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Mygalomorph Spiders of the Natural and Historical Reserve of Martín García Island, Río de la Plata River, Argentina

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Nelson Ferretti, Fernando Pérez-Miles, and Alda González (2010) Mygalomorph spiders of the Natural and Historical Reserve of Martín García Island, Río de la Plata River, Argentina. *Zoological Studies* **49**(4): 481-491. Martín García I. is located in the upper La Plata River, at the outlet of the Uruguay River, northeastern Buenos Aires Province, Argentina. Due to its status as a protected area, it is imperative to know the biological diversity that is intended to be preserved. Mygalomorph spiders have life-history characteristics that parallel general characteristics of well-studied taxa that are “extinction prone”, either at the population or species level. We analyzed the abundance and distribution in space and time of mygalomorph spiders at the specific level. We also offer some comments of distributional patterns in a geological context. Spider abundances were sampled from Mar. 2004 to Nov. 2006 by hand-capture and pitfall traps in 5 different ecological areas. To determine the habitat preference of the species, we used the Kruskal-Wallis one-way ANOVA test. Species of the Mygalomorphae occurring on Martín García I., *Actinopus* sp. (Actinopodidae), *Catumiri argentinense* (Theraphosidae), *Stenoterommata platensis* (Nemesiidae), and *Xenonemesia platensis* (Microstigmatidae) were distributed among all habitats, with 1 specialist in only 1 habitat type. *Xenonemesia platensis* showed a restricted distribution possibly influenced by the geological history related with the Río de la Plata Craton as for *S. platensis*. Other distributional patterns may have been affected by more-recent transgressions and regressions of the sea through the Río de la Plata River. http://zoolstud.sinica.edu.tw/Journals/49.4/481.pdf

Key words: Argentinean island, Biogeography, Diversity, Mygalomorphae, Neotropical.

The Natural and Historical Reserve of Martín García I. (Buenos Aires, Argentina) lies at the confluence of the Uruguay and Paraná Rivers (Upper Río de la Plata River). This island is an outcrop of the crystalline basement, unconformably overlain by Pleistocene and Holocene sediments (Ravizza 1984). Because it is a protected area, it is imperative to know the biological diversity that is being preserved. This area is important because to assure the conservation of regional diversity, studies are necessary to define and apply suitable designs for management and conservation. In the past, the arachnological fauna of the island had possibly been associated with the Mesopotamic region. However, due to the different geological origin of the island, this hypothesis needs to be elucidated. In Argentina, taxonomic and systematic knowledge of some mygalomorph spider families is abundant (Schiapelli and Gerschman de Pikelin 1967, Goloboff 1995), although research on ecological aspects of communities associated with natural and altered areas is scarce (Ávalos et al. 2007). Mygalomorph spiders represent one of 3 main spider lineages (Platnick and Gertsch 1976). These spiders are distributed worldwide, although all tropical regions and temperate austral regions

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*To whom correspondence and reprint requests should be addressed. E-mail:nferretti@conicet.gov.ar of South America, southern Africa, and Australasia are centers of spider genetic diversity (Raven 1985, Platnick 2009). They are well represented in the Neotropical region, although the ecology and natural history were mainly studied in the Neartic (Baerg 1958, Minch 1979, Coyle and O'Shear 1981) and Australian regions (Main 1987, Jackson and Pollard 1990, Kotzman 1990). One study regarding ecological aspects of mygalomorphs in the Neotropical region is that of Pérez-Miles et al. (1993).

Mygalomorphs possess life-history traits that markedly differ from other spiders. For example, some species live for 15-30 yr and require 5-6 yr to reach reproductive maturity (Main 1978). They are habitat specialists and females are sedentary (Main 1987, Coyle and Icenogle 1994). These life-history traits promote geographic fragmentation over space and time, resulting in a large number of taxa that have small geographic distributions (Bond et al. 2006). Overall, this combination of life-history characteristics parallels general characteristics of well-studied taxa that are "extinction prone", either at the population or species level (McKinney 1997, Purvis et al. 2000). Herein, we present an assessment of the abundance and spatial distribution of mygalomorph spiders at the Natural and Historic Reserve Martín García I. and test the possible habitat preferences of the species on the island. In agreement with the available information, this is the 1st study to provide ecological data for some of the Argentinean Mygalomorphae. Our 2nd goal was to comprehend the distributional patterns in a geological context, considering the origin of the island, in order to clarify the relationship of the fauna on the island with those of zones having similar geological origins.

MATERIALS AND METHODS

Study area

The study area is located in the upper La Plata River, at the outlet of the Uruguay River, northeastern Buenos Aires Province, Argentina (34°11'25"S; 58°15'38"W). Martín García I. is 37.5 km from the Argentinean coast, 3.5 km from the Uruguayan coast, and 46 km in a straight line from the city of Buenos Aires. It has a sub-rectangular shape and is elongated in a north-south orientation, a design possibly controlled by the structure of the crystalline basement. The island comprises an area of 168 ha and constitutes the most elevated portion of the deltaic environment in the La Plata River (25 m above sea level) (Dalla Salda 1981). The most elevated zone of the island is completely urbanized (Lahitte and Hurrell 1997). Five different ecological areas are recognized (Fig. 1) on the basis of physiognomic aspects of the vegetation (Lahitte and Hurrell 1997): jungle (J), shore forest (SF), sandy xerophilous forest (SXF), airport xerophilous forest (AXF), and sandy (S). The jungle is characterized by a complex forest with more than 1 arboreal stratum (*Cytharexylum montevidense*, *Terminalia australis*, and *Senna corymbosa*) and abundant epiphyte plants, climbing plants, and lianas (*Tillandsia aeranthos*, *Vigna luteola*, *Ipomoea alba*, *Macfadyena unguiscati*, *Smilax campestris* and *Lanicera japonica*). The shore jungles are marginal or in galleries because of their proximity to riverbanks. The shore forest has some tree species such *Sesbania punicea* and *Senna corymbosa* with many shrubs (*Phyllantus sellowianus*). In the lower stratum, a thick grass sometimes appears with small shore herbs (*Nierenbergia repens* and *Zephirantes candida*). The sandy xerophilous forest and airport

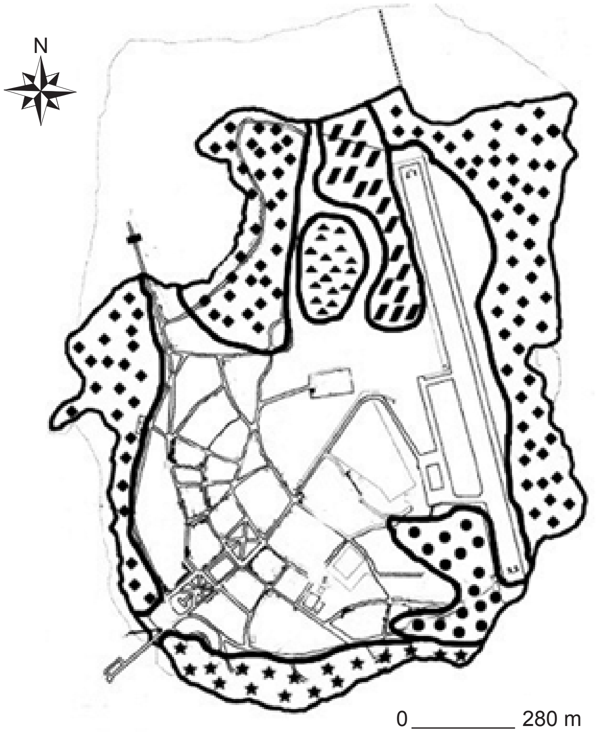

Fig. 1. Map showing ecological areas on Martín García I. ◆, Jungle (J); ★, shore forest (SF); ▰, sandy xerophilous forest (SXF); ●, airport xerophilous forest (AXF); ▲, sandy (S).

xerophilous forest generally have trees of the same sizes (*Erytrhrina crista-galli*, *Salix humboldiana*, *Tessaria integrifolia*, and *Fagara hyemalis*) and an understory formed by shrubs and different kind of herbs (*Pavonia*, *Abutilon*, *Thelypteris riograndensis*, *Zephyranthes candida*, and *Trifoluim repens*). Finally the sandy area is located in the north of the island in the middle of a plain that ends at the river level. It consists of 3 dunes of sands of uncertain origin. The characteristic vegetation comprises some trees such *Sesbania punicea* and many shrubs (*Sebastiania schottiana* and *Cephalanthus glabratus*). The study areas where the pitfall traps and hand captures were made in each ecological area are shown in figure 2. The average monthly temperature and rainfall changes during the study period are presented in figures 3 and 4.

Spider sampling and identification

Samplings were carried every 2 mo between Mar. 2004 and Nov. 2006. Each hand capture per site was performed during 2 uninterrupted hours in the daytime, with 2 collectors looking under rocks, logs, and dung (cryptozoic habitat). Pitfall traps consisted of cylindrical plastic cups of 10 cm in diameter and 15 cm high (Churchill and Arthur 1999), placed every 4 m along each transect (straight line of 12 m), for a total of 4 traps per transect and site. Traps were filled with 300 ml of the preservative liquid ethylene glycol (1, 2-ethanediol) which was refilled every 45-60 d. This preservative liquid did not dry after 60 d of exposure as do other liquids such as ethanol. The total number of samples was 72 per method and area. Spiders were identified at the species level following Raven (1985), Goloboff (1995), and Guadanucci (2004). *Actinopus* sp.1 constitutes the only morphospecies that could not be identified at the species level. Voucher specimens are deposited in Centro de estudios Parasitológicos y de Vectores (CEPAVE) La Plata, Argentina.

Analysis

To perform the habitat preference analysis we used the Kruskal-Wallis one-way analysis of variance (ANOVA) test to compare relative abundances among the 5 types of habitat. STATISTICA (StatSoft 2008) trial vers. 8.0 was used for the statistical analyses. Distribution maps for each species were made using DIVA-GIS (Annapurna) vers. 6.0.3 (CIP 2007, http://www.diva-gis.com).

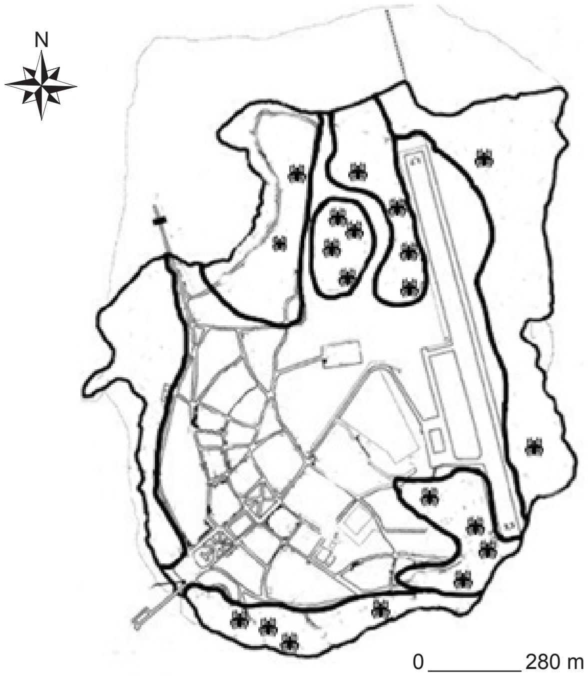

Fig. 2. Map showing sampling sites on Martín García I.

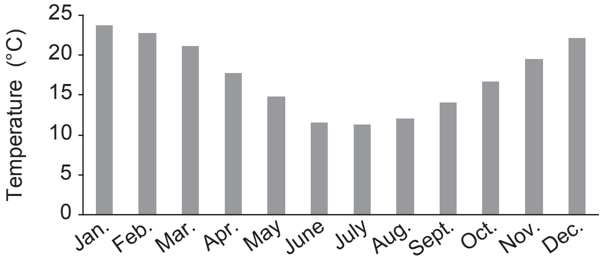

Fig. 3. Average monthly temperature of Martín García I.

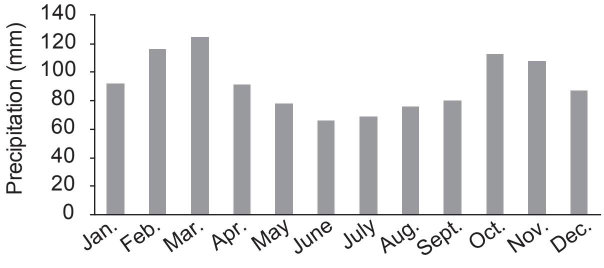

Fig. 4. Rainfall amounts at Martín García I.

RESULTS

Taxonomic composition and demographic structure

In total, 402 individuals of the Mygalomorphae were collected on Martín García I. We found 4 species in the studied area, belonging to 4 families represented by unique species: *Actinopus* sp.1 of the Actinopodidae; *Stenoterommata platensis* Holmberg, 1881 of the Nemesiidae; *Xenonemesia platensis* Goloboff, 1989 of the Microstigmatidae, and *Catumiri argentinense* (Mello-Leitão 1941) of the Theraphosidae. The absolute and relative frequencies of individuals collected manually and with pitfall traps are shown in table 1. With hand-capture, juveniles prevailed over adults, but with pitfall trapping, adults (97.15%) were much more frequent than juveniles. Males were more frequent in pitfall traps constituting 89.12% of the total, females at 8.03%, and juveniles at 2.85%.

Phenology

The highest activity for males of *Actinopus* sp.1 was recorded in Apr. 2004 (beginning of fall, Fig. 5A) and Mar. 2005 (end of summer, Fig. 5B). Males were recorded during months of medium temperatures (Fig. 3) and highest values of precipitation (Fig. 4). No individuals were recorded in 2006. Females were less abundant, with 2 individuals captured during Oct.-Dec. 2004 (in spring) (Fig. 5A) and 3 juveniles in the same period. Only 1 male *C. argentinense* was collected in Apr. 2004 (beginning of fall, Fig. 6). Females and juveniles occurred during the same period (Fig. 6). Males of *S. platensis* were clearly present during Dec. 2004 (Fig. 7A), Feb. 2005 (Fig. 7B), and Jan. 2006 (Fig. 7C) corresponding to summer in the Southern Hemisphere with the highest

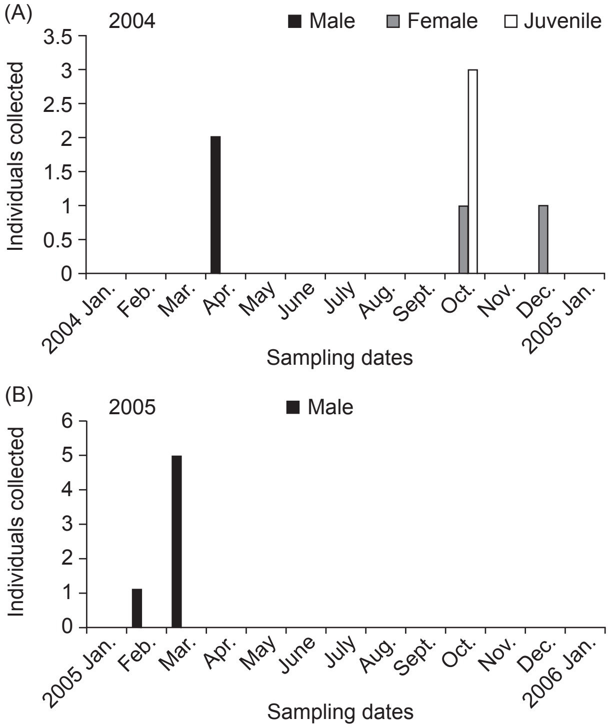

Fig. 5. *Actinopus* sp.1. Phenology, based on the specimen activity (individuals/month).

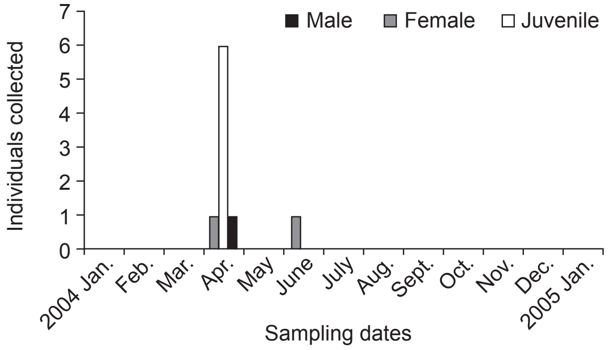

Fig. 6. *Catumiri argentinense*. Phenology, based on specimen activity (individuals/month) during 2004.

Table 1. Absolute and relative frequencies of individuals collected by hand-capture and pitfall traps. M, males; F, females; J, Juveniles; T, total

	Hand-capture					Pitfall traps				
	M	F	J	T	(%)	M	F	J	T	(%)
Catumiri argentinense	1	2	6	9	56.25	0	0	0	0	0
Actinopus sp.1	2	2	3	7	43.75	6	0	0	6	1.55
Stenoterommata platensis	0	0	0	0	0	112	20	6	138	35.75
Xenonemesia platensis	0	0	0	0	0	226	11	5	242	62.7
Total	3	4	9	16		344	31	11	386	
Percent (%)	18.75	25	56.25		100	89.12	8.03	2.85		100

temperatures on the island (Fig. 3). In May (in fall) 2005 males showed an isolated clear activity peak, and in July (in winter) of the same year, some males were recorded but less abundantly (Fig. 7B). In this month on the island, there are lower temperatures and precipitation (Figs. 3, 4). This isolated peak was not observed during the other years. Females were less abundant but showed 1 clear activity peak in Jan. (in summer) 2006. *Xenonemesia platensis* was collected during the entire sampling period (Fig. 8). Males showed 3 activity peaks. The 1st was observed in Aug. 2004 (Fig. 8A), July 2005 (Fig. 8B), and Aug. 2006 (Fig. 8C) corresponding to a winter peak of activity with

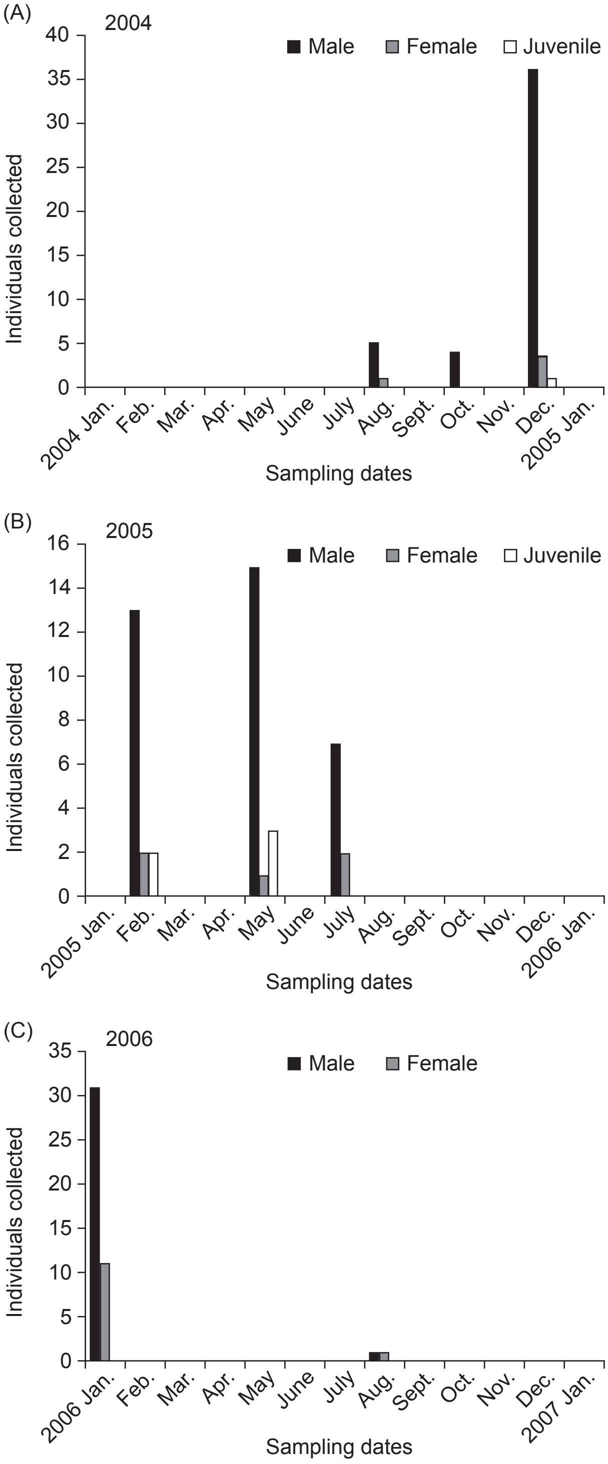

Fig. 7. *Stenoterommata platensis*. Phenology, based on specimen activity (individuals/month).

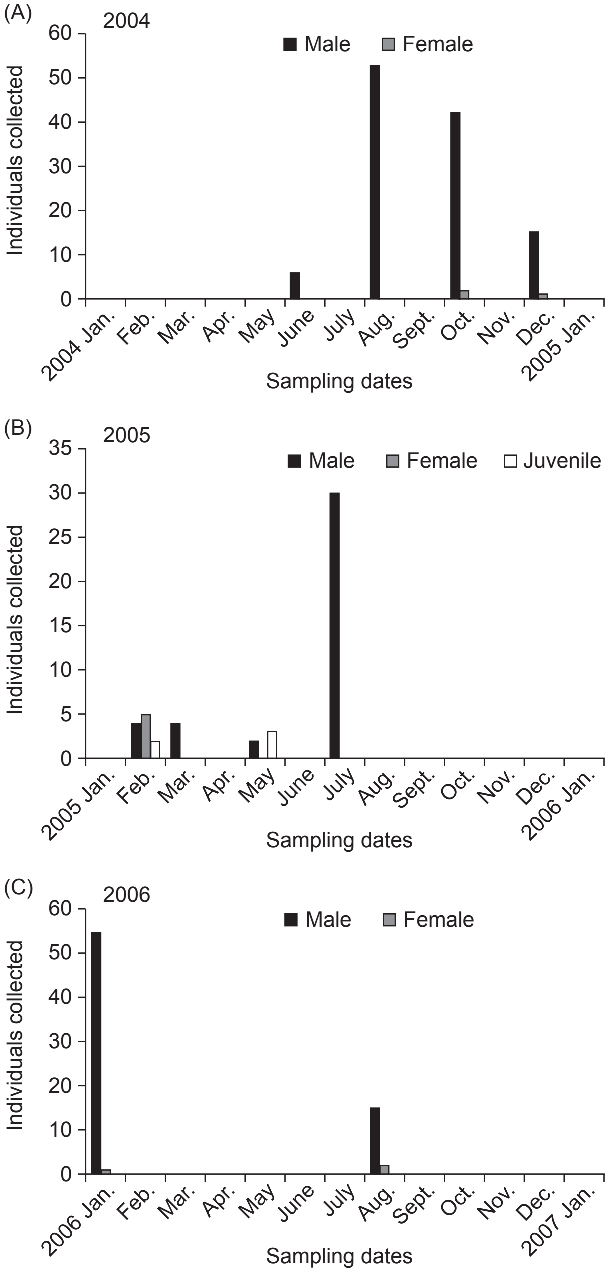

Fig. 8. *Xenonemesia platensis*. Phenology, based on specimen activity (individuals/month).

low temperatures and precipitation (Figs. 3, 4). The 2nd peak corresponded to Oct. 2004 (spring) (Fig. 8A) with medium values of temperature but higher values of precipitation (Figs. 3, 4), and the 3rd was recorded during Dec. 2004 (Fig. 8A) and Jan. 2006 (in summer) (Fig. 8C) with higher values of temperature but low values of precipitation. Females were less abundant and showed no clear activity peak during the sampling years.

Diversity and spatial distribution

The jungle was the only habitat where all 4 taxa were present (Table 2). *Catumiri argentinense* was present in Apr. and June 2004, and absent during the remaining sampled dates. During Dec. 2004, 3 taxa (*Actinopus* sp.1, *S. platensis*, and *X. platensis*) were present. Then, *X. platensis* and *S. platensis* were recorded together from Aug. 2004 to Aug. 2006. In the sandy habitat, *S. platensis* and *X. platensis* were present in Feb. 2005. In Apr. 2004, only *C. argentinense* was recorded, and *S. platensis* appeared during the other sampled dates (from Aug. 2004 to Jan. 2006). In the shore forest habitat, only *X. platensis* was recorded from Aug. 2004 to Aug. 2006. In the sandy xerophilous forest during Apr. 2004, *C. argentinense* and *Actinopus* sp.1 were present. In Jan. 2006, *X. platensis* was the only mygalomorph recorded. At the airport xerophilous forest, *Actinopus* sp.1, *S. platensis*, and *X. platensis* were present. The habitat preferences of the species among different habitats are shown in table 3. For *C. argentinense* and *Actinopus* sp.1, no significant differences were found for abundances in the different types of habitat. *Stenoterommata platensis* was the only specialist in 1 habitat type, the jungle. We found significant differences for *X. platensis* between the airport xerophilous forest (highest abundance) and the sandy xerophilous forest (Kruskal-Wallis, $p < 0.05$), but no significant differences were found among the remaining habitats (Kruskal-Wallis, $p > 0.1$).

DISCUSSION

The species richness observed was intermediate, although the area of the island is quite small. We found a higher richness than observed in Chile, where only 2 species were found (Sáiz and Calderón 1976), and lower than other regions of Argentina, where at least 6 species were collected in Corrientes Province (Ávalos et

Table 2. Distribution frequencies by habitat of individuals of different mygalomorph species collected. J, jungle; S, sandy; SF, shore forest; SXF, sandy xerophilous forest; AXF, airport xerophilous forest; T, total

	J	S	SF	SXF	AXF	T
Catumiri argentinense	5	1	0	3	0	9
Actinopus sp.1	1	0	0	2	10	13
Stenoterommata platensis	136	1	0	0	1	138
Xenonemesia platensis	72	16	39	1	114	242
Total	214	18	39	6	125	402

Table 3. Results of Kruskal-Wallis one-way ANOVA test examining habitat preferences of the species among different habitats, $p < 0.05$. S, sandy; SF, shore forest; AXF, airport xerophilous forest; J, jungle; SXF, sandy xerophilous forest. Values followed by the same letters in a row do not significantly differ ($p > 0.1$)

	Habitat abundance (mean)				
Species	J	SF	SXF	AXF	S
Catumiri argentinense	0.41a	0a	0.25a	0a	0.08a
Actinopus sp.1	0.08a	0a	0.16a	0.83a	0a
Stenoterommata platensis	11.33a	0b	0b	0.08b	0.08b
Xenonemesia platensis	6ab	3.25ab	0.08a	9.5b	1.33ab

al. 2005). In similar areas from the Neotropical region, approximately 4 to 6 mygalomorph species were reported (Pérez-Miles et al. 1993, Sandoval 2005).

Taxonomic composition, demographic structure, and phenology

The Nemesiidae and Microstigmatidae (absent from hand-captured specimens) clearly showed more motility than the other species. The only species of the Theraphosidae present on the island was exclusively collected by hand capture. Hand-capture seemed to be a more effective method for theraphosids because adults live under stones and fallen trees, and thus do not fall into pitfall traps and require more active searching (Pérez-Miles et al. 1993). *Actinopus* sp.1 was collected in similar numbers in pitfall traps and by hand-capture. This is not common because trapdoor spiders are difficult to collect by hand (Pérez-Miles et al. 1993, Indicatti et al. 2005). This proportion could be explained because individuals collected by hand were mostly wandering males and dispersing juveniles. During hand-capture, juveniles prevailed over adults of *C. argentinense*, due to the extended juvenile stage, longevity of females, and short lifespan of males that characterize the family Theraphosidae (Pérez-Miles et al. 1993, Costa and Pérez-Miles 2002). Moreover, the low number of theraphosids collected could be explained by sampling in daytime, because most wandering males of mygalomorph spiders are nocturnal. The temporal distribution showed that juveniles emerged at the end of summer (Mar.) and in fall (Apr.-May) with high abundances in pitfall traps as was reported by Pérez-Miles et al. (1993). This can be explained by the motility of juveniles in the dispersion stages (Reichling 2000, Shillington and McEwen 2006). The exception was juveniles of *Actinopus* sp.1 which were abundant during spring (Oct.), and this could have been due to the high value of precipitation in this month on the island making more food available for dispersing juveniles. Juveniles of this species possibly balloon in dispersal stages, as was observed for others trapdoor spiders of the family Ctenizidae (Coyle 1983, Coyle et al. 1985). Usually the presence of walking males of the Mygalomorphae is an indicator of the mating period. Males of *Actinopus* sp.1 were observed during rainy periods, so this could have been related to the mating season of this species. *Xenonemesia platensis* and *S. platensis* were more abundant during the entire summer (Dec., Jan., and Feb.) in relation to high temperature values. Some species however showed different peaks of sexual activity. Males of *S. platensis* were present during an extended period, with a clear activity peak in summer (Dec.-Jan.) and fall (May). In Jan., the large number of males observed could be explained by this species showing greater motility than the other species, but also the number of females that dropped inside the pitfall traps was the highest compared to other months, so this could have increased the number of males due to the pheromone attraction from silk lines of females (Costa and Pérez-Miles 2002, Ferretti and Ferrero 2008) that dropped inside the pitfall traps because these spiders have very limited vision. This effect was not observed in fall, when a small number of males and only a few females were found in the traps. Males of *Stenoterommata* spp. (now identified as *S. crassistyla*, Pérez-Miles) recorded in Uruguay show an uneven seasonal distribution with peaks in fall and spring (Pérez-Miles et al. 1993). In Brazil, *S. arnolisei* Indicatti et al. 2008 presents the highest activity periods for males from the beginning of fall to the end of spring (Indicatti et al. 2008). Females of *S. platensis* were abundant in pitfall traps showing a clear activity peak in summer, thus suggesting high motility of this species, not recorded for other *Stenoterommata* species (Pérez-Miles et al. 1993). In *S. arnolisei*, some females were recorded in spring and summer (Indicatti et al. 2008). Males of *X. platensis* showed a broader sexual period than did *S. platensis*, with 3 sexual activity peaks in summer, spring, and winter. Males of a Brazilian Microstigmatidae, *X. araucaria* Indicatti et al. 2008, are more active during spring and summer (Indicatti et al. 2008). The peak in winter could occur as a way to avoid an overlap of the sexual period with *S. platensis*, because both species share the same habitat type. Moreover, *S. platensis* shows sexual activity in fall, perhaps to avoid the sexual period of *X. platensis*. The winter sexual activity of *X. platensis* could also be a mechanism to avoid potential predators, which show low frequencies and activities during this period (Pérez-Miles et al. 1993).

Diversity and spatial distribution

The differences detected for species density among habitats do not suggest a marked spatial pattern for the distribution and diversity of mygalomorph spiders. Spider diversities recorded in a complex and diverse habitat such as the jungle and in habitats exhibiting lower structural complexity, such as the airport xerophilous forest (modified habitat) were similar. These results led to the conclusion that the structural complexity of the habitat might not determine the diversity or spider species composition of mygalomorphs on the island, in contrast to what other authors cited for araneomorphs (Hatley and MacMahon 1980, Raizer and Amaral 2001, Pinkus-Rendón et al. 2006). Perhaps some differences determining the diversity could be found by examining litter and substrate complexity; litter can provide an important variety of microhabitats for mygalomorphs (Pinkus-Rendón 2006). The jungle was the only habitat that contained all 4 species and had 1 specialist, *S. platensis*. This may have been due to the great extent this habitat occupies on the island. Moreover, the preference showed by *S. platensis* was similar to *S. crassystila* in Uruguay, which occupies similar shelters as *Mecicobothrium thorelli*, that is found in wet soils protected by a dense vegetal cover (Pérez-Miles et al. 1993). No habitat preference was reported for *S. arnolisei* in Brazil, suggesting that *Stenoterommata* species are tolerant of different habitat conditions (Indicatti et al. 2008). That would not be the case for *S. platensis* on Martín García I. *Xenonemesia platensis* seemed to be tolerant of disturbed environments, showing preference for the airport xerophilous forest. In the shore forest, this species was the only mygalomorph present. This species was collected on river banks of the Uruguay River, under stones, and in wet and gloomy places. Also, this species was collected in a modified habitat and a xerophilous environment (Goloboff 1988). Among other Brazilian Microstigmatidae, *X. araucaria* was recorded in both disturbed Araucaria forests and pines silviculture habitat (Indicatti et al. 2008). The other recorded species, *Actinopus* sp.1 and *C. argentinense* showed no preferences for the studied habitat types, perhaps due to the low number of individuals of these species. The sandy, shore forest, and sandy xerophilous forest habitats showed similar results, considering the qualitative composition of mygalomorph species, mainly due to the dominance of *X. platensis* in xerophilous environments.

Spider distributional patterns in a geological context

The Río de la Plata Craton, which crops out in both Argentina and Uruguay, is thought to be one of the main Precambrian shield areas of the South American continent (Pankhurst et al. 2003). This relatively small cratonic fragment extends from the Southern province of Buenos Aires in Argentina up to the Rio Grande Do Sul and possibly the Santa Catarina state of southeastern Brazil. Most of the area of Uruguay is included in this craton (Rapela et al. 2007) with rocks of Early Proterozoic ages (ca. 2500-2000 Ma). The Uruguayan Shield is composed of 3 major tectonic units, namely from west to east: Piedra Alta Terrane (PAT), Nico Pérez Terrane (NPT), and Cuchilla Dionisio Terrane (CDT) (Mallman et al. 2007). In Argentina, rocks assigned to this craton are known from Martín García I. in the Río de la Plata estuary (Dalla Salda 1981), boreholes in the plains of northeastern Argentina, and the Sierras Septentrionales of southern Buenos Aires (Tandilia) (Dalla Salda 1999). Martín García I. consists of a small remnant of rocks of the Precambrian crystalline basement, with the oldest rocks dating from 2,085-2,050 Ma (Dalla Salda 1981). Considering the limited dispersal abilities of mygalomorphs, with the exceptions of indications of ballooning on juveniles of *Actinopus* spp. as observed in ctenizid spiders (Coyle 1983, Coyle et al. 1985), and the distances from the island to the coast, these features seem to be an effective barrier for dispersal of these spiders, and they thus have been affected by vicariance events. Although some of the species present on the island lack an evolutionary hypothesis and the genus *Stenoterommata* might be paraphyletic (Goloboff 1995), we compared the distribution of these species with some species present on areas related to the Río de la Plata Craton. *Stenoterommata platensis* is present on the island of Martín García, Buenos Aires, Entre Ríos, and Misiones (Argentina) (Goloboff 1995) and is absent from Uruguay and Brazil (Fig. 9), where other species of *Stenoterommata* are recorded. *Stenoterommata palmar* Goloboff 1995 is recorded in Argentina (Entre Ríos and Corrientes, not on the island) (Goloboff 1995) and Río Grande do Sul and Santa Catarina (Indicatti et al. 2008), which are the limits reported for the Río de la Plata Craton (Rapela et al. 2007). *Stenoterommata crassistyla*, is distributed in Argentina (Buenos Aires and Entre Ríos), and in Uruguay, is present at Sierra de las Animas (NPT) and Montevideo (PAT) (Goloboff 1995). One possible explanation for the distribution patterns of these 3 different species of *Stenoterommata* could be the vicariance events that led to these remnants of the Río de La Plata Craton. *Xenonemesia platensis*, recorded for the 1st time on the island, showed the most restricted distribution. This species is also distributed in Buenos Aires and Entre Ríos (Argentina) (Goloboff 1988) (Fig. 9). In Uruguay, *X. platensis* is present at Montevideo (PAT), Lavalleja (NPT), and Colonia (Fig. 9). In Brazil, this species is distributed at Río Grande do Sul (Indicatti et al. 2007) (Fig. 9). The general distribution pattern could have been influenced by the geological history related to the Río de la Plata Craton, but unfortunately, there are no data on the diversity of mygalomorph spiders in the Tandilia system in Buenos Aires, where the craton also remains unaffected. The presence of the species in Entre Ríos Province (Argentina) can be explained by the transgressions and regressions of the sea through the Río de la Plata River after 2.9 Ma, with an immense sedimentary input that filled in the outlet of the deltaic systems, and the waters were forced to overrun a marginal riverbed that flowed by the current Uruguay River and resulted in the Río de la Plata River (Violante and Parker 1999). *Catumiri argentinense* seems to show a broad distribution, occurring in most of the hilly zones of Argentina (Fig. 9), although it is likely to have attained this distribution through dispersal, but the age of that dispersal is unknown.

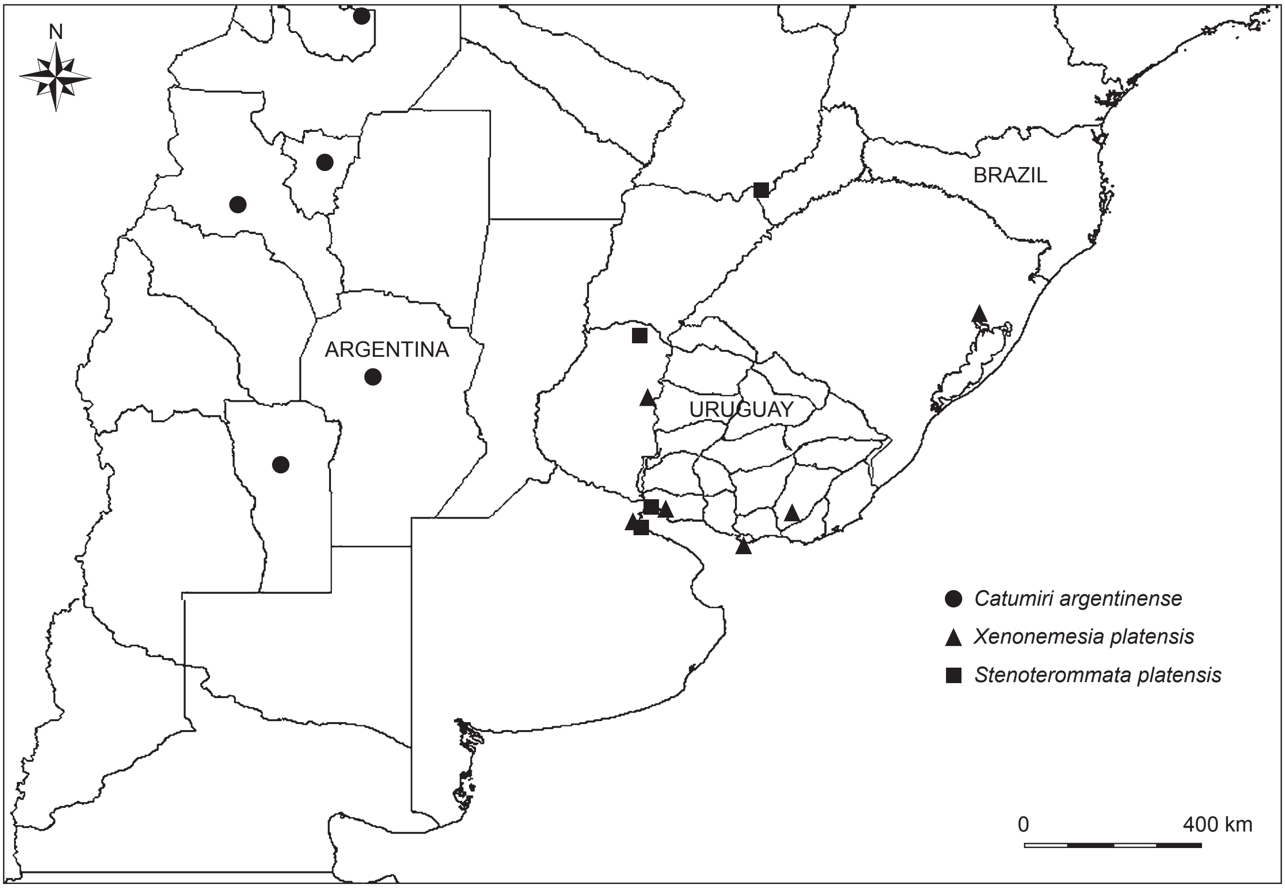

Fig. 9. Map showing the distribution of the species present on Martín García I. (*Actinopus* sp.1 was not included because of its uncertain taxonomic status).

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