ALTITUDINAL AND SEASONAL DISTRIBUTION OF CAMPOPLEGINAE GENERA (HYMENOPTERA, ICHNEUMONIDAE) IN THE ATLANTIC RAIN FOREST, CAMPOS DO JORDÃO, SP.

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ABSTRACT

The invertebrate fauna in Neotropical ecosystems is rich in Hymenoptera parasitoids. Thus, the evaluation of their diversity is of fundamental importance, especially since they possibly constitute more than 20% of all insect species . On consulting the literature, scarce reference was found to Neotropical and Brazilian Campopleginae, especially on their occurrence in the Atlantic Rain Forest, where anthropic pressure is accelerating the extinction of various endemic species, besides many others, as yet unknown. The Campopleginae constitute an ample subfamily of the Ichneumonidae, coinobiont and solitary endoparasitoids of the larvae of other holometabolous insects, generally Lepidoptera. Work was undertaken at the idle Santa Izabel Hydroelectric Plant, located in a 11.374.000 m^2 area of the Atlantic Rain Forest, in the region of Campos do Jordão, SP ($22^0$44´S-$45^0$30´W). Collections were carried out in condensed form over the dry (June 28 to July 13, 2002 and September 27 to October 12, 2002) and rainy (November 23 to December 10, 2001 and March 29 to April 14, 2002) seasons. 15 sites were sampled with Malaise traps at different heights (600-2.000m). Each trap was set parallel to the edge of the trail, at a distance of 100m from the next, remaining so during all the following fortnight. In the literature, the rainy seasons are referred to as those of greatest Campopleginae abundance. In studies on Ichneumonidae fauna diversity in an area of semideciduous Atlantic Rain Forest in the São Carlos (SP) region, the months of September and November appeared as those of greatest abundance and richness. In another study on the ombrophilous Rain Forest in Ubatuba, SP, Guerra (1993) identified the highest abundance of this subfamily as being in the springtime. These results appear to be associated to more favorable temperatures and high humidity, as well as the profusion and availability of seasonal hosts. The expressed aim was to survey Campopleginae fauna at different altitudes in an area of the Atlantic Rain Forest, in the Campos de Jordão-SP region, besides checking the influence of the dry and rainy seasons on its composition

INTRODUCTION

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On consulting the literature, scarce reference was found to Neotropical and Brazilian Campopleginae, especially on their occurrence in the Atlantic Rain Forest, where anthropic pressure is accelerating the extinction of various endemic species, besides many others, as yet unknown. The Campopleginae constitute an ample subfamily of the Ichneumonidae, coinobiont and solitary endoparasitoids of the larvae of other holometabolous insects, generally Lepidoptera.

The expressed aim was to survey Campopleginae fauna at different altitudes in an area of the Atlantic Rain Forest, in the Campos de Jordão-SP region, besides checking the influence of the dry and rainy seasons on its composition.

MATERIAL AND METHODS

Work was undertaken at the idle Santa Izabel Hydroelectric Plant, located in a 11.374.000 m^2 area of the Atlantic Rain Forest, in the region of Campos do Jordão, SP ($22^0$44´S-$45^0$30´W).

Collections were carried out in condensed form over the dry (June 28 to July 13, 2002 and September 27 to October 12, 2002) and rainy (November 23 to December 10, 2001 and March 29 to April 14, 2002) seasons. 15 sites were sampled with Malaise traps at different heights (600-2.000m). Each trap was set parallel to the edge of the trail, at a distance of 100m from the next, remaining so during all the following fortnight.

RESULTS AND DISCUSSION

1.147 examples of Campopleginae were collected, these being distributed among 16 genera, 57% of which corresponding to *Dusona* and *Nonnus*. Most were collected during the dry seasons, with a predominance of the genera *Dusona* (30,7%), *Nonnus* (24,9%) and *Casinaria* (13,5%), this situation continuing unaltered during the rainy seasons (44,6%, 16,6% and 12,1%, respectively). *Phobocampe* only occurred during the dry season (Table1).

In the literature, the rainy seasons are referred to as those of greatest Campopleginae abundance (04). In studies on Ichneumonidae fauna diversity in an area of semideciduous Atlantic Rain Forest in the São Carlos (SP) region, the months of September and November appeared as those of greatest abundance and richness. In another study on the ombrophilous Rain Forest in Ubatuba, SP, Guerra (1993) identified the highest abundance of this subfamily as being in the springtime. These results appear to be associated to more favorable temperatures and high humidity, as well as the profusion and availability of seasonal hosts (04).

In relation to sampled heights, the genera *Campoplex*, *Diadegma*, *Enytus* and *Hyposoter*, widely distributed throughout the different altitudes, were more abundant above 1.500 m. The genera *Campoletis* and a new identified genus occurred only above 1.600 and 1.100 m, respectively. The genera *Casinaria, Dusona* and *Nonnus* were also widely spread, although being more abundant at intermediary heights (1.000 to 1.500 mm, whereas *Microcharops* and *Venturia* occurred uniformly at various levels, *Campoctonus* and *Phobocampe* in a narrow strip at intermediate heights, and *Charops* only below 900m.

Wolda (1987) suggested that differences in period induce a variation in species distribution patterns. Accordingly, it was noted that richness in Campopleginae genera, especially at altitudes between 1.300 and 1.700m complies with the dry and rainy seasons (Figure 1).

Tabela 1. Genera – Atlantic Rain Forest - Campos do Jordão, SP.

	23/11-10/12/01 **(chuvoso)**	**29/03-14/04/02 (chuvoso)**	**% (Chuvoso)**	**28/06-13/07/02 (seco)**	**27/9-12/10/02 (seco)**	**% (seco)**	**Total**	**% (total)**
Gênero novo1	1	0	0,26	0	7	0,91	08	0,70
Campoctonus	0	2	0,53	1	1	0,26	04	0,35
Campoletis	6	4	2,64	2	5	0,91	17	1,50
Campoplex	5	2	1,8	0	11	1,43	18	1,6
Casinaria	12	34	12,1	6	98	13,5	150	13,1
Charops	2	2	1,0	4	9	1,7	17	1,50
Cryptophion	1	2	0,85	0	2	0,26	05	0,43
Diadegma	8	11	5,0	2	62	8,3	83	7,2
Dusona	70	99	44,6	34	202	30,7	405	35,3
Enytus	2	1	0,80	1	10	1,43	14	1,22
Hyposoter	8	17	6,6	11	41	6,7	77	6,71
Microcharops	7	6	3,4	2	22	3,1	37	3,22
Nonnus	24	39	16,62	4	187	25	254	22,14
Olesicampe	1	2	0,80	0	2	0,26	05	0,43
Phobocampe	0	0	0	0	14	2	14	1,22
Venturia	2	9	3,0	3	25	3,6	39	3,4
Total	149	230	100	70	698	100	1147	100
%	13,1	20	33,1	6,1	60,8	66,9	100	

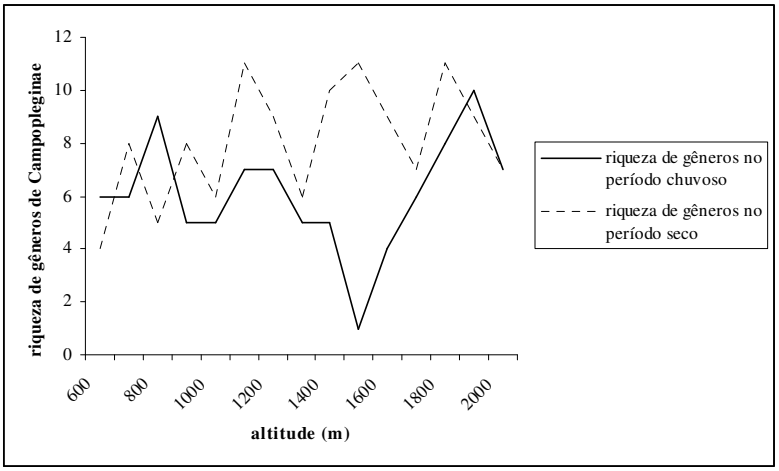

Figura 1: .Richness Campopleginae in different altitude with the dry and rainy seasons.

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RESUMO

Distribuição altitudinal e sazonal dos gêneros de Campopleginae (Hymenoptera, Ichneumonidae) em área de Mata Atlântica na região de Campos do Jordão, SP.

A fauna de invertebrados em áreas de ecossistemas neotropicais é rica em Hymenoptera parasitóides e a avaliação da sua diversidade é de grande importância já que eles podem constituir mais de 20% de todas as espécies de insetos. Em consulta a literatura, pouco foi encontrado sobre os Campopleginae neotropicais e brasileiros, especialmente em áreas de Mata Atlântica onde a pressão antrópica vem acelerando a extinção de diversas espécies endêmicas e de muitas outras ainda não conhecidas. Os Campopleginae constituem ampla subfamília de Ichneumonidae, endoparasitóides coinobiontes solitários de larvas de outros insetos holometábolos, geralmente Lepidoptera. O trabalho foi desenvolvido na Usina Hidrelétrica Santa Izabel, desativada e localizada dentro de uma área de mata atlântica de 11.374.000 m^2 na região de Campos do Jordão, SP ($22^0$44´S-$45^0$30´W). As coletas foram realizadas de forma condensada, abrangendo as estações seca (28/06 a 13/07/02 e 27/09 a 12/10/02) e chuvosa (23/11 a 10/12/01 e 29/03 a 14/04/02). Foram amostrados 15 pontos em diferentes altitudes (600-2000m) através de armadilhas de Malaise. Cada armadilha foi disposta paralelamente à margem do caminho e espaçada 100m da próxima armadilha, aí permanecendo por quinze dias consecutivos. Foram coletados 1.147 exemplares de Campopleginae, distribuídos em 16 gêneros, 57% correspondendo a *Dusona* e *Nonnus*. A maioria dos exemplares foi coletada nos períodos secos, com predominância dos gêneros *Dusona* (30,7%), *Nonnus* (24,9%) e *Casinaria* (13,5%), que também predominam nos períodos chuvosos

(44,6%, 16,6% e 12,1%, respectivamente). *Phobocampe* ocorreu exclusivamente no período seco. Apesar da literatura se referir aos períodos úmidos como os de maior abundância dos Campopleginae em seus estudos sobre a diversidade da fauna de Ichneumonidae em área de mata atlântica semidecídua na região de São Carlos, SP também identificou os meses de setembro e novembro como os de maior abundância e riqueza para os Campopleginae. No estudo realizado em área de mata atlântica ombrófila de Ubatuba, SP, Guerra (1993) identificou a maior abundância desta subfamília na primavera. Estes resultados parecem estar associados às temperaturas e umidades mais favoráveis e à abundância e disponibilidade de hospedeiros desta estação. Este trabalho teve por objetivos o levantamento da fauna dos Campopleginae em diferentes níveis altitudinais na região de Campos do Jordão-SP, em área de Mata Atlântica, verificando também a influência das épocas seca e chuvosa em sua composição.