 to February 2001. The preys captured by *P. versicolor* were mainly those from the orders Lepidoptera (95.4%) and Coleoptera (1.1%) while 3.4% of them were not identified. *Chlosyne lacinia saundersii* Doubleday & Hewitson (Lepidoptera: Nymphalidae) was the most collected prey (13.5%). The total of 4,015 preys was estimated to be captured per colony of *P. versicolor* during one year. The species can be used in integrated pest management of herbivorous insects, especially defoliating caterpillars.

KEY WORDS: Social wasp, foraging activity, prey, biological control

Foraging activity of social insects is considered one of the most important behaviours for survival (Lima & Prezoto 2003). The activity involves the capacity of their workers to interact with the environment and to collect resources necessary to complete the development of their colony (Wilson 1971). The materials collected by social wasps are mainly water, carbohydrates, material to build their nests and animal protein (Wilson 1971, Hunt *et al.* 1987). The prey capture ability is the most complex behaviour of these insects because it involves preys recognition, predation and the capacity of returning to the nest (Wilson 1971, Ugolini & Cannicci 1998).

Between 90% and 95% of the prey captured by *Polybia*

*occidentalis* (Olivier) (Gobbi *et al.* 1984), *Polybia paulista* (Ihering) (Gobbi & Machado 1985), *Polybia ignobilis* (Haliday) (Gobbi & Machado 1986), *Agelaia pallipes* (Olivier) (Machado *et al.* 1987), *Polistes simillimus* Zikán (Prezoto *et al.* 1994) and *Polistes lanio* (Fabricius) (Giannotti *et al.* 1995) are Lepidoptera larvae.

In Carolina of the North, EUA, Rabb & Lawson (1957) found a reduction of 68% in the damage caused by *Protoparce sexta* (Cramer) in the culture of the tobacco, after the introduction of colonies of the wasps *Polistes exclamans* (L.) and *Polistes fuscatus* (Fabricius) in the proximities of the farms infested by the pests.

The social wasp *Polistes versicolor* (Olivier) occurs from

the Amazon State to the Rio Grande do Sul State in Brazil and its nests are formed by one comb linked to the substratum by a peduncle (Richards 1978).

The objective of this study was to survey the material captured by the forager *P. versicolor* to nourish the individuals of its colony aiming to better reveal the importance of this natural enemy in tropical ecosystems.

Preys captured by *P. versicolor* were collected in 32 colonies of this wasp in Juiz de Fora (21°46'S 43°21'W, altitude of 800 m), Minas Gerais State, Brazil. The wasps returning from foraging activity were collected twice a week, during 240h in different colonies from March 2000 to February 2001 in the hottest hours of the day (10:30 a.m. to 2:30 p.m.). Wasps with prey were identified by their slow flying speed and they were captured with entomological nets where the preys carried were easily discharged. This material was fixed in alcohol 70% for further identification under stereomicroscopy.

A total of 89 preys were collected and they were mainly larvae of Lepidoptera (95.4%) and Coleoptera (1.1%) orders while 3.4% of them were not identified (Table 1). *Polybia dimidiata* (Olivier) (Campos-Farinha & Pinto 1996), *P. ignobilis* (Silva et al. 1968, Gobbi & Machado 1986, Picanço et al. 1988, Marques 1996), *P. occidentalis* (Gravena 1983,

Gobbi et al. 1984), *P. paulista* (Gobbi & Machado 1985, Campos-Farinha & Pinto 1996, Marques 1996), and *Polybia sericea* (Olivier) (Silva et al. 1968, Marques 1996) also showed preference to collect Lepidoptera larvae. A detailed survey about preys captured by *Polistes annularis* (L.) (Rabb 1960), *P. fuscatus* (Rabb 1960), *P. exclamans* (Rabb 1960), *P. simillimus* (Prezoto et al. 1994) and *P. lanio* (Giannotti et al. 1995) showed that these species collected mainly larvae of Lepidoptera in cultivated areas near their nests. In Brazil, the predatory potential of the wasps *P. versicolor* (Butignol 1992) and *P. simillimus* (Prezoto & Machado 1999) were demonstrated by transferring their colonies to the proximity of several cultures.

*P. versicolor* did not present specificity in relation to its preys but a larger number of individuals of *Chlosyne lacinia saundersii* Doubleday & Hewitson (Lepidoptera: Nymphalidae) collected was observed (13.5%) although the seasonality of prey captured was not studied. An average of 11 returns of the wasps of this species with preys was registered per day in each colony. This shows that a colony of *P. versicolor* can collect about 4,015 preys during one year.

An adequate management of colonies of *P. versicolor*, by transferring them to artificial shelters, may represent an

Table 1. Preys captured in 32 colonies of *P. versicolor* for 240h, of collection from March 2000 to February 2001 in the Municipality of Juiz de Fora, State of Minas Gerais, Brazil.

List of preys	Number	Percentage
Lepidoptera		
Pyralidae		
<i>Hedylepta indicata</i> (Fabricius)	2	2.2
<i>Elasmopalpus lignosellus</i> (Zeller)	5	5.6
Unidentified	7	7.9
Noctuidae		
<i>Spodoptera frugiperda</i> (J.E. Smith)	8	9.0
<i>Heliothis virescens</i> (Fabricius)	2	2.2
<i>Pseudoplusia includens</i> (Walker)	2	2.2
Unidentified	10	11.3
Nymphalidae		
<i>Chlosyne lacinia saundersii</i> Doubleday & Hewitson	12	13.5
Unidentified	16	18.0
Saturniidae		
<i>Automeris</i> sp.	3	3.4
Pieridae (unidentified)	1	1.1
Arctidae (unidentified)	1	1.1
Lyparidae (unidentified)	6	6.7
Unidentified	10	11.3
Coleoptera (unidentified)	1	1.1
Other unidentified individuals	3	3.4

efficient strategy to control pests and to reduce costs aiming to restore the balance between the species in agricultural ecosystems.

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