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Original article

Current knowledge of spiders (Arachnida: Araneae) from Sinaloa, Mexico: species checklist and new records, including the first record of *Plexippus petersi* Karsch, 1878 for America

Conocimiento actual de las arañas (Arachnida: Araneae) de Sinaloa, México: lista de especies y nuevos registros, con el primer registro de *Plexippus petersi* Karsch, 1878 para América

Acta Zoológica Mexicana (nueva serie)

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ABSTRACT. In this work, we provide the first spider checklist for Sinaloa, Mexico. After reviewing the literature and the examination of spiders collected in Sinaloa, the checklist comprises 31 families, 82 genera, and 118 species. The families Salticidae (17 species), Araneidae (15), and Theridiidae (13) are the most diverse in Sinaloa. Furthermore, we report the first record of the jumping spider *Plexippus petersi* Karsch, 1878 in America along with twelve state

records of spiders of the families Anyphaenidae (1), Diguetidae (1), Filistatidae (1), Pholcidae (2), Salticidae (4), Sparassidae (1), and Thomisidae (2). Furthermore, we provide photographs of the habitus and copulatory organs of all new records.

Key words: Distribution; diversity; Mexican spiders; synanthropic spiders

RESUMEN. En este trabajo, proporcionamos el primer listado de especies de arañas para el estado de Sinaloa, México. Después de la revisión de literatura y de las arañas recolectadas en distintas localidades del estado, el listado comprende 31 familias, 82 géneros y 118 especies. Las familias Salticidae (17 especies), Araneidae (15) y Theridiidae (13) son las más diversas en Sinaloa. Además, reportamos por primera vez la presencia de la araña saltadora *Plexippus petersi* Karsch, 1878 en el continente americano junto con doce nuevos registros estatales de arañas de las familias Anyphaenidae (1), Diguetidae (1), Filistatidae (1), Pholcidae (2), Salticidae (4), Sparassidae (1) y Thomisidae (2). También, proporcionamos evidencia fotografíca del habitus y los órganos copuladores de todos los nuevos registros.

Palabras clave: Arañas mexicanas; arañas sinantrópicas; distribución; diversidad

INTRODUCTION

Spiders are a diverse group, with a total of 51, 939 species globally, that occur in almost all terrestrial habitats worldwide (Coddington & Levi, 1991; World Spider Catalog, 2024). Predominantly insectivores, spiders play a fundamental role as predators and biological control agents in natural environments and agroecosystems (Coddington & Levi, 1991; Foelix, 2011).

In Mexico, there are 2,345 species recorded, belonging to 455 genera, and 70 families (Ponce-Saavedra *et al*., 2023). In Mexico, Chiapas (379 species), Veracruz (360), and Guerrero (291), harbor the highest species diversity of spiders (Ponce-Saavedra *et al*., 2023). In Sinaloa, the number of documented species has steadily increased since Hoffmann (1976) work, who enumerated 48 species, then Jiménez (1996) enumerated 82 species, and recently Ponce-Saavedra *et al*. (2023) cited 93 species.

Sinaloa, a northwestern state in Mexico, exhibits remarkable biodiversity due to diverse physiographic, climatic, and altitudinal factors. It encompasses several vegetation types, including tropical deciduous forest, thorn forest, low deciduous forest, and pine-oak forest, among others (Rzedowski, 2006). Despite the vegetation diversity, few faunistic inventories have been conducted in Sinaloa, limiting current knowledge of spider diversity in the state. Only a single faunistic inventory has been conducted within the state's geographical boundaries. Hernández-Reátiga *et al*. (2017) studied weaver spider diversity in an agroecosystem in Surutato, Badiraguato, identifying 18 species belonging to 15 genera and five families. However, their work, while offering a valuable baseline study, raises questions about certain identifications and is limited to a small region of the state.

The study aims to increase the knowledge of the diversity of spiders in Sinaloa, by (1) providing new distributional data of 13 species not previously recorded in the state and (2) compiling a species list of spiders.

MATERIALS AND METHODS

Deposit of specimens. All spiders are preserved in 70% ethyl alcohol and deposited in the Colección de Arácnidos e Insectos (CARCIB, curator Dr. María-Luisa Jiménez) at the Centro de Investigaciones Biológicas del Noroeste S.C. (CIBNOR).

New records. Serendipitous samplings were conducted in Ahome and Guasave municipalities, Sinaloa, Mexico, by the first author during June 2022 and July-September 2023. Following Gómez-Moreno *et al.* (2023), any spider encountered in any habitat, including synanthropic ones, was collected using diverse techniques outlined by Ubick *et al.* (2017). Representative localities are Cañón del Diablo (Fig. 1), Isla San Ignacio and Isla Nescoco (Fig. 2), and Los Mochis City (Fig. 3). Furthermore, a small collection of specimens from Mazatlán, Sinaloa deposited at CARCIB were examined. Precise information, e.g., locality data, number of specimens examined, sex, and other important data, are given for each species, following the format of Gómez-Moreno *et al.* (2023).

Figures 1–3. Collection sites in Sinaloa. **1.** Cañón del Diablo in Sierra Barobampo. **2.** Isla Nescoco in Navachiste, Guasave. **3.** Plazuela 27 de September in Los Mochis city.

Identification and imaging. Species identification was carried out with a VELAB VE-S6 microscope at the Benjamín Francis Johnston Botanical Garden, Sinaloa. The species names were verified with the World Spider Catalog (2024). The photographs were taken with an AxioCam HSc camera attached to a ZEISS SteREO Discovery.V20.

Spider list. The species list was generated using the data compiled by second and third authors, only tally by states published in Ponce-Saavedra *et al.* (2023). Moreover, we used web search engines to look for more published studies from Sinaloa but discarded species records from grey literature.

RESULTS

New records. From the samplings, we examined 17 specimens (eight males, six females, and three immatures) belonging to 7 families, all representing new distributional data (see below). Twelve spiders were collected inside houses or nearby, while five came from low deciduous forest or coastal scrub. *Plexippus petersi* Karsch, 1878 (Salticidae) is recorded for the first time in America. The following 12 species represent the first record for Sinaloa: *Hibana incursa* Chamberlin, 1919 (Anyphaenidae), *Diguetia* sp. (Diguetidae), *Filistatoides* sp. (Filistatidae), *Crossopriza lyoni* Blackwall, 1867 (Pholcidae), *Physocyclus globosus* Taczanowski, 1874 (Pholcidae*), Hasarius adansoni* Audouin, 1826 (Salticidae), *Lyssomanes mandibulatus* F. O. Pickard-Cambridge, 1900 (Salticidae), *Menemerus bivittatus* Dufour, 1831 (Salticidae), *Plexippus paykulli* Audouin, 1826 (Salticidae), *Heteropoda venatoria* Linnaeus, 1767 (Sparassidae), *Synema* sp. (Thomisidae), and *Xysticus lassanus* Chamberlin, 1925 (Thomisidae).

Spider species list of Sinaloa. A total of 31 families, 82 genera, and 118 species are distributed in Sinaloa (Table 1). Salticidae (8 genera and 17 species), Araneidae (12 genera and 15 species), and Theridiidae (7 genera and 13 species) are the most diverse families (Fig. 4). Eleven families have only one recorded species in Sinaloa (Fig. 4).

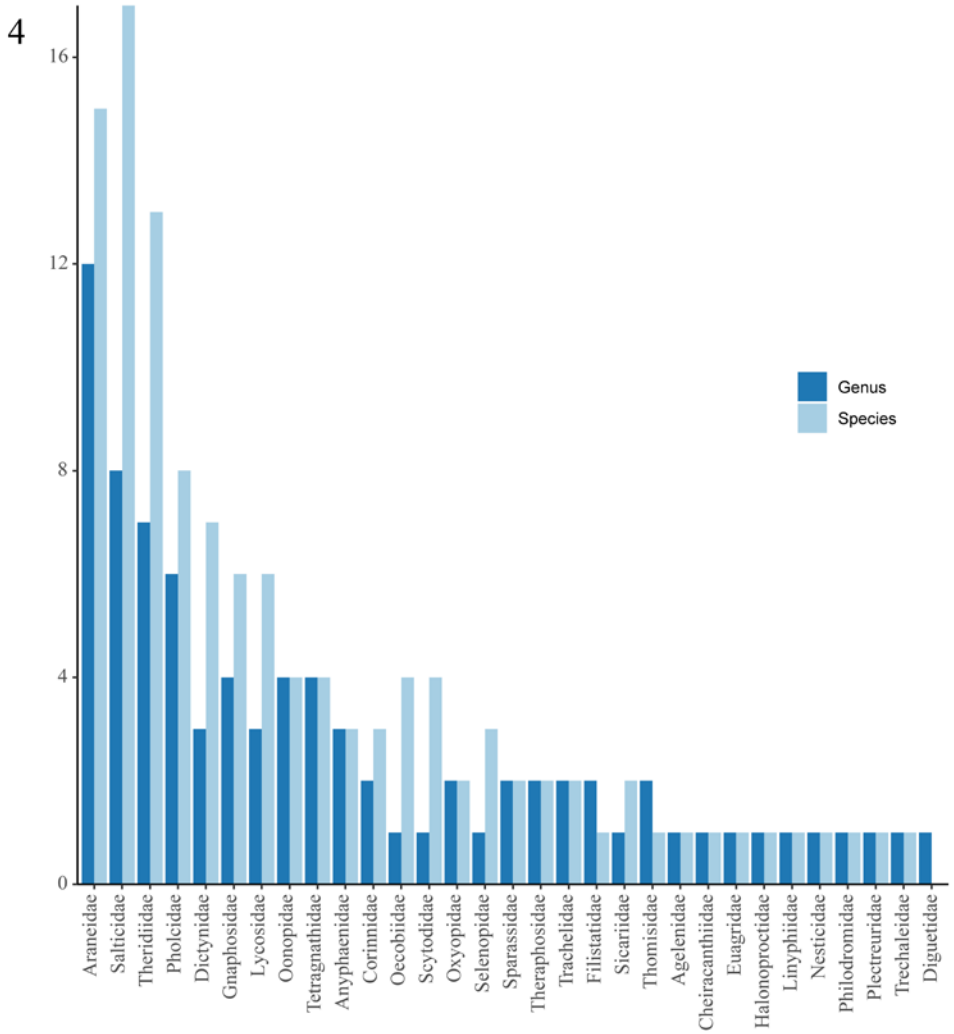


Figure 4. Number of genera and species per family in Sinaloa.

Table 1. List of spiders of Sinaloa. * New state record, ** New record for America, [1] = species only known from Sinaloa, [2] = introduced species, [3] = synanthropic species.

Infraorder/Family	Genus and species	Consulted literature
Mygalomorphae		
Halonoproctidae	*Ummidia pustulosa* Becker, 1879	Gondwin & Bond (2021)
Theraphosidae	*Brachypelma emilia* White, 1856	Mendoza & Francke (2020)
	Magnacarina moderata Locht, Mendoza & Medina, 2016	Mendoza, Locht, Kaderka, Medina & Pérez-Miles (2016)
Araneomorphae		
Agelenidae	*Novalena sinaloa* Maya-Morales & Jiménez, 2017 [1]	Maya-Morales & Jiménez (2017)
Anyphaenidae	*Anyphaena judicata* O. Pickard-Cambridge, 1896	Platnick & Lau (1975)
	Wulfila tantillus Chickering, 1940	Platnick (1974)
	Hibana incursa Chamberlin, 1919*	
Araneidae	*Araneus colima* Levi, 1991	Levi (1991)
	Araneus detrimentosus O. Pickard-Cambridge, 1889	Levi (1991)
	Argiope argentata Fabricius, 1775	Levi (1968); Hoffmann (1976)
	Argiope blanda O. Pickard-Cambridge, 1898	Levi (1968); Hoffmann (1976)
	Cyclosa walckenaeri O. Pickard-Cambridge, 1889	Levi (1999)
	Edricus productus O. Pickard-Cambridge, 1896	Levi (1991)
	Eriophora edax Blackwall, 1863	Hoffmann (1976)
	Eustala conchlea McCook, 1888	Levi (1977)
	Gasteracantha cancriformis Linnaeus, 1758	Levi (1978)
	Larinia directa Hentz, 1847	Harrod, Levi & Liebensperger (1991)
	Mangora mobilis O. Pickard-Cambridge, 1889	Levi (2005)
	Metepeira petatlan Piel, 2001	Piel (2001)
	Micrathena funebris Marx, 1898	Levi (1985); Hoffmann (1976)
	Micrathena mitrata Hentz, 1850	Levi (1985)
	Neoscona oaxacensis Keyserling, 1864	Berman & Levi (1971); Hoffmann (1976)
Cheiracanthiidae	*Strotarchus nebulosus* Simon, 1888	Bonaldo et al. (2012)
Corinnidae	*Castianeira dorsata* Banks, 1898	Reiskind (1969); Hoffmann (1976)
	Castianeira nanella Gertsch, 1933	Reiskind (1969); Hoffmann (1976)

	Creugas gulosus Thorell, 1878	Bonaldo (2000)
Dictynidae	*Dictyna calcarata* Banks, 1904	Chamberlin & Gertsch (1958); Hoffmann (1976)
	Dictyna peon Chamberlin & Gertsch, 1958	Chamberlin & Gertsch (1958); Hoffmann (1976)
	Dictyna sinaloa Gertsch & Davis, 1942 [1]	Gertsch & Davis (1942)
	Dictyna tucsona Chamberlin, 1948	Chamberlin & Gertsch (1958); Hoffmann (1976)
	Mallos niveus O. Pickard-Cambridge, 1902	Bond & Opell (1997)
	Phantyna mulegensis Chamberlin, 1924	Gertsch & Davis (1942)
	Phantyna segregata Gertsch & Mulaik, 1936	Gertsch & Davis (1942)
Diguetidae	*Diguetia* sp.*	
Euagridae	*Euagrus gertschi* Coyle, 1988	Coyle (1988)
Filistatidae	*Filistatoides* sp.*	
	Kukulcania tequila Magalhaes & Ramírez, 2019	Magalhaes & Ramírez (2019)
Gnaphosidae	*Cesonia lugubris* O. Pickard-Cambridge, 1896	Platnick & Shadab (1980)
	Drassyllus gammus Platnick & Shadab, 1982 [1]	Platnick & Shadab (1982)
	Drassyllus villus Platnick & Shadab, 1982 [1]	Platnick & Shadab (1982)
	Micaria jeanae Gertsch, 1942	Platnick & Shadab (1988)
	Zelotes monachus Chamberlin, 1924	Platnick & Shadab (1983)
	Zelotes union Platnick & Shadab, 1983 [1]	Platnick & Shadab (1983)
Linyphiidae	*Mermessus denticulatus* Banks, 1898	Millidge (1987)
Lycosidae	*Arctosa tenella* (Keyserling, 1877)	Dondale & Redner (1983)
	Pardosa bellona Banks, 1898	Dondale & Redner (1984)
	Pardosa vadosa Barnes, 1959	Barnes (1959); Hoffmann (1976)
	Pardosa sierra Banks, 1898	Barnes (1959); Hoffmann (1976)
	Pardosa valens Barnes, 1959	Barnes (1959); Hoffmann (1976)
	Sosippus californicus Simon, 1898	Brady (1962); Hoffmann (1976)
Nesticidae	*Eidmannella pallida* Emerton, 1875	Gertsch (1984)
Oecobiidae	*Oecobius culiacanensis* Shear, 1970 [1]	Shear (1970); Hoffmann (1976)
	Oecobius isolatoides Shear, 1970	Shear (1970); Hoffmann (1976)
	Oecobius piaxtla Shear, 1970 [1]	Shear (1970); Hoffmann (1976)

	Oecobius rivula Shear, 1970 [1]	Shear (1970); Hoffmann (1976)
Oonopidae	*Cinetomorpha bandolera* Ott & Harvey, 2019	Ott et al. (2019)
	Escaphiella hespera Chamberlin, 1924	Platnick & Dupérré (2009a)
	Noonops culiacan Platnick & Berniker, 2013 [1]	Platnick & Berniker (2013)
	Opopaea concolor Blackwall, 1859 [2]	Platnick & Dupérré (2009b)
Oxyopidae	*Peucetia longipalpis* F. O. Pickard-Cambridge, 1902	Brady (1964); Hoffmann (1976)
	Oxyopes felinus Brady, 1964	Brady (1975)
Philodromidae	*Apollophanes punctipes* O. Pickard-Cambridge, 1891	Dondale & Redner (1975)
Pholcidae	*Artema atlanta* Walckenaer, 1837 [2, 3]	Gertsch & Davis (1942)
	Crossopriza lyoni Blackwall, 1867* [2, 3]	
	Micropholcus fauroti Simon, 1887 [2]	Gertsch & Davis (1942); Hoffmann (1976)
	Physocyclus globosus Taczanowski, 1874* [3]	
	Physocyclus platnicki Valdez-Mondragón, 2010 [1]	Valdez-Mondragón (2010)
	Physocyclus validus Gertsch, 1971	Valdez-Mondragón (2010)
	Psilochorus sinaloa Gertsch & Davis, 1942 [1]	Gertsch & Davis (1942); Hoffmann (1976)
	Tolteca hesperia Gertsch, 1982	Gertsch (1982); Huber (2000)
Plectreuridae	*Plectreurys ardea* Gertsch, 1958 [1]	Gertsch (1958); Hoffmann (1976)
Salticidae	*Habronattus abditus* Griswold, 1987 [1]	Griswold (1987)
	Habronattus aztecanus Banks, 1898	Griswold (1987)
	Habronattus carpus Griswold, 1987	Griswold (1987)
	Habronattus contingens Chamberlin, 1925	Griswold (1987)
	Habronattus fallax Peckham & Peckham, 1909	Griswold (1987)
	Habronattus pugillis Griswold, 1987	Griswold (1987)
	Habronattus pyrrithrix Chamberlin, 1924	Griswold (1987)
	Habronattus virgulatus Griswold, 1987	Griswold (1987)

	Hasarius adansoni Audouin, 1826* [2, 3]	
	Lyssomanes mandibulatus F. O. Pickard-Cambridge, 1900*	
	Menemerus bivittatus Dufour, 1831* [2, 3]	
	Pelegrina variegata F. O. Pickard-Cambridge, 1901	Maddison (1996)
	Phidippus pacosauritus Edwards, 2020 [1]	Edwards (2020)
	Phidippus californicus Peckham & Peckham, 1901	Edwards (2004)
	Plexippus paykulli Audouin, 1826* [2, 3]	
	Plexippus petersi Karsch, 1878** [2, 3]	
	Sassacus vitis Cockerell, 1894	Richman (2008)
Scytodidae	*Scytodes atlatonin* Rheims, Brescovit & Durán-Barrón, 2007 [1]	Rheims, Brescovit & Durán-Barrón (2007)
	Scytodes chiconahui Rheims, Brescovit & Durán-Barrón, 2007	Rheims, Brescovit & Durán-Barrón (2007)
	Scytodes fusca Walckenaer, 1837	F. O. Pickard-Cambridge (1899); Hoffmann (1976)
	Scytodes redempta Chamberlin, 1924	Rheims, Brescovit & Durán-Barrón (2007)
Selenopidae	*Selenops actophilus* Chamberlin, 1924	Crews (2011)
	Selenops debilis Banks, 1898	Crews (2011)
	Selenops nesophilus Chamberlin, 1924	Crews (2011)
Sicariidae	*Loxosceles seri* Gertsch & Ennik, 1983	Gertsch & Ennik (1983)
	Loxosceles sonora Gertsch & Ennik, 1983	Gertsch & Ennik (1983)
Sparassidae	*Curicaberis culiacan* Rheims, 2015 [1]	Rheims (2015)
	Heteropoda venatoria Linnaeus, 1767* [2, 3]	
Tetragnathidae	*Chrysometa alboguttata* O. Pickard-Cambridge, 1889	Levi (1986)
	Glenognatha minuta Banks, 1898	Cabra-García & Brescovit (2016)
	Azilia affinis O. Pickard-Cambridge, 1893	Levi (1980)
	Leucauge argyra Walckenaer, 1841	Levi (1980)

Theridiidae	*Anelosimus pacificus* Levi, 1956	Levi (1956); Levi (1963); Agnarsson (2006); Hoffmann (1976)
	Anelosimus studiosus Hentz, 1850	Hoffmann (1976)
	Asagena medialis Banks, 1898	Levi (1957b); Hoffmann (1976)
	Argyrodes elevatus Taczanowski, 1873	Exline & Levi (1962); Hoffmann, (1976)
	Latrodectus geometricus C. L. Koch, 1841 [2, 3]	Cabrera-Espinosa & Valdez-Mondragón (2021)
	Latrodectus hesperus Chamberlin & Ivie, 1935	Valdez-Mondragón & Cabrera-Espinosa (2023)
	Steatoda punctulata Marx, 1898	Levi (1957b); Hoffmann (1976)
	Steatoda grossa C. L. Koch, 1938 [2]	Hoffmann (1976)
	Theridion elisabethae Roewer, 1951	Levi (1959); Hoffmann (1976)
	Theridion dilutum Levi, 1957	Levi (1957a); Hoffmann (1976)
	Theridion positivum Chamberlin, 1924	Levi (1957a); Hoffmann (1976)
	Theridion sinaloa Levi, 1959 [1]	Levi (1959); Hoffmann (1976)
	Wamba crispulus Simon, 1895	Levi (1957a); Hoffmann (1976)
Thomisidae	*Synema* sp.*	
	Xysticus lassanus Chamberlin, 1925*	
Trachelidae	*Meriola decepta* Banks, 1895	Platnick & Shadab (1974a)
	Trachelas mexicanus Banks, 1898	Platnick & Shadab (1974b)
Trechaleidae	*Trechalea connexa* O. Pickard-Cambridge, 1898	Carico (1993)

Species with current distribution restricted to Sinaloa. In total, 17 species belonging to 14 genera and 11 families (Table 1) are only recorded within state boundaries. The municipalities of Culiacán, Villa Unión, and Piaxtla are the most common type localities of these species. Furthermore, among these species, some are toponyms of Sinaloa localities. For example, *Dictyna sinaloa* Gertsch & Davis, 1942, *Psilochorus sinaloa* Gertsch & Davis, 1942, *Novalena sinaloa* Maya-Morales & Jiménez, 2017, *Curicaberis culiacan* Rheims, 2015; *Noonops culiacan* Platnick & Berniker, 2013; *Oecobius culiacanensis* Shear, 1970; *Zelotes union* Platnick & Shadab, 1983, and *Oecobius piaxtla* Shear, 1970. The most recent species described from Sinaloa is *Phidippus pacosauritus* Edwards, 2020, which is only known from Mazatlán.

Of the 17 species restricted to Sinaloa, only six species have both sexes described. In contrast, *Curicaberis culiacan* (Sparassidae), *Habronattus abditus* (Salticidae), *Theridion sinaloa* (Theridiidae), and *Zelotes union* (Gnaphosidae) are described only from males, while *Dictyna sinaloa* (Dictynidae), *Psilochorus sinaloa* (Pholcidae), *Drassyllus gammus* and *Drassyllus villus* (Gnaphosidae), *Novalena sinaloa* (Agelenidae), *Scytodes atlatonin* (Scytodidae) are described only from females. *Plectreurys ardea* (Plectreuridae) is an obscure species described with immature specimens, known only from Concordia, Sinaloa.

Introduced and synanthropic species. Eleven species belonging to 10 genera and five families (Table 1) have been introduced in Sinaloa and Mexico; none of these are naturally distributed in North America. Salticidae is represented by four introduced species, followed by Pholcidae (3 species), Theridiidae (2), Sparassidae (1), and Oonopidae (1). Among these introduced species, eight exhibit synanthropic habits (Table 1). The exception is *Physocyclus globosus* Taczanowski, 1874, the only native North American species found with synanthropic behavior (Table 1).

Spiders of medical-toxicological importance. Only four spiders belonging to two genera and two families are species of medical-toxicological importance. The violin spiders, *Loxosceles seri* Gertsch & Ennik, 1983 and *Loxosceles sonora* Gertsch & Ennik, 1983 of the family Sicariidae. The widow spiders, *Latrodectus geometricus* C. L. Koch, 1841 and *Latrodectus hesperus* Chamberlin & Ivie, 1935 of the family Theridiidae.

Species under special protection. *Brachypelma emilia* (White, 1856), better known as the Mexican red-legged tarantula, is the only species categorized as threatened in Sinaloa. This species, as well as other *Brachypelma* species, is under special protection in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Official Mexican Standard NOM-059-SEMARNAT-2010 (DOF, 2010).

New records

Family: Anyphaenidae Bertkau, 1878

Genus: *Hibana* Brescovit, 1991

***Hibana incursa* (Chamberlin, 1919)**

Figs. 5–8

Material examined. MEXICO: Sinaloa, Ahome, Los Mochis, Plazuela 27 de September, 25.789967°N, 108.998099°W, 14 m a.s.l, 19 August 2023, J. Alcántar *leg*., manual collection in a park, 1 ♂, CARCIB-Ar-5128.

Distribution. USA to Panama (World Spider Catalog, 2024). In Mexico, it has been previously recorded from Baja California, Baja California Sur, Chiapas, Chihuahua, Guerrero, Hidalgo, Morelos, Oaxaca, San Luis Potosí, Sonora, and Tamaulipas (Brescovit, 1991; Platnick, 1974).

Remarks. This species has a distinctive sharp point on the retrolateral tip of the tegulum and a sharp point underlying embolus (compare Figs. 7–8 and Platnick, 1974: figs. 114–115). This finding constitutes the first record in Sinaloa.

Family: Diguetidae F. O. Pickard-Cambridge, 1899

Genus: *Diguetia* Simon, 1895

***Diguetia* sp.**

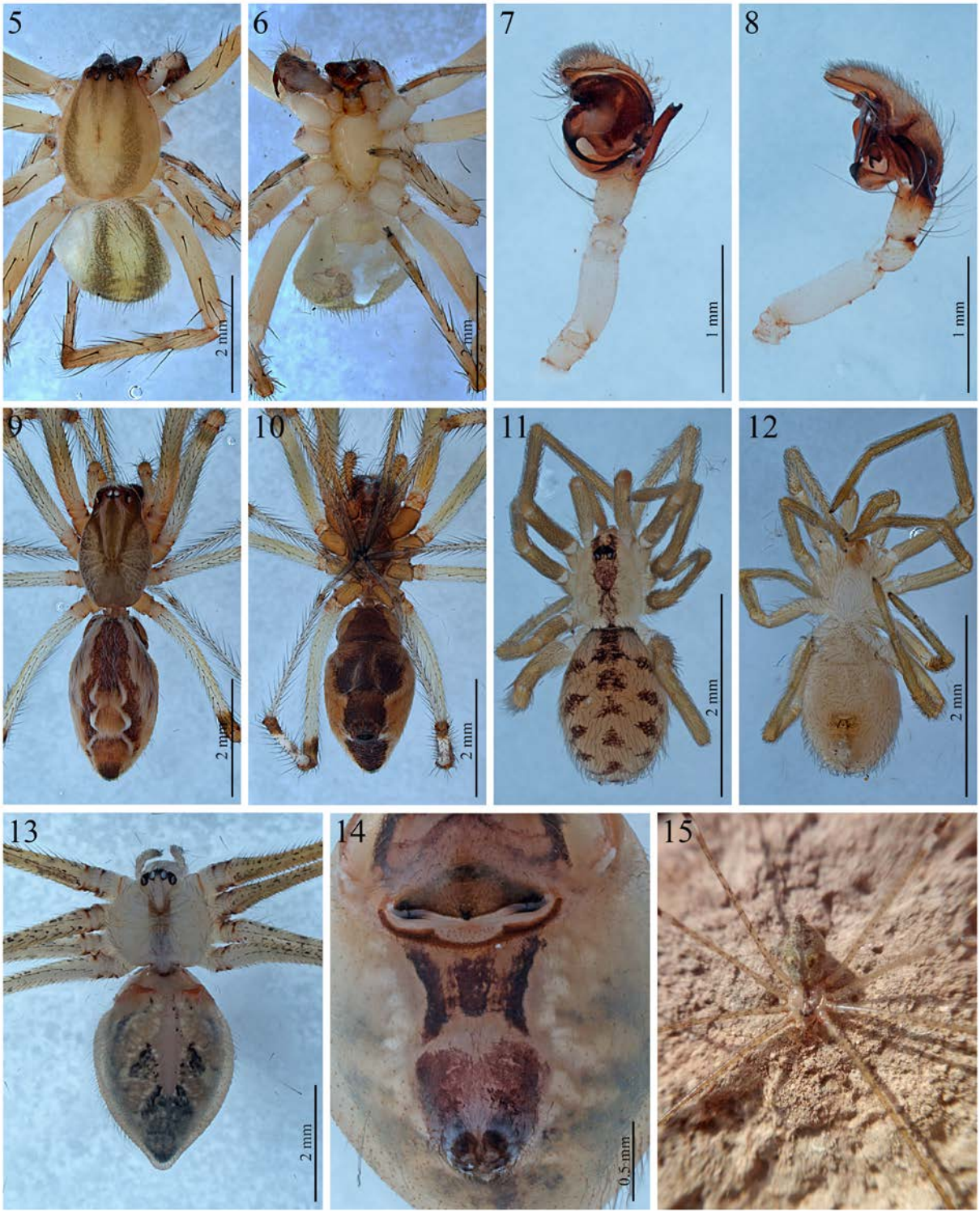
Figs. 9–10

Material examined. MEXICO: Sinaloa, Guasave, Isla Nescoco, 25.492319°N, 108.881087°W, 7 m a.s.l, 28 August 2023, J. Alcántar *leg.*, manual collection in low tropical deciduous forest, 1 juvenile, CARCIB-Ar-5129.

Distribution. United States, Mexico, and Argentina (World Spider Catalog, 2024). In Mexico, this genus has been previously recorded in Baja California, Baja California Sur, Ciudad de México, Chihuahua, Coahuila, Durango, Guerrero, Jalisco, Michoacán, Nuevo León, Puebla, Sonora, and Tamaulipas (Jiménez *et al*., 2022b).

Remarks. Among the two Diguetidae genera, *Diguetia* is easily distinguishable by the presence of thick, white setae on both prosoma and opisthosoma, and its characteristic behavior of spinning aerials webs with vertical retreats (Jiménez *et al*., 2022b). The specimen examined was found inside

its silk retreat on a dead bush, with its web positioned very close to the ground. Due to the specimen being immature, identification to the species level was not possible. This finding fills the distribution gap of the genus in northwestern Mexico.



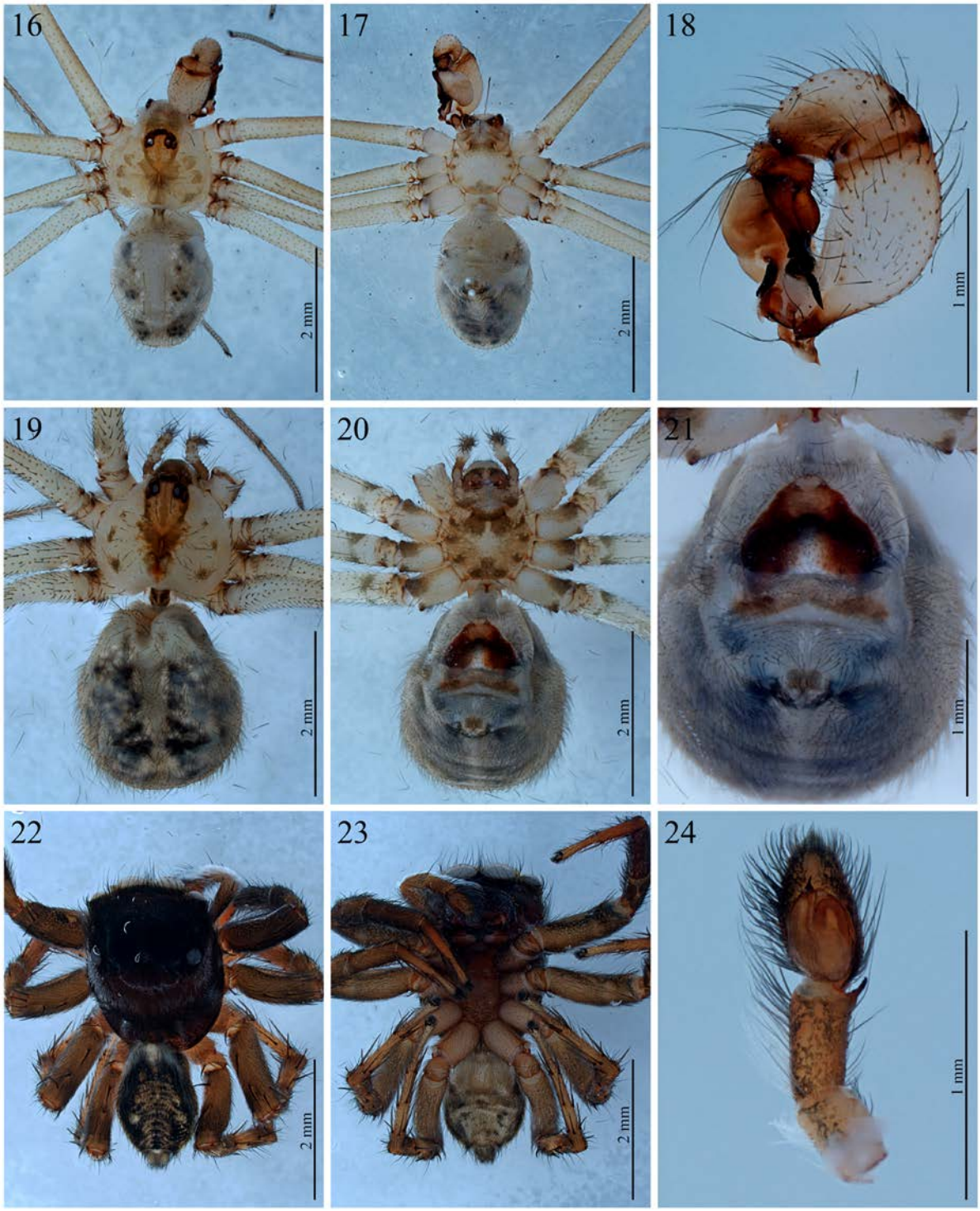
Figures 5–15. *Hibana incursa*. **5–8. 5.** Habitus male, dorsal view. **6.** Same, ventral view. **7.** Male palp, ventral view. **8.** Same, retrolateral view. *Diguetia* sp. **9–10. 9.** Habitus, dorsal view. **10.** Same, ventral view. *Filistatoides* sp. **11–12. 11.** Habitus, dorsal view. **12.** Same, ventral view. *Crossopriza lyoni*. **13–15. 13.** Habitus female, dorsal view**. 14.** Epigynum, ventral view. **15.** Habitus female in situ, dorsal view.

Family: Filistatidae Ausserer, 1867
Genus: *Filistatoides* F. O. Pickard-Cambridge, 1899
***Filistatoides* sp.**
Figs. 11–12
Material examined. MEXICO: Sinaloa, Ahome, José María Robles, 25.981285°N, 109.042989°W, 37 m a.s.l, 2 September 2023, J. Alcántar *leg.*, manual collection in low tropical deciduous forest, 1 juvenile, CARCIB-Ar-5130.
Distribution. Cuba, Guatemala, and Mexico (World Spider Catalog, 2024). In Mexico, it has been previously known from Chiapas, Guanajuato, and Sonora (Brescovit *et al*., 2016; García-Villafuerte & Brescovit, 2019; Gómez-Moreno *et al*., 2023).
Remarks. *Filistatoides* is distinguished from other North American genera by its elongated carapace with a dark stripe, an abdomen with purplish chevrons, and legs concolorous (Ubick *et al*., 2017). Also, males have a long embolus with short paraembolic lamina, while females possess paired receptacle with large base (Brescovit *et al*., 2016). While the examined specimens are potentially conspecific with the undescribed Sonoran species identified by Gómez-Moreno *et al*. (2023), confirmation require comparison with mature specimens. This finding represents the first record of the genus in Sinaloa.

Family: Pholcidae C. L. Koch, 1850
Genus: *Crossopriza* Simon, 1893
***Crossopriza lyoni* (Blackwall, 1867)**
Figs. 13–15
Material examined. MEXICO: Sinaloa, Ahome, San José de Ahome, 25.937187°N, 109.259583°W, 13 m a.s.l., 15 July 2023, J. Alcántar *leg*., manual collection inside house, 1 ♀, CARCIB-Ar-5131; Cerro de "La Memoria", Los Mochis, 25.804925°N, 108.969358°W, 42 m a.s.l, 22 February 2022, J. Alcántar *leg*., manual collection in low tropical deciduous forest, 1♀, CARCIB-Ar-5132.
Distribution. Probably native to Africa and/or Asia. Introduced to the Americas, Belgium, Germany, Australia, Micronesia (World Spider Catalog, 2024; Huber, 2022). Within Mexico, it was previously known only from Guerrero (Rodríguez-Rodriguez *et al*., 2015).
Remarks. This species can be distinguished from congeners by its short epigyne and elongated pore plates (compare Fig. 14 and Huber, 2022: figs. 796, 798). While photographic records on the iNaturalista platform (the citizen science platform) potentially suggest widespread distribution in Mexico, verification through voucher specimens is crucial. Most published records lacks supporting evidence (illustrations or photographs) and originated from grey literature. This finding represents the first record of this synanthropic species in Sinaloa, where was usually found in both low tropical deciduous and houses.

Genus: *Physocyclus* Simon, 1893
***Physocyclus globosus* (Taczanowski, 1874)**
Figs. 16–21
Material examined. MEXICO: Sinaloa, Ahome, Los Mochis, 25.824039°N, 108.999263°W, 13 m a.s.l., 12 July 2023, J. Alcántar *leg*., manual collection inside a house, 1 ♂, CARCIB-Ar-5133; El Aguajito, 25.961904°N, 109.331931°W, 6 m a.s.l., 15 July 2023, J. Alcántar *leg*., manual collection inside a house, 1 ♀, CARCIB-Ar-5134.
Distribution. North America, introduced to Africa, Australia, China, Czechia, Galapagos, Indonesia, Iran, Japan, Mexico, Pacific Islands, Philippines, and Sri Lanka (World Spider Catalog, 2024). In

Mexico, was previously known from Estado de México (Durán-Barrón, 2004; Desales-Lara *et al*., 2013), Baja California Sur (Banks, 1898; Jiménez, 1998), Ciudad de México, Yucatán (Valdez-Mondragón, 2010), Chiapas, Colima, Guerrero, Jalisco, Oaxaca, Quintana Roo, San Luis Potosí, Veracruz (Gertsch & Davis, 1942), Tabasco (Pickard-Cambridge, 1902), and Tamaulipas (Gómez-Rodríguez *et al*., 2014).



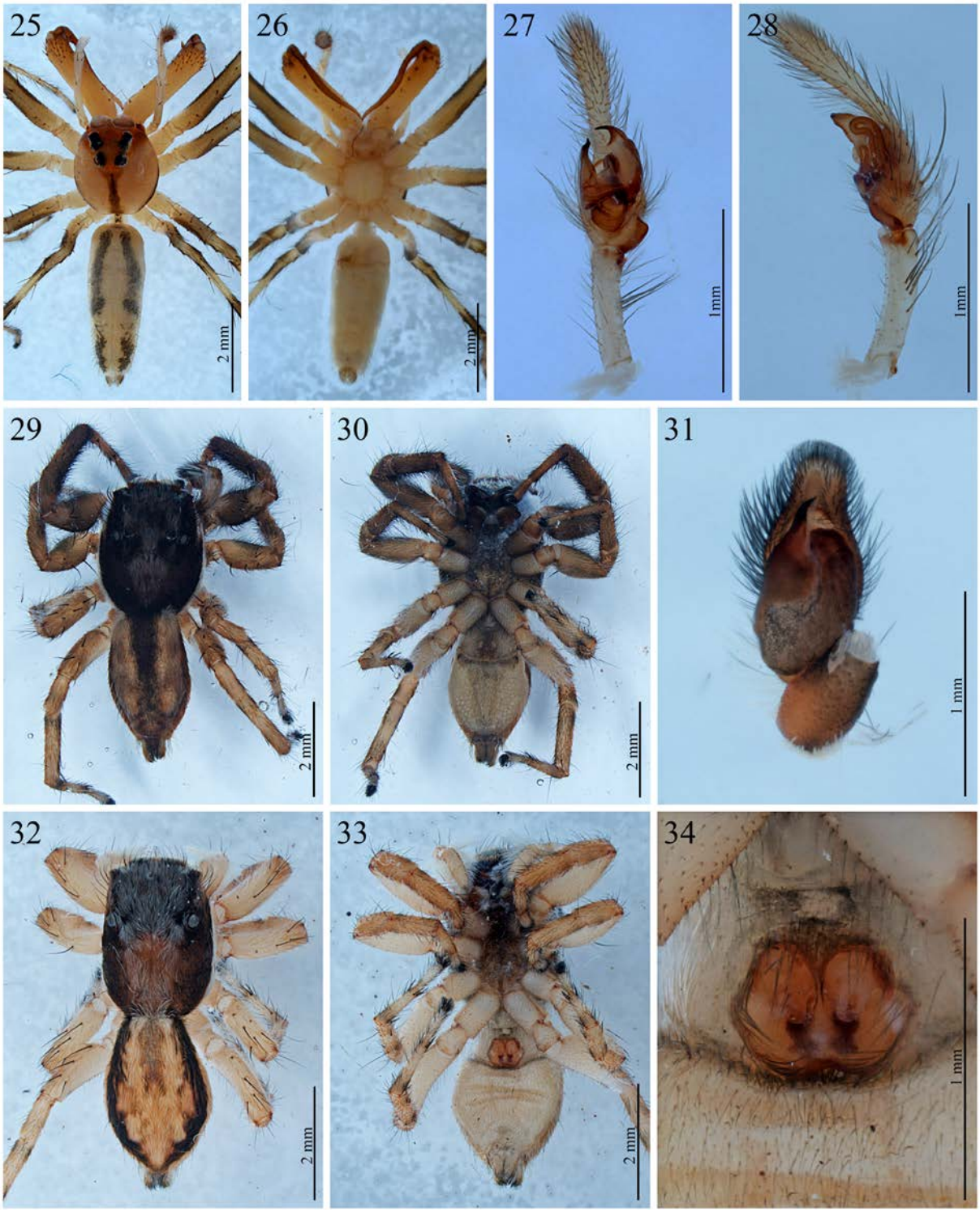
Figures 16–24. *Physocyclus globosus* **16–21. 16.** Habitus male, dorsal view. **17.** Same, ventral view. **18.** Male palp, retrolateral view. **19.** Habitus female, dorsal view. **20.** Same, ventral view. **21.** Epigynum, ventral view. *Hasarius adansoni* **22–24. 22.** Habitus male, dorsal view. **23.** Same, ventral view. **24.** Male palp, ventral view.

Remarks. Males are distinguishable by the combination of crescent-shaped embolic sclerites and ventral notch of embolus (compare Fig. 18 and Valdez-Mondragón, 2010: fig. 44), while females are characterized by subtriangular epigyne in ventral view, epigynal plate with pronounced curvature in lateral view (compare Fig. 21 and Valdez-Mondragón, 2010: figs. 46, 48). This finding constitutes the first record in Sinaloa.

Family: Salticidae Blackwall, 1841
Genus: *Hasarius* Simon, 1871
***Hasarius adansoni* (Audouin, 1826)**
Figs. 22–24
Material examined. MEXICO: Sinaloa, Ahome, Los Mochis, 25.824011°N, 108.999304°W, 13 m a.s.l, 3 August 2023, J. Alcántar *leg.*, manual collection in garden house, 1 ♂, CARCIB-Ar-5135.
Distribution. Africa, Middle East, introduced to America, Australia, China, Europe, India, Japan, Laos, Pacific Islands, Taiwan, and Vietnam (World Spider Catalog, 2024). In Mexico, it was previously known only from Guerrero (Rodríguez-Rodríguez *et al*., 2015).
Remarks. The sole representative of the genus *Hasarius* in Mexico, *H. adansoni* is distinguishable by its short, robust, triangular embolus (compare Fig. 24 and Pupin & Brescovit, 2023: fig. 21). While Richman & Cutler (1988) mentioned its presence in Mexico, confirmed records were lacking. Therefore, this finding constitutes the first record in Sinaloa. While multiple photographic records exist on iNaturalista, including sightings from various localities in Sinaloa, these require verification through voucher specimens.

Genus: *Lyssomanes* Hentz, 1845
***Lyssomanes mandibulatus* F. O. Pickard-Cambridge, 1900**
Figs. 25–28
Material examined. MEXICO: Sinaloa, Ahome, Cohuibampo, 25.941974°N, 109.160363°W, 14 m a.s.l., 4 July 2023, A. Cota *leg*., manual collection inside a house, 1 ♂, CARCIB-Ar-5136.
Distribution. Costa Rica (Logunov & Marusik, 2003), Guatemala, Mexico, and Panamá (Galiano, 1980). In Mexico, was previously known from Tabasco (Pickard-Cambridge, 1900), Jalisco (Logunov, 2014), Guerrero, and Oaxaca (Galvis, 2020).
Remarks. Males of *L. mandibulatus* are similar to those of *L. pescadero* Jiménez & Tejas, 1993 in coloration, but can be distinguished by the shape of the bulb in lateral view (compare Figs. 27–28 and Galiano, 1980: figs. 92–93), shape of median process and embolus, number of cheliceral teeth, and leg spination (Jiménez & Tejas, 1993). This finding constitutes the first record in Sinaloa.

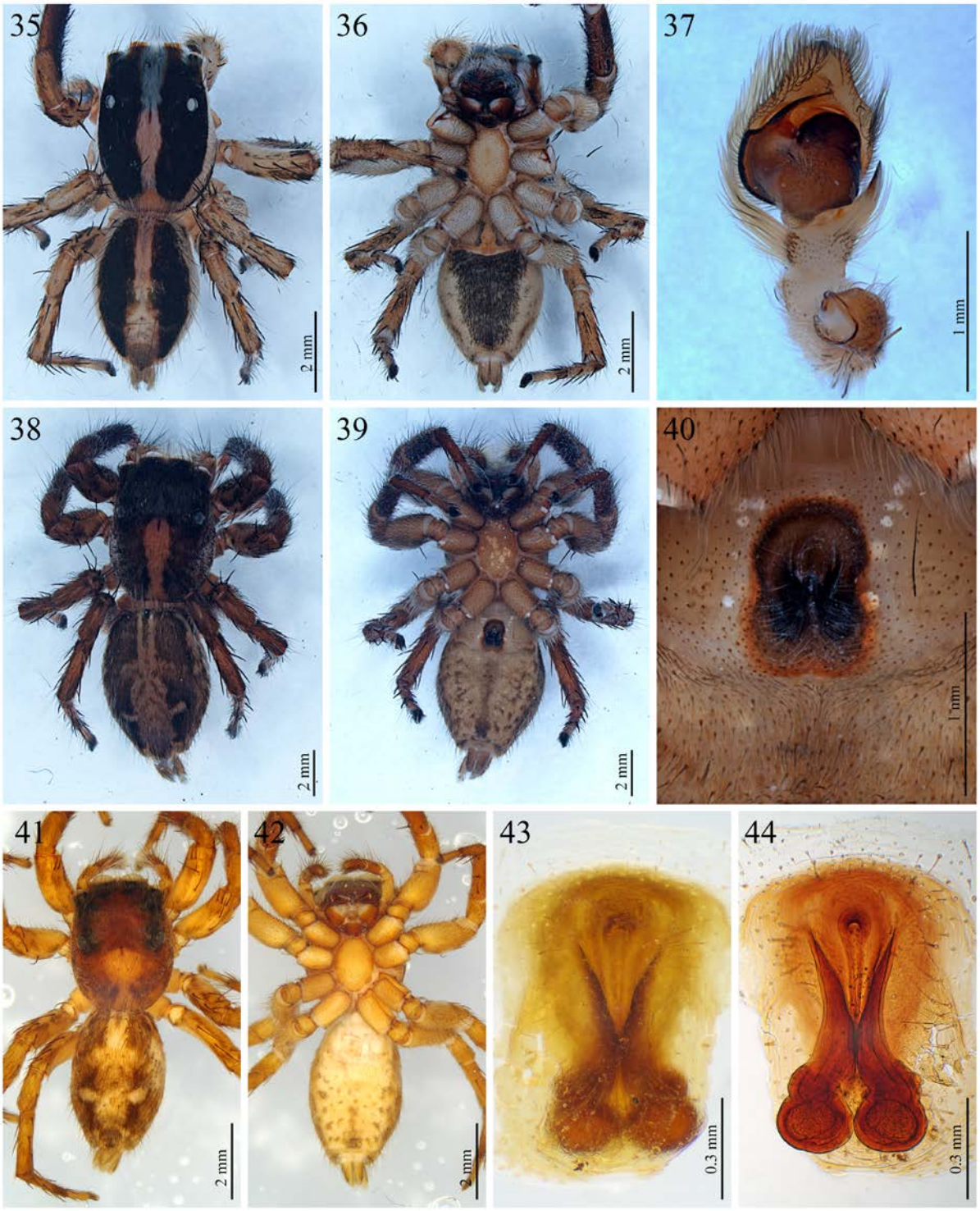
Genus: *Menemerus* Simon, 1868
***Menemerus bivittatus* (Dufour, 1831)**
Figs. 29–34
Material examined. MEXICO: Sinaloa, Ahome, El Aguajito, 25.961904°N, 109.331931°W, 6 m a.s.l., 15 July 2023, J. Alcántar *leg*., manual collection outside of house in a guava tree, 1 ♂, CARCIB-Ar-5137; Jardín Botánico Benjamin F. Johnston, 25.789226°N, 109.005850°W, 12 m a.s.l, 24 August 2023, J. Alcántar *leg*., manual collection inside of house, 1 ♀, CARCIB-Ar-5138.
Distribution. Africa, introduced to North, Central and South America, southern Australia, Europe, China, India, Japan, Pacific Islands, Taiwan, and Turkey (World Spider Catalog, 2024). In Mexico, was previously known from Baja California, Campeche, Guerrero, Quintana Roo, Sonora, Tabasco, and Veracruz (Hoffmann, 1976).



Figures 25–34. *Lyssomanes mandibulatus*. **25**–**28**. **25**. Habitus male, dorsal view. **26**. Same, ventral view. **27**. Male palp, ventral view. **28**. Same, retrolateral view. *Menemerus bivittatus*. **29**–**34**. **29**. Habitus male, dorsal view. **30**. Same, ventral view. **31**. Male palp, ventral view. **32**. Habitus female, dorsal view. **33**. Same, ventral view. **34**. Epigynum, ventral view.

Remarks. Males of *M. bivittatus* can be distinguished by the narrower bulbus and the shape of embolus and retrolateral apophysis (Wesołowska, 1999), while females by the large anterior epigynal atrium, and short median septum and copulatory ducts (compare Figs. 31, 34 and Pupin

& Brescovit, 2023: figs. 9, 11). While this cosmopolitan species has numerous sightings in several locations of northwestern Mexico, voucher specimens are required to confirm its widespread distribution in the country. This finding represents the first record in Sinaloa.



Figures 35–44. *Plexippus paykulli*. **35–40. 35.** Habitus male, dorsal view. **36.** Same, ventral view. **37.** Male palp, ventral view. **38.** Habitus female, dorsal view. **39.** Same, ventral view. **40.** Epigynum, ventral view. *Plexippus petersi*. **41–44. 41.** Habitus female, dorsal view. **42.** Same, ventral view. **43.** Epigynum, ventral view. **44.** Same, dorsal view.

Genus: *Plexippus* C. L. Koch, 1846

***Plexippus paykulli* (Audouin, 1826)**

Figs. 35–40

Material examined. MEXICO: Sinaloa, Ahome, El Aguajito, 25.961893°N, 109.331964°W, 6 m a.s.l., 15 July 2023, J. Alcántar *leg*., manual collection outside a house, 1 ♂, CARCIB-Ar-5139; Los Mochis, 25.824100°N, 108.999312°W, 14 m a.s.l., 17 July 2023, J. Alcántar, D. Alcántar *leg*., manual collection inside a house, 1 ♀, CARCIB-Ar-5140.

Distribution. Africa, introduced to America, Europe, Middle East, Nepal, southern Asia, Australia, Pacific islands (World Spider Catalog, 2024). In Mexico, previously known from Baja California Sur (Jiménez, 1998), Ciudad de México (Durán-Barrón *et al*., 2009), Estado de México (Durán-Barrón, 2004), Guerrero (Hoffmann, 1976; Rodríguez-Rodríguez *et al*., 2015), and Tamaulipas (Gómez-Rodríguez *et al*., 2014).

Remarks. Males can be distinguished by a long and robust retrolateral tibial apophysis, thinned embolus, and relatively shorter tegular apophysis. Females have an epigynum with an oval plate and with lateral edges approaching each other at the base and separated in the distal part (compare Figs. 37, 40, and Pupin & Brescovit, 2023: figs. 3, 5). This finding constitutes the first record in Sinaloa.

***Plexippus petersi* (Karsch, 1878)**

Figs. 41–44

Material examined. MEXICO: Sinaloa, Mazatlán, Colonia Benito Juárez, 23.249362°N, 106.41116°W, 6 m a.s.l, 1995, without collector, manual collection outside a house, 1 ♀, CARCIB-Ar-5127.

Distribution. Asia. Introduced to Africa and Pacific islands (World Spider Catalog, 2024).

Remarks. This species is close to *Plexippus paykulli* (Audouin, 1826), but can be differentiated by having a longer and narrower epigynum, and shorter insemination ducts (compare Figs. 43–44 and Żabka & Gardzińska, 2017: figs. 4D, 4F). This finding constitutes the first confirmed record of *P. petersi* in the Americas. While photographic records on the iNaturalista platform potentially suggest its presence in Guerrero, Nayarit, Oaxaca, Sinaloa, and Yucatán (iNaturalista, 2024), these records lack voucher specimens and require verification for conclusive identification. Therefore, the species' potential widespread distribution in Mexico remains unconfirmed until further investigation.

Family: Sparassidae Bertkau,1872

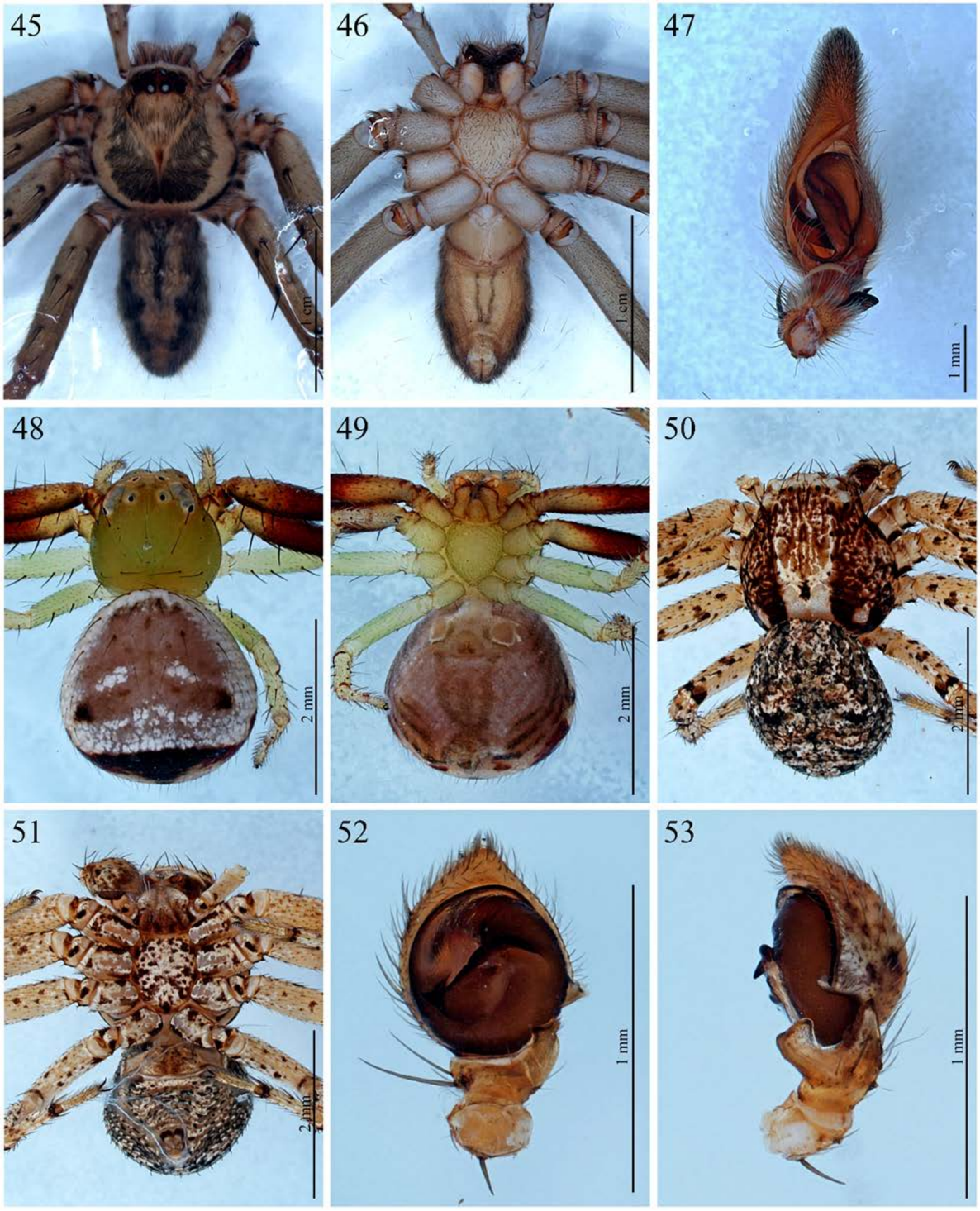
Genus: *Heteropoda* Latreille, 1804

***Heteropoda venatoria* (Linnaeus, 1767)**

Figs. 45–47

Material examined. MEXICO: Sinaloa, Ahome, El Aguajito, 25.957524°N, 109.330570°W, 7 m a.s.l., 15 July 2023, J. Alcántar *leg*., manual collection outside a house, 1 ♂, CARCIB-Ar-5141.

Distribution. Tropical Asia, introduced to Africa, Europe, Macaronesia, North, Central, and South America, and Pacific Is. (World Spider Catalog, 2024). In Mexico, previously known from Baja California Sur (Jiménez, 1998), Baja California, Chiapas, Guerrero, Nayarit, Quintana Roo, Veracruz (Hoffmann, 1976), and Tamaulipas (Gómez-Rodríguez *et al*., 2014).



Figures 45–53. *Heteropoda venatoria*. **45–47. 45.** Habitus male, dorsal view. **46.** Same, ventral view. **47.** Male palp, ventral view. *Synema* sp. **48–49. 48.** Habitus, dorsal view. **49.** Same, ventral view. *Xysticus lassanus*. **50–53. 50.** Habitus male, dorsal view. **51.** Same, ventral view. **52.** Male palp, ventral view. **53.** Same, retrolateral view.

Remarks. Males can be distinguished by the two tooth-like projections on the retrolateral tibial apophysis (compare Fig. 47 and Jäger, 2014: fig. 1). This finding constitutes the first record in Sinaloa.

Family: Thomisidae Sundevall, 1833
Genus: *Synema* Simon, 1864
***Synema* sp.**
Figs. 48–49
Material examined. MEXICO: Sinaloa, Guasave, Isla San Ignacio, 25.415605°N, 108.851213°W, 2 m a.s.l, 28 August 2023, J. Alcántar *leg.*, manual collection in coastal scrub, 1 juvenile, CARCIB-Ar-5142.
Distribution. Africa, Asia, Europe, North America, South America, and Oceania (World Spider Catalog, 2024). In Mexico, previously known from Estado de México (Jiménez, 1988), Morelos, Nayarit, Tabasco, Veracruz (F. O. Pickard-Cambridge, 1900), and Tamaulipas (Gómez-Rodríguez & Salazar, 2012).
Remarks. This genus can be distinguished by having the carapace strongly convex and tarsal claws of forelegs with six to twelve teeth (Gertsch, 1939). The specimen examined was found on leaves of *Jatropha cinerea* (Ortega) Müll.Arg. (Euphorbiaceae) in coastal scrub. This finding represents the first record of the genus in Sinaloa.

Genus: *Xysticus* C. L. Koch, 1835
***Xysticus lassanus* Chamberlin, 1925**
Figs. 50–53
Material examined. MEXICO: Sinaloa, Ahome, Cañón del Diablo, Sierra de Barobampo, 26.029711°N, 109.032640°W, 86 m a.s.l, 27 June 2022, J. Alcántar *leg.*, manual collection in low tropical deciduous forest, 1 ♂, CARCIB-Ar-5143.
Distribution. United States and Mexico (World Spider Catalog, 2024). In Mexico, it was previously known only from Chihuahua (Gertsch, 1953) and Baja California Sur (Jiménez, 2004).
Remarks. Males of *X. lassanus* can be distinguished by their strongly sclerotized median and distal apophyses, with the median one attached near the middle of the tegulum (see Figs. 52–53, and compare with Gertsch, 1939: fig. 124). The specimens examined were found in leaflitter and small logs, while Jiménez (2004) reported finding them in soil of sarcocaule and xeric scrubs. According to Jiménez (2004) the Chihuahuan records of *X. lassanus* is dubious. This finding represents the first record in Sinaloa.

DISCUSSION

This study increases the documented spider diversity in Sinaloa to 31 families (previously 29 families), 82 genera (previously 63 genera), and 118 species (previously 93 species). This represents an approximately 12% increase in documented species richness compared to Ponce-Saavedra *et al*. (2023). The families Diguetidae and Thomisidae are newly recorded for Sinaloa, while *P. petersi* is first recorded for the American continent.

Six newly recorded species are identified as synanthropic and introduced: *C. lyoni*, *H. adansoni*, *M. bivittatus*, *P. paykulli*, *P. petersi*, and *H. venatoria*. These widely distributed species in Mexico are primarily found indoors. Conversely, *H. incursa*, *P. globosus*, and *X. lassanus* are identified as native species of America with broad distributions. Furthermore, *Diguetia* sp. and *Filistatoides* sp. may represent undescribed species because they do not resemble the current known species (*pers. obs.*). However, mature specimens of these two taxa are necessary for confirmation and identification. As emphasized by Ponce-Saavedra *et al*. (2023), further studies are crucial to document the distribution of synanthropic species and understand their potential impact on native spiders. While numerous photographic records exist across the country, primarily

on citizen science platforms, documenting these synanthropic species requires genital photographs or voucher specimens deposited in recognized collections.

Among the documented species, at least 17 (14% of the total) are considered to have restricted distribution in Sinaloa. This highlights the need for further investigations to expand our knowledge of spider diversity in the state. Undoubtedly, increased sampling efforts would likely yield additional species records and undescribed species for the state and surrounding region. For instance, recent and ongoing spider surveys in Sonora, a neighboring state to the north, have resulted in a significant increase in documented species richness (Jiménez *et al*., 2022a; Ponce-Saavedra *et al*., 2023; Gómez-Moreno *et al*., 2023). Furthermore, neighboring states such as Sonora, Baja California, and Baja California Sur possess at least double the number of documented spider species compared to Sinaloa. This also suggests that the spider diversity of Sinaloa has the potential to reach similar levels with further research.

This study highlights the remarkable diversity of spiders in Sinaloa and emphasizes the critical need for further research to comprehensively document the spider richness of the state and northwestern Mexico. Future efforts should prioritize comprehensive inventories in natural protected areas and agroecosystems, as well as in urban environments to study synanthropic species.

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