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NUMBER OF INDIVIDUALS OF THE HUNTING AND WEB-BUILDING SPIDER GUILDS OF THE DRY GRASSLAND AND GALLERY FOREST OF CHAPADA DIAMANTINA, BAHIA (ARACHNIDA: ARANEAE)

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ABSTRACT

This study compares the number of individuals of the hunting and web-building guilds of spiders collected at the dry grassland and gallery forest of the Chapada Diamantina, State of Bahia. There was no difference between the number of individuals collected in the dry grassland (n = 39) and the gallery forest (n = 40), but the number of individuals of each guild was significantly different between the sampled areas. Individuals of the spider web-building guild prevailed in the gallery forest (n = 27), while those from the hunting guild prevailed in the dry grassland (n = 24). The importance of the microhabitats to the distribution and composition of spiders' guild are discussed.

Keywords: guilds, spiders, cerrado, Chapada Diamantina, Bahia.

RESUMO

O estudo compara o número de indivíduos das guildas de aranhas caçadoras e construtoras de teias, coletadas no campo sujo e na mata ciliar na Chapada Diamantina, Estado da Bahia. Não houve diferença entre o número de indivíduos coletados no campo sujo (n = 39) e na mata ciliar (n = 40), mas o número de indivíduos de cada guilda foi significativamente diferente entre as áreas amostradas. Indivíduos da guilda das aranhas construtoras de teias prevaleceram na mata ciliar (n = 27), enquanto aqueles da guilda de aranhas caçadoras prevaleceram no campo sujo (n = 24). Discute-se brevemente a importância dos microhábitats na distribuição e composição de guildas de aranhas.

Palavras-chave: guildas, aranhas, cerrado, Chapada Diamantina, Bahia.

INTRODUCTION

Several studies discuss the importance of the ecological factors in order to understand the relationships between groups of spiders that share the same resources, such as tolerance to the sunlight and shade, humidity and climate conditions, strategies of prey capture, types of vegetation, shelters and reproductive behavior (Uetz, 1977; Sunderland & Greenstone, 1999; Höfer & Brescovit, 2001; Brescovit *et al.*, 2004; Peres *et al.*, 2007; Silva. & Coddington, 1996). These ecological groups of spiders are generically called guilds, a term that can be defined as a group of syntopic organisms that use resources in a

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similar way, utilizing the same trophic levels (Jaksic´, 1981), or a cluster of species separated from all other such clusters by a distance greater than the largest distance between the two most disparate members of the guild concerned (Pianka, 1994). In spite of their differences in morphology, physiology and behavior, distinct spider guilds may be associated to explore microhabitats (Halaj *et al.*, 1998), but studies comparing guild habitat specificity are few (Höfer & Brescovit, 2001). In order to contribute to the understanding of how habitat and foraging behavior can determine spider guilds, we studied the hunting and web-building spider guilds of the dry grassland and gallery forest in the cerrado vegetation of Brasilian State of Bahia.

MATERIALS AND METHODS

The study was carried out in March, September and October of 2005 in the cerrado area of the Reserva Particular de Patrimonio Natural Adília Paraguassu (12°59'S, 41°23'W), located in the Chapada Diamantina, Bahia. Three dry grassland and three gallery forest areas were sampled utilizing two methods: i) sweeping net during 30 minutes in a quadrant (5 x 5 meters) inserted randomly in each area, ii) 60 pitfall-traps (9 centimeters of diameter) disposed in 6 lines separated by 1 meter, each one with 10 traps filled with 200ml of a solution containing 70% ethanol, water, formaldehyde 4% and detergent. The traps remained open for seven days. Most of the spiders were identified until genera. A chi-square test for homogeneity (Ayres *et al.*, 2000) was utilized in order to verify the differences between the number of individuals in the hunting/web-building species guilds presented in the dry grassland and gallery forest of the studied areas. The two categories of spider guilds adopted in the study followed Höfer & Brescovit (2001).

RESULTS AND DISCUSSION

Among the 79 collected spiders (around 37 species), 40 individuals occurred in the dry grassland and 39 in the gallery forest, heterogeneously distributed in relation to the two guild categories. Most of the web-building guild individuals (n = 27) occurred in the gallery forest; for the hunting guild most individuals (n = 24) occurred in the dry grassland (χ^2 = 6.8, $p < 0.01$, d.f. = 1, Table 1). The species composition of both guilds was different between and inside the sampled areas, except for the web-building *Dubiaranea* sp. (Linyphiidae) and two hunting lycosids (Lycosidae) that occurred together in the dry grassland and gallery forest (Table 1).

We assume that these differences were due to the habitat and microhabitat structures of the sampled areas, mainly the vegetation. Souza-Alves & Tinôco (2005) reported that the dry grassland areas are constituted by shrub vegetation and does not have a thick layer of litter, whereas the gallery forest areas have a more accentuated herbaceous and litter coverage. The presence of a high herbaceous covering and shrub layers can favor the web-building species, offering a greater diversity of microhabitats than the open areas do (Wise, 1993; Elton, 1973).

As for density, in the areas with low litter and diversity of microhabitats, like the dry grassland, the individuals are more exposed to predation (Uetz, 1979), such as the web-building spiders, and we expected to encounter more hunting guild spiders in these open areas. However, in habitats with a deep leaf litter layer, as the gallery forests, we expected a higher number of individuals of the web-building guilds, especially those that fix their webs among the leaves on the ground. Both expectancies were encountered in our study, suggesting that together with the morphological, physiological and behavioral features, we also have to consider the structure of the habitats and microhabitats for a better understanding of the regional distribution and composition of spider guilds.

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Table 1.Frequency of the number of individuals per species between the web-building and hunting spider guilds in the dry grassland (G) and gallery forest (F) of Chapada Diamantina, Bahia.

Web-building			**Hunting**		
	G	F		G	F
TETRAGNATHIDAE			PALPIMANIDAE		
Tetragnatha sp.	2	-	*Fernandezina* sp.	-	1
Glenognatha sp.	1	-	*Otiothops* sp.	-	4
ULOBORIDAE			OONOPIDAE		
Zosis sp.	-	1	*Orchestina* sp.	-	1
ARANEIDAE			SPARASSIDAE		
Micrathena sp.	-	1	*Polybetes* sp.	1	-
Mangora sp.	-	1	THOMISIDAE		
DICTYNIDAE			*Misumenops* sp.	3	-
Dictyna sp.	1	-	SEGESTRIDAE		
THERIDIIDAE			*Ariadna* sp.	-	1
Dipoena sp.	-	2	CORINNIDAE		
Coleosoma floridanum Banks, 1900	1	-	*Orthobula* sp.	-	2
Guaraniella sp.	1	-	*Castianera* sp.	1	-
Euryopis sp.	1	-	SALTICIDAE		
Euryopis sp. 2	1	-	Salticidae sp. 1	-	1
Steatoda sp.	1	-	ZODARIIDAE		
LINYPHIIDAE			*Leprolochus* sp.	7	-
Dubiaranea sp.	2	3	GNAPHOSIDAE		
Linyphiidae sp.	2	-	*Zimiromus* sp.	1	-
OXYOPIDAE			*Eilica* sp.	1	-
Oxyopes salticus Hentz, 1845	3	-	LYCOSIDAE		
Peucetia sp.	-	1	Lycosidae sp. 1	1	-
HAHNIIDAE			Lycosidae sp. 2	3	1
Hahniidae sp. 1	-	6	Lycosidae sp. 3	4	1
Ochyroceratidae			Lycosidae sp. 4	2	-
Ochyrocera sp.	-	4			
SICARIIDAE					
Sicarius tropicus Mello-Leitão, 1936	-	1			
PHOLCIDAE					
Mesabolivar sp.	-	5			
Metagonia sp.	-	2			
Total	**16**	**27**		**24**	**12**