

SYNANTHROPIC SPIDERS (ARACHNIDA: ARANEAE) FROM CHILE

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Abstract: Urbanization has pronounced effects on the abiotic components of the environment, causing irreversible changes in natural environments, replacing all original biotic components of the site. The spiders can colonize and become established in these new ecosystems and acquire synanthropic habits. We review all the records of synanthropic spiders found in Chile, including published literature and sporadic collecting mainly undertaken from 2010 to 2013 in different parts of the country. Here we define four types of environments that these spiders can be use: peridomestic habitats, domestic habitats, agrosystems and rural areas. Finally we compare the results of this study with the synanthropic spider faunas from other countries of America.

Key words: Araneae, spiders, anthropogenic, synanthropic, houses, Chile.

Arañas sinantrópicas (Arachnida: Araneae) de Chile

Resumen: La urbanización ha pronunciado los efectos sobre los componentes abióticos del medio ambiente, provocando cambios irreversibles en los ambientes naturales, sustituyendo por tanto todos los componentes bióticos originales del sitio. Las arañas pueden colonizar y establecerse en estos nuevos ecosistemas y adquirir hábitos sinantrópicos. Revisamos todos los registros de arañas sinantrópicas que se encuentran en Chile, incluyendo literatura publicada y colectas esporádicas llevadas a cabo principalmente desde 2010 hasta 2013 en distintas partes del país. Se definieron cuatro tipos de hábitats que estas arañas pueden utilizar: peridomésticos, domésticos, agrosistemas y zonas rurales. Finalmente se compararon los resultados de este estudio con las faunas de arañas sinantrópicas de otros países de América.

Palabras clave: Araneae, arañas, antropogénico, sinantrópico, casas, Chile.

Introduction

The urbanization process causes alterations in the landscape and climate, and reduces the size and number of natural or semi-natural habitats. At the same time provides a variety of new microhabitats as cemeteries, gardens, parks, agricultural plantations, etc (Pérez, 1985; Japyassú, 2002). Thus, urban areas not only disturb the original habitat, also from this disturbance, creates new artificial habitats which provide the best opportunities for the existence of many species, which otherwise could not cohabit with humans (Duran-Barron *et al.*, 2009).

Spiders are organisms able to take advantage of new microhabitats available in homes and around houses in urbanized areas (Mourier *et al.*, 1979), and settle in human dwellings. While some of these species don't proliferate under these circumstances, other urban colonist adapts successful, mainly due to the absence of competitors, predators and an abundance food (Jimenez, 1998). These species acquire synanthropic habits.

Biological invasions have increased in the last centuries due to the increase in travel and global trade (Kobelt & Nentwig, 2008). While large organisms, particularly vertebrates, are usually introduced intentionally, invertebrates are introduced mostly by accidental transport (Jenkins, 1996; Nentwig, 2007). In line with this scenario, synanthropic and opportunistic spider species have established populations outside of their original ranges.

Our goals are to determine for the first time which are the most common spiders found in Chilean homes and their surroundings, and to provide information concerning their habitats, ecological guilds, distributions and medical importance. We compared the synanthropic spider faunas of five

American countries: Chile, Cuba, Mexico, Brazil and the U.S.A.

Material and Methods

Sporadic collecting was mainly undertaken from 2010 to 2013 in urban areas in different parts of Chile. The main cities that were sampled are: Arica, Iquique, Mejillones, Chañaral, Santiago and surroundings, Talca, Concepcion and Puerto Montt. Spiders were sampled by hand (ground and plant search in the gardens, search in the corners and cellars of houses) and were fixed in 70% ethanol. The species list includes published records of synanthropic spiders for the country and a review of the spider collection in Santiago de Chile. The new records were identified by the first author and are housed in the Museo Nacional de Historia Natural de Santiago de Chile (MNHN, Curator: Mario Elgueta) and in the Instituto Butantan in São Paulo, Brazil (IBSP, Curator: Darci M. Barros Battesti).

Furthermore, the spiders were classified as being native or introduced species. The species can be grouped into guilds based on available information of their habitat preferences and predatory behavior (Cardoso *et al.*, 2011). For the present study, two main guilds were recognized, namely wandering spiders (W) and web building spiders (WB), with further subdivisions based on habitat and general behavior (Table I). We define four types of habitat that these spiders can use: peridomestic habitats such as turfgrass, flowers and shrubs in parks and gardens, and ornamental trees; domestic habitats within households including dark corners, furniture, closets, clothes and towels; agrosystems; and lastly, rural zones,

which include less disturbed areas with few settlements on the periphery of cities.

Comparison data for Mexico are from Perez (1985), Jimenez (1998) and Duran-Barron *et al.* (2009); for the United States, of Cutler (1973), Guarisco (1999) and Kaston (1983); for Brazil are from Japyassú (2002), Brescovit (2002) and Brasil *et al.* (2005) and for Cuba of Armas (2012).

All treated species correspond to the category of hemisynanthropic, understood as such those who live in close association with man, and also could live in natural environments (Gregor & Povolny, 1958).

Results and Discussion

In Chile there are 55 families and 809 species (Platnick, 2013), but few of these spiders lived in houses with humans. We found a total of 31 synanthropic species within sixteen families of Araneomorphae and one in the Mygalomorphae. Twenty three (74%) of these spiders are introduced and only eight (26%) are native.

Diversity, habitats and distribution

The family with highest species richness was Theridiidae, with five species (Table II). This is consistent with other studies of synanthropic spiders in the Neotropics (Brescovit, 2002; Duran-Barron *et al.*, 2009). The most common spiders found in houses were *Loxosceles laeta* (Sicariidae) (Fig. 1), *Scytodes globula* (Scytodidae) (Fig. 2), *Ariadna maxima* (Segestriidae) (Fig. 3), *Oecobius navus* (Oecobiidae) and *Steatoda grossa* (Theridiidae) (Fig. 4) widely distributed in Chile (Gertsch, 1967; Santos & Gonzaga, 2003; Grismado, 2008; Taucare-Rios, 2013a). The less common spiders were *Argiope argentata* (Araneidae) (Fig. 5), *Argiope trifasciata* (Araneidae) (Fig. 6), *Menemerus semilimbatus* (Salticidae) (Fig. 7), *Polybetes martius* (Sparassidae) (Fig. 8), *Pholcus phalangioides* (Pholcidae), *Smeringopus pallidus* (Pholcidae) (Fig. 9), *Lycosa hildegardae* (Lycosidae), *Lycosa magallanica* (Lycosidae), *Latrodectus geometricus* (Theridiidae), *L. thoracicus* (Theridiidae) (Fig. 10), *Hasarius adansoni* (Salticidae), *Grammostola rosea* (Theraphosidae) (Fig. 11) and *Scytodes univittata* (Scytodidae) (Fig. 12). Introduced spiders, such as *Prodidomus rufus* (Prodidomidae), *Heteropoda venatoria* (Sparassidae), *Kukulcania hibernalis* (Filistatidae) and *Phoneutria boliviensis* (Ctenidae) were each represented by only one record.

Mexico, with 90 species, remains the country with the largest number of urban spiders. The U.S.A. has 86, Brazil has 37, Cuba has 32 (Perez, 1985; Jimenez, 1998; Cutler, 1973; Kaston, 1983; Guarisco, 1999; Brescovit, 2002; Japyasu, 2002; Brasil *et al.*, 2005; Duran-Barron *et al.*, 2009; Armas, 2012) including the records of *Argiope trifasciata* unpublished (Luis F. de Armas inedit data), and finally, Chile with 31 species. In this study, most spiders were exotic species (Table III). These results were consistent with similar studies made in Mexico and U.S.A. (Guarisco, 1999; Duran-Barron *et al.*, 2009). This can be explained by the 'novel niche hypothesis', where anthropogenic changes to the landscape create niche opportunities for invaders (Shea & Chesson, 2002). Abandoned fields and urban areas, for example, host a number of exotic species that could not survive in natural environments (Lonsdale, 1999).

Most introduced spiders are present in the warmer regions of the country (north of Chile) (Levi, 1967a,b; Sedgwick, 1973; Platnick & Ewing, 1985; Platnick, 2002; Santos & Gonzaga, 2003; Taucare-Rios, 2010a,b; Taucare-Rios, 2011; Taucare-Rios & Brescovit, 2011; Taucare-Rios, 2012a,b; Taucare-Rios & Edwards, 2012; Taucare-Rios, 2013a,b) with the highest number of records compared to central and south of Chile (Porter, 1917; Levi, 1967b; Roth, 1968; Cekalovic, 1973; Levi, 1974; Simó & Brescovit, 2001; Ramirez *et al.*, 2004; Levi 2004; Faundez, 2007). Similar results have been found in the U.S.A. where a large number of species have been introduced in localities with warmer environments (Edwards, 1993a; Edwards, 1993b; Guarisco, 1999; Vincent *et al.*, 2008). The few urban spiders that are native occur mostly in southern Chile (e.g. *Grammostola rosea*, *Lycosa hildegardae*, *L. magallanica* and *Polybetes martius*) (Gerschman & Schiapelli, 1965; Casanueva, 1980; Legendre & Calderon, 1984). These results were very similar to other studies which include many species with worldwide distribution such as *Tegenaria domestica*, *Hasarius adansoni*, *Dysdera crocata*, *Steatoda grossa*, *L. geometricus*, *S. univittata*, *H. venatoria* and *Oecobius navus* (Brescovit, 2002; Duran-Barron *et al.*, 2009). Some species which are widely distributed in this geographical area, such as *A. argentata* and *S. globula*, were found in other American countries in which they have been introduced (Guarisco, 2003; Taucare-Rios, 2013a; Platnick, 2013). However, some cosmopolitan species share distribution in the U.S.A., Cuba and Chile such as *Argiope trifasciata*, *Prodidomus rufus* and *Steatoda triangulosa* (Platnick, 2002; Alayon Garcia, 1992; Levi, 1968; Levi, 2004) (Table IV). Finally, *L. geometricus* and *H. venatoria* were present in all countries compared, possibly due to the similarity in climatic conditions in the areas of introduction.

The synanthropic spiders were associated with domestic and peridomestic urban habitats. *L. geometricus*, *S. grossa*, *M. semilimbatus*, *D. crocata* and *Ariadna maxima* were very common in peridomestic habitats. Most were associated with home gardens, probably because of the wide availability of prey. Furthermore, the brown spider (*L. laeta*) and the tiger spider (*S. globula*) were more common in domestic habitats, i.e. within houses, rather than outdoors. A few urban spiders were present in agrosystem (Table V). The species *Loxosceles laeta*, *Steatoda grossa* and *Ariadna maxima* are characteristic of disturbed environments. Their abundance is reduced in natural habitats. On the other hand, *G. rosea* and *P. martius* were not very common in cities, but were often found on the periphery of urban areas, mostly associated with roads in rural zones.

The guilds with more richness were the wandering spiders (W), such as ground hunters (GH), plant wanderers (PW), and ambush hunters (AH), that build shelters in cracks in the walls inside houses and under stones in gardens. The main families represented by these ecological guilds were Salticidae, Sparassidae, Lycosidae, Corinnidae, Prodidomidae and Scytodidae (Table II). On the other hand, the web building spiders (WB) mainly represented by the space web weavers (SPWB) Theridiidae and Pholcidae, live almost exclusively outside houses in gardens, window casements and wineries. However, the orb web weavers (OW) such as *A. argentata* and *A. trifasciata* are particularly common in agricultural crops and less common in garden.

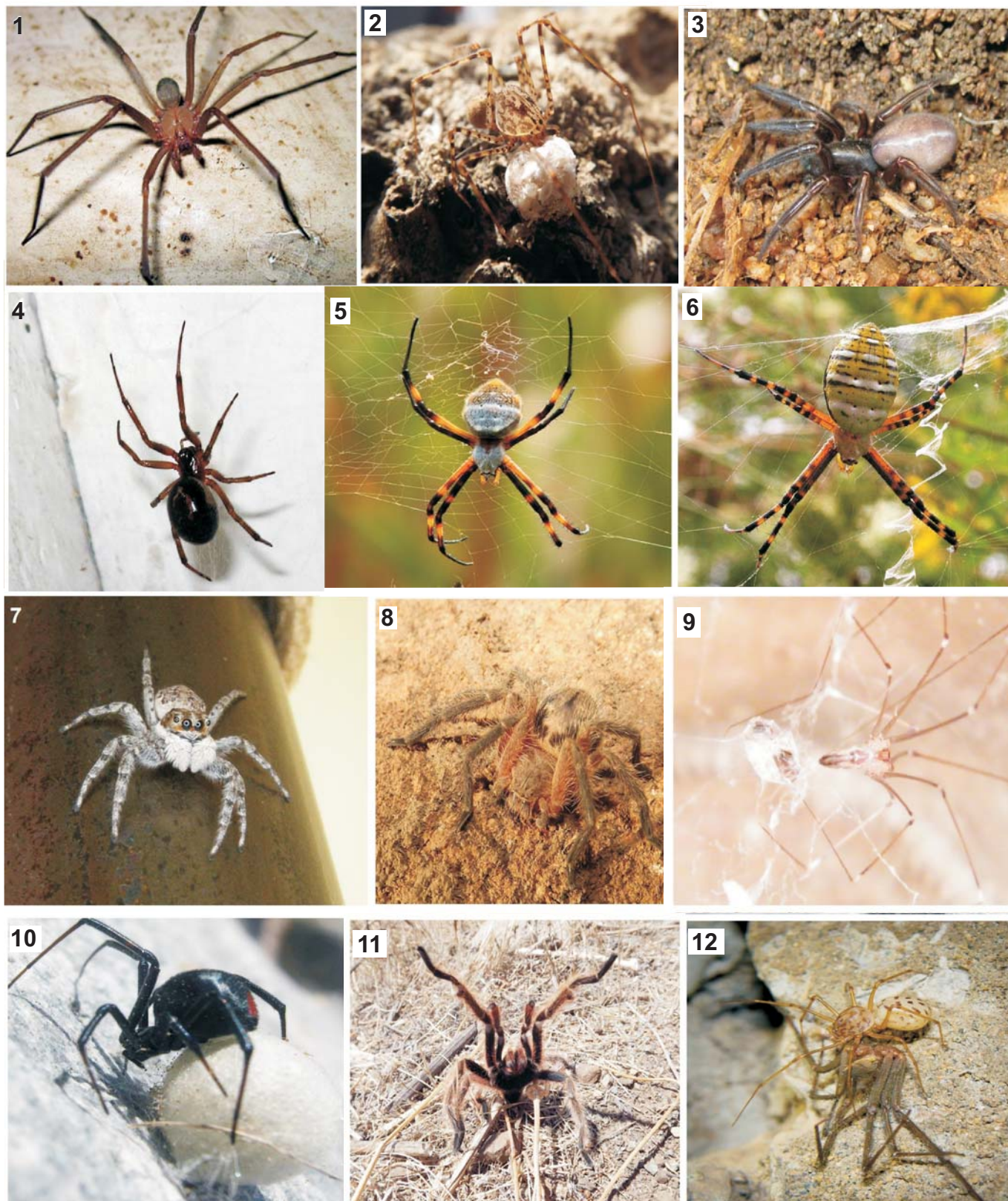


Fig. 1-12: Synanthropic spiders from Chile: 1. Male of *Loxosceles laeta*; 2. *Scytodes globula* female; 3. *Ariadna maxima* female and 4. *Steatoda grossa* female. 5. Female of *Argiope argentata*; 6. *Argiope trifasciata*; 7. *Menemerus semilimbatus* and 8. *Polybetes martius*. 9. *Smeringopus pallidus* hunting an insect; 10. *Latrodectus thoracicus* and its cocoon. 11. Male of *Grammostola rosea*; 12. *Scytodes univittata* eating *Loxosceles laeta*.

Synanthropic spiders of medical importance

Synanthropic spiders important for their dangerous interactions with humans are found in the following families: Ctenidae, Theridiidae, Sicariidae and Lycosidae (Reyes *et al.*, 1991). The Ctenidae ("wandering spiders") reportedly produce serious medical conditions. These are large tropical spiders, with legspans exceeding 10 cm in adults and are not present in Chile. Occasionally they are transported from other countries in shipments of bananas, so they are sometimes called banana spiders ("banana spiders"). Simó & Brescovit (2001) point to *P. boliviensis* as a tropical species introduced passively in Chile. Its bite has a neurotoxic effect which produces intense, stabbing pain that lasts many hours, with no subsequent local damage. Later symptoms include: high fever, profuse sweating, sometimes and impairment of consciousness, diplopia, and respiratory failure that can lead to death (Reyes *et al.*, 1991).

The Lycosidae (wolf spiders) are cited as hazardous in America because their bite can cause necrotic lesions by the action of proteolytic enzymes present in the venom (proteases, hyaluronidases). Necrotic lesions, although they may be large, covering areas greater than 10 by 10 inches, can be successfully treated, usually without further complications. In Chile there are many species of Lycosidae, a family reviewed by Casanueva (1980), but no reports of injury from this group except a single case involving *Lycosa murine* [currently known as *L. implacida* (Nicolet, 1849)] which produced cutaneous necrotic lesions (Donoso-Barros, 1948). However, it should be noted that in Chile the patient rarely brought in the spider that caused the bite. Even when the spider is captured, a positive identification is often not possible since the knowledge of the arachnofauna by the medical community is very limited.

In Chile, most medical conditions caused by spider bites are produced by spiders belonging to the genera *Latrodectus* and *Loxosceles*. The "black widow" (*L. thoracicus*) and the "brown widow" (*L. geometricus*) produce a medical condition known as latrodectism (Aguilera *et al.*, 2009; Taucare-Rios, 2011). A second medical condition, known as loxoscelism, is caused by the bite of the "corner recluse spider" (*Loxosceles laeta*) (Schenone & Reyes, 1965; Artaza *et al.*, 1982; Schenone, 2003).

The black widow spider is a rural species that can be found in much of the country, most abundant in regions VII to IX. In the summers of 1983 and 1984, more than 150 cases of latrodectism were caused by this species (Artaza *et al.*, 1982; Schenone, 2003). It occurs in fields of wheat, alfalfa, flax and other crops (Reyes *et al.*, 1991; Schenone, 2003) even in Santiago; in gardens, vacant lots, and in human dwellings. This species can maintain high population densities. Schenone *et al.* (1962) reported between five and seven adult spiders per m² in an area of alfalfa in Pudahuel, Santiago. On the other hand, the brown widow spider is commonly present in gardens from Iquique (Taucare-Rios, 2011) and recently has been found on avocado plantations in the valley of Azapa in north of Chile. Loxoscelism is registered on every continent. In America there have been cases of loxoscelism attributed to *L. laeta* in Brazil, *L. reclusa* in the U.S.A and Mexico and *L. gaucho* in Argentina (Reyes *et al.*, 1991). In Peru, loxoscelism is attributed to *L. laeta* and *L. rufipes* (Zavaleta, 1987). In Chile "the necrotic spot" produced by spider bites was known since 1878, it was Macchiavello (1937) who showed that many cases of necrotic cutaneous and hemolytic disorders followed the bite of *L. laeta* (Schenone & Reyes,

1965). Currently, according with Schenone (1998, 2003) there is only one species in Chile, responsible for all cases of loxoscelism. This spider is found in practically all the country, from Region de Arica and Parinacota to the Region de los Lagos, especially in attics, corners of rooms, behind pictures and furniture indoors (Gertsch, 1967; Schenone, 2003).

Ultimately, this paper provides the first record of spiders from anthropogenic habitats in Chile, with particular emphasis on those species associated with houses and their surroundings. Most of the species are cosmopolitan and pan-tropical species introduced into the country. In this context, it is important to continue to study this type of spider in order to identify potential invasive species that can be a threat to native communities. Finally, we can say that the ecological role of spiders in urban ecosystems is still little known in Chile; however, this study offers novel approaches for a better understanding of these animals in this country.

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Table I. Guild classification of urban spiders from Chile.

Guilds	Abbreviation	Guild explanation
Wandering spiders	(W)	
Ground hunters	(GH)	free-living spiders running on the soil surface
Ambush hunters	(AH)	spiders that hunt by ambushing their prey
Plant wandering spiders	(PW)	free-living spiders running on the plant surface in houses
Web-building spiders	(WB)	
Orb- web	OW	orb-webs consisting of a frame with mooring and bridge lines that anchors the web and radial signal threads arranged like the ribs of a umbrella converging onto the centre of the web with circular spiral Threads
Retreat-web	RWB	silk threads used to catch prey radiating from retreat
Sheet-web	SHWB	sheet-webs which, usually consists of an upper sheet with mooring, signal and catch threads
Space-web	SPWB	space-webs which, fill open space and are usually attached with mooring threads to different substrates.

Table II. Checklist of urban spiders from Chile.

	Taxa	Guild	Records
1.Araneidae	<i>Argiope argentata</i> (Fabricius, 1775)	OWB	Levi (1968, 2004) ; Taucare-Ríos (2012a)
	<i>Argiope trifasciata</i> (Forsskal, 1775)	OWB	Levi (1968,2004)
	<i>Zygiella x-notata</i> (Clerk , 1906)	OWB	Levi (1974)
2.Agelenidae	<i>Tegenaria domestica</i> (Clerck, 1757)	SHWB	Ramírez <i>et al.</i> 2004
	<i>Malthonica pagana</i> C. L. Koch, 1841	SHWB	Roth (1968); Ramírez <i>et al.</i> 2004
3.Corinnidae	<i>Meriola arcifera</i> (Simon, 1886)	GH	Platnick & Ewing (1995)
	<i>Meriola cetiformes</i> (Strand, 1908)	GH	Platnick & Ewing (1995)
4.Ctenidae	<i>Phoneutria boliviensis</i> (F. O. P.-Cambridge, 1897)	GH	Simó & Brescovit (2001)
5.Dysderidae	<i>Dysdera crocata</i> C. L. Koch, 1838	GH	Porter (1917)
6.Filistatidae	<i>Kukulcania hibernalis</i> (Hentz , 1842)	RWB	Taucare-Ríos (2010a)
7.Lycosidae	<i>Lycosa magallanica</i> Karsch, 1880	GH	Casanueva (1980)
	<i>Lycosa hildegardae</i> (Casanueva , 1980)	GH	Casanueva (1980)
8. Oecobiidae	<i>Oecobius navus</i> Blackwall, 1859	RWB	Santos & Gonzaga (2003)
9. Pholcidae	<i>Pholcus phalangioides</i> (Fuesslin , 1775)	SPWB	Cekalovic (1976)
	<i>Smeringopus pallidus</i> (Blackwall , 1858)	SPWB	Taucare-Ríos (2012b)
10.Prodidomidae	<i>Prodidomus rufus</i> Hentz, 1847	GH	Platnick (2002)
11. Salticidae	<i>Hasarius adansoni</i> (Audouin, 1826)	PW	Taucare-Ríos (2013b)
	<i>Menemerus semilimbatus</i> (Hahn, 1827)	PW	Taucare-Ríos & Edwards (2012)
	<i>Frigga crocuta</i> (Taczanowski 1878)	PW	New record : Iquique
12.Scytodidae	<i>Scytodes univittata</i> Simon, 1882	GH	Taucare-Ríos (2013a)
	<i>Scytodes globula</i> (Nicolet , 1849)	GH	
13. Segestriidae	<i>Ariadna maxima</i> (Nicolet , 1849)	RWB	Grismado (2008)
14.Sicariidae	<i>Loxosceles laeta</i> (Nicolet , 1849)	AH	Gertsch (1967)
15.Sparassidae	<i>Heteropoda venatoria</i> (Linnaeus, 1767)	GH	Taucare-Ríos & Brescovit (2011)
	<i>Polybetes martius</i> (Nicolet , 1849)	GH	Gerschman & Schiapelli (1965)
16.Theraphosidae	<i>Grammostola rosea</i> (Walckenaer, 1837)	GH	Legendre & Calderon (1984)
17.Theridiidae	<i>Latrodectus geometricus</i> Koch, 1841	SPWB	Levi (1967a); Taucare-Ríos (2011)
	<i>Latrodectus thoracicus</i> (Nicolet , 1849)	SPWB	Aguilera <i>et al.</i> 2009
	<i>Parasteatoda tepidariorum</i> (C. L. Koch, 1841)	SPWB	Levi (1967b)
	<i>Steatoda grossa</i> (C. L. Koch, 1838)	SPWB	Sedgwick (1973); Faundez (2007); Taucare-Ríos (2010b)
	<i>Steatoda triangulosa</i> C. A. Walckenaer, 1802	SPWB	New record : Iquique

Abbreviation: GH = ground hunters; AH = ambush hunters; PW = plant wanderers spiders; OW = orb-web weavers; SHWB = sheet-web weavers
 RWB= retreat web weavers; SPWB= space web weavers.

Table III. Distribution of the synanthropic spiders in Chile and its respective origin.

Taxa	Origin	Distribution
ARANEIDAE		
<i>Argiope argentata</i> (Fabricius, 1775)	Introduced	North of Chile : Arica and Antofagasta
<i>Argiope trifasciata</i> (Forsskål, 1775)	Introduced	Center and south of Chile
<i>Zygiella x-notata</i> (Clerk , 1906)	Introduced	South of Chile
AGELENIDAE		
<i>Tegenaria domestica</i> (Clerck, 1757)	Introduced	Center of Chile : Santiago
<i>Malthonica pagana</i> C. L. Koch, 1841	Introduced	Center of Chile : Santiago
CORINNIDAE		
<i>Meriola arcifera</i> (Simon, 1886)	Introduced	Central of Chile : Santiago
<i>Meriola cetiformes</i> (Strand, 1908)	Introduced	North of Chile
CTENIDAE		
<i>Phoneutria boliviensis</i> (F. O. P.-Cambridge, 1897)	Introduced	Center of Chile : Santiago
DYSDERIDAE		
<i>Dysdera crocata</i> C. L. Koch, 1838	Introduced	Center of Chile: Valparaíso and Santiago
FILISTATIDAE		
<i>Kukulcania hibernalis</i> (Hentz , 1842)	Introduced	North of Chile
LYCOSIDAE		
<i>Lycosa magallanica</i> Karsch, 1880	Native	South of Chile : Tierra del fuego
<i>Lycosa hildegardae</i> (Casanueva , 1980)	Native	Center of Chile: Valparaíso and Santiago
OECOBIIDAE		
<i>Oecobius navus</i> Blackwall, 1859	Introduced	North and center of Chile : From Iquique to Coquimbo
PHOLCIDAE		
<i>Pholcus phalangioides</i> (Fuesslin , 1775)	Introduced	Iquique to Punta Arenas
<i>Smeringopus pallidus</i> (Blackwall , 1858)	Introduced	North of Chile : Iquique
PRODIDOMIDAE		
<i>Prodidomus rufus</i> (Hentz , 1847)	Introduced	North of Chile: Antofagasta
SALTICIDAE		
<i>Hasarius adansoni</i> (Audouin, 1826)	Introduced	North of Chile : Pisagua and Iquique
<i>Frigga crocuta</i> (Taczanowski 1878)	Introduced	North of Chile : Iquique
<i>Menemerus semilimbatus</i> (Hahn, 1827)	Introduced	North and South of Chile: Iquique to Talca
SCYTODIDAE		
<i>Scytodes univittata</i> Simon, 1882	Introduced	North of Chile : Arica to Chañaral
<i>Scytodes globula</i> (Nicolet , 1849)	Native	Center and south of Chile : Coquimbo to Biobío
SEGESTRIIDAE		
<i>Ariadna maxima</i> (Nicolet , 1849)	Native	Antofagasta to Magallanes
SICARIIDAE		
<i>Loxosceles laeta</i> (Nicolet , 1849)	Native	Arica to Puerto Montt
SPARASSIDAE		
<i>Heteropoda venatoria</i> (Linnaeus, 1767)	Introduced	North of Chile: Iquique
<i>Polybetes martius</i> (Nicolet , 1849)	Native	Center of Chile: Santiago
THERAPHOSIDAE		
<i>Grammostola rosea</i> (Walckenaer, 1837)	Native	Center and south of Chile
THERIDIIDAE		
<i>Latrodectus geometricus</i> Koch, 1841	Introduced	North of Chile : Azapa and Iquique
<i>Latrodectus thoracicus</i> (Nicolet , 1849)	Native	Arica to Magallanes
<i>Parasteatoda tepidariorum</i> (C. L. Koch, 1841)	Introduced	North to center of Chile : Antofagasta to Santiago
<i>Steatoda grossa</i> (C. L. Koch, 1838)	Introduced	Arica to Magallanes
<i>Steatoda triangulosa</i> C. A. Walckenaer, 1802	Introduced	North of Chile : Iquique

Table IV. Comparison of synanthropic spiders from Chile, Mexico, Brazil, U.S.A. and Cuba.

Species	Chile	Mexico	Brazil	U.S.A.	Cuba
<i>Ariadna maxima</i>	•	–	–	–	–
<i>Argiope argentata</i>	•	–	•	–	–
<i>Argiope trifasciata</i>	•	–	–	•	•
<i>Dysdera crocata</i>	•	•	–	•	–
<i>Frigga crocuta</i>	•	–	–	–	–
<i>Grammostola rosea</i>	•	–	–	–	–
<i>Hasarius adansoni</i>	•	–	•	•	–
<i>Heteropoda venatoria</i>	•	•	•	•	•
<i>Kukulcania hibernalis</i>	•	•	•	–	•
<i>Latrodectus geometricus</i>	•	•	•	•	•
<i>Latrodectus thoracicus</i>	•	–	–	–	–
<i>Loxosceles laeta</i>	•	–	•	•	–
<i>Lycosa hildegardae</i>	•	–	–	–	–
<i>Lycosa magallanica</i>	•	–	–	–	–
<i>Malthonica pagana</i>	•	–	–	•	–
<i>Menemerus semilimbatus</i>	•	–	•	•	–
<i>Meriola arcifera</i>	•	–	–	•	–
<i>Meriola cetiformes</i>	•	–	•	–	–
<i>Oecobius navus</i>	•	•	•	•	–
<i>Parasteatoda tepidiorum</i>	•	–	–	•	–
<i>Pholcus phalangioides</i>	•	–	•	•	–
<i>Phoneutria boliviensis</i>	•	–	•	–	–
<i>Prodidomus rufus</i>	•	–	–	•	•
<i>Polybetes martius</i>	•	–	–	–	–
<i>Scytodes globula</i>	•	–	•	•	–
<i>Scytodes univitatta</i>	•	•	•	–	•
<i>Smeringopus pallidus</i>	•	–	•	•	–
<i>Steatoda grossa</i>	•	•	–	•	–
<i>Steatoda triangulosa</i>	•	–	–	•	–
<i>Tegenaria domestica</i>	•	•	–	•	–
<i>Zygiella x-notata</i>	•	–	–	•	–

Table V. Major environments visited by synanthropic spiders in Chile.

Species	Peridomestic habitats	Domestic habitats	Agrosystem	Rural zones
<i>Ariadna maxima</i>	•	•	–	•
<i>Argiope argentata</i>	•	–	•	•
<i>Argiope trifasciata</i>	–	–	•	•
<i>Dysdera crocata</i>	•	•	–	–
<i>Frigga crocuta</i>	•	–	–	–
<i>Grammostola rosea</i>	–	–	–	•
<i>Hasarius adansoni</i>	•	•	–	–
<i>Heteropoda venatoria</i>	–	•	–	–
<i>Kukulcania hibernalis</i>	–	•	–	–
<i>Latrodectus geometricus</i>	•	•	•	–
<i>Latrodectus thoracicus</i>	–	–	•	•
<i>Loxosceles laeta</i>	•	•	–	•
<i>Lycosa hildegardae</i>	•	–	•	•
<i>Lycosa magallanica</i>	•	•	–	•
<i>Menemerus semilimbatus</i>	•	•	–	–
<i>Meriola arcifera</i>	•	–	–	–
<i>Meriola cetiformes</i>	•	•	–	–
<i>Oecobius navus</i>	•	•	–	•
<i>Parasteatoda tepidiorum</i>	•	–	–	–
<i>Pholcus phalangioides</i>	–	•	–	–
<i>Phoneutria boliviensis</i>	•	–	–	–
<i>Polybetes martius</i>	•	–	–	•
<i>Prodidomus rufus</i>	•	•	–	–
<i>Scytodes globula</i>	•	•	–	•
<i>Scytodes univitatta</i>	•	•	–	–
<i>Smeringopus pallidus</i>	–	•	–	–
<i>Steatoda grossa</i>	•	•	•	–
<i>Steatoda triangulosa</i>	•	–	–	–
<i>Tegenaria domestica</i>	•	•	–	–
<i>Malthonica pagana</i>	•	•	–	–
<i>Zygiella x-notata</i>	•	–	–	–