

COMMENTS AND NEW RECORDS FOR THE AMERICAN GENERA *GEA* AND *ARGIOPE* WITH THE DESCRIPTION OF A NEW SPECIES (ARANEAE: ARANEIDAE)

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ABSTRACT. There are one species of *Gea* and seven species of *Argiope* in the Americas. Distributions of *Gea* and *Argiope* species are recorded with new records from South America. Only one new species, *A. ericae*, from southern Brazil to northern Argentina, was found and is here described. The coloration of the female abdomen of *Argiope* species differs more than the visible differences of the genitalia. Males are separated by differences in palpi, the attachment of the embolus to stipes, and the shape of the coiled embolus.

INTRODUCTION

In 1968, I started my araneid revisions with the genera *Gea* and *Argiope*. These genera were first because they are the most distinct of the araneid genera, separated from most others by the presence of a procurved posterior eye row. At the time, I had mostly North American collections from the MCZ and AMNH. The individual variation among specimens was astonishing, especially in the structure of the epigynum (these are not again illustrated here). At the time, Willis Gertsch (personal communication) stressed that species could not be variable; when differences were found, they must indicate two species. I disagreed because when many specimens were examined, there were intermediates. These were the taxonomic issues of arachnologists in the 1960s.

This is an update of the 1968 revision. Since 1968, many additional South American specimens have become available, begging to be examined, especially in view

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of today's better understanding of variation. When I started this revision I expected several species to be new, but I found only one. In the 1960s lack of funds limited the amount of data that could be included in the paper, so the localities of specimens were omitted, represented only by dots on a map. Although lengthy, both new localities and disposition of specimens are provided here, much abbreviated for common species, except for southern border specimens. I have not repeated information published in 1968, except that essential for maps and diagnoses.

At present, I have revised most American araneid genera and have examined the *Argiope* of the Pacific area (Levi, 1983). The Chinese *Argiope* have been illustrated by Yin (1997), the African species by Bjørn (1997), and the Mideastern species by Levy (1998).

METHODS

The methods used here were the same as in the revisions of other American araneid genera (Levi, 1993).

Specimens came from the following collections:

AMNH	American Museum of Natural History, New York, United States; N. Platnick, L. Sorkin
BMNH	Natural History Museum, London, England; J. Beccaloni
CAS	California Academy of Sciences, San Francisco, California,

	United States; C. Griswold, D. Ubick
FSCA	Florida State Collection of Arthropods, Gainesville, Florida, United States; G. B. Edwards
IBSP	Instituto Butantan, São Paulo, Brazil; A. Brescovit
IRSNB	Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium; L. Baert
MACN	Museo Argentino de Ciencias Naturales, Buenos Aires, Argentina; C. L. Scioscia
MCN	Museu de Ciências Naturais, Fundação Zoobotânica do Rio Grande do Sul, Porto Alegre, Rio Grande do Sul, Brazil; E. H. Buckup, M. A. L. Marques
MCP	Museu de Ciências, Pontifícia Universidade Católica do Rio Grande do Sul, Porto Alegre, Rio Grande do Sul, Brazil; A. A. Lise
MCZ	Museum of Comparative Zoology, Cambridge, Massachusetts, United States
MHNMC	Museo de Historia Natural, Medellín, Colombia; L. A. Zamudio
MLP	Museo de La Plata, La Plata, Argentina; C. Ituarte, L. A. Pereira
MZSP	Museu de Zoologia, Universidade de São Paulo, São Paulo, SP, Brazil; R. Pinto da Rocha
SMNK	Staatliches Museum für Naturkunde Karlsruhe, Karlsruhe, Germany; H. Höfer
USNM	National Museum of Natural History, Smithsonian Institution, Washington, D.C., United States; J. Coddington, S. F. Larcher
ZMUC	Zoologisk Museum, Copenhagen, Denmark; N. Scharff

RESULTS

Species Characters. The eye arrangement, procurved posterior eye row, and

structure of the male palpus place *Gea* close to *Argiope*.

Females of *Argiope* are easiest to determine by their coloration as epigyna of many are quite similar (Levi, 1968). This differs from Bjørn's (1997) observations of African *Argiope*, which show much greater differences in genitalia as well as coloration. Extracting the broken male embolus tip stuck in the copulatory ducts inside of the epigynum is helpful for determining females in faded specimens.

Males of *Argiope* can be separated by examining the palpus. The palpi of most species are much alike, differing, however, in the attachment of the embolus to the stipes (arrow, Fig. 25) and the shape and structure of the curved embolus.

The relatively small differences between *Argiope* species in morphology of the genitalia and the consistent differences in coloration of the abdomen reminds one of similar differences in the theridiid widow spiders, *Latrodectus* (Abalos, 1980). Both genera also have a long, thread-shaped embolus that breaks off and plugs the epigynum. In both genera, relatively common species have been overlooked in well-collected areas.

Gea heptagon is probably introduced from the South Pacific where it and other species of *Gea* are found. There are seven species of *Argiope* in the Americas, one in Europe, 13 in Africa and Madagascar, and about 29 in China. Only one, *A. trifasciata*, is cosmopolitan. The similarity of genitalia suggests all but *A. aurantia* are close to *A. trifasciata*.

TAXONOMIC SECTION

Gea C. L. Koch

Gea C. L. Koch, 1843: 101. Type species *Gea spinipes* C. L. Koch, 1843: 101, pl. 823, from the East Indies.

Diagnosis. *Gea* species, together with those of *Argiope*, differ from most araneid genera by having the posterior eye row strongly procurved, from *Mangora* by the low thoracic region of the carapace and by

lacking trichobothria on the third tibia, and from *Mecynogea* by the wider carapace and different structure of the palpus.

Gea specimens are smaller than *Argiope* and have larger posterior median eyes. In females of *Gea*, the eyes of the posterior eye row are almost equally spaced (Fig. 5), whereas in *Argiope*, the median eyes are closer to each other than to the laterals.

Gea heptagon (Hentz)

Maps 1A; Figures 1–8

Epeira heptagon Hentz, 1850: 20. Type specimens destroyed, from North Carolina and Alabama.

Gea heptagon:—Keyserling, 1892: 76, pl. 3, fig. 58. Levi, 1968: 324, figs. 1–24, ♀♂. Platnick, 2003.

Diagnosis. The small size of females, the shape of the abdomen (Figs. 4, 5), the epigynum with a ventral transverse slit and paired posterior openings (Figs. 1–3), and the male palpus with the embolus only gently curved, held by a large conductor (Fig. 8), distinguish the species from others. Differences of the first tibia are unreliable.

Variation. Total length of females 3.7–6.4 mm, males 2.6–4.1 mm. The color of the abdomen is variable. There may be transverse lines or a dark folium. The illustrations of a female (Figs. 1–5) were made from a specimen from Florida, male (Figs. 6–8) from a specimen from Honduras.

Natural History. Found in soybean field in Arkansas, in high grass in Florida. The female drops from the web when disturbed.

Distribution. Pacific, probably introduced to America and found from eastern United States and West Indies (Map 1A), probably to Argentina.

Additional Records. UNITED STATES, NORTH CAROLINA *Dare Co.*: Kill Devil Hills, 12 Sep. 1956, 1♀ (K. V. Krombein, USNM). GEORGIA *Bullock Co.*: Statesboro, 1984, ♀ (E. Dismar, USNM). *Chatham Co.*: Rt. 95, nr. South Carolina border, 1 Aug. 1985, ♀♂ (J. Coddington, USNM). ALABAMA *Dallas Co.*: Selma, ♀ (USNM). FLORIDA *Franklin Co.*: St. Teresa, 23 Mar. 1961, ♀ (J. Carico, USNM). *St. Lucie Co.*: Fort Pierce, ♀♂ (M. Mikkelsen, USNM); 7 Sep. 1985, ♀ (P. Mikkelsen, USNM). ARKANSAS

Chicot Co.: 29 Aug. 1962, ♀ (CAS). *Mississippi Co.*: Big Lake, 23 June 1966, ♂ (W. Peck, CAS). LOUISIANA *Cameron Par.*: Cameron, ♀ (USNM). OKLAHOMA *Garfield Co.*: Enid, 36°24'N, 97°54'W, 28 July 1989, ♀ (L. E. Anhorn, USNM). CALIFORNIA *San Diego Co.*: Del Mar, ♀ (M. Martinez, USNM); Los Angeles, ♀♂ (USNM). MEXICO *San Luis Potosí*: Huichihuayan, 98°50'N, 21°19'W, 24 July 1966, ♂ (J. W. Ivie, AMNH). HONDURAS *Atlantida*: Lancetilla, 20 July 1929, ♂ (A. M. Chickering, MCZ). *Copan*: Copan, 16 Feb. 1937, ♂ (MCZ). COSTA RICA *Turrialba*, 25–31 May 1962, ♀ (H. Ruckes, AMNH). PANAMA *Balboa*, 1 Aug. 1943, ♂ (J. B. Duncan, AMNH).

BAHAMA ISLANDS *Grand Bahama Island*, 13 May 1953, ♀ (L. Giovannoli, AMNH). DOMINICAN REPUBLIC *Ciudad Trujillo* [Santo Domingo], nest of *Sceliphron* wasp, 1947, ♀♂ (H. F. Allard, USNM). PUERTO RICO *SW Guayama*, Pta. Pozuela, 25 Dec. 1985, ♀ (V. B. Roth, CAS); *Aguas Bueno*, 5 Nov. 1971, imm. (J. Carico, USNM). VIRGIN ISLANDS *St. Croix*, 1–11 Sep. 1966, ♀ (A. M. Chickering, USNM).

COLOMBIA *Valle*: nr. Cali, 1,000 m elev., 1977, ♂ (W. Eberhard, MCZ); *Palmira*, 27 June 1964, ♂ (R. Hunter, CAS). ECUADOR *Guayaquil*, 22 Mar. 1942, ♂ (Landes, CAS). PERU *Piura*: Hiquéron, July 1941, ♂ (H. E., D. L. Frizzell, CAS). BRAZIL *Mato Grosso*: S. Antônio de Levergera, 8 Sep. 1992, ♀ (M. E. Marques, MCP 2558). *Rio Grande do Sul*: Guaíba, 1 Jan. 1989, ♀♂ (A. B. Bonaldo, MCN 18009); 24–27 Dec. 1992, ♀♂ (A. B. Bonaldo, MCN 22643); *Montenegro*, 7 July 1977, ♀ (H. A. Gastal, MCN 6177); *Porto Alegre*, 21 Sep. 1992, ♂ (A. Bonaldo, MCP 2051); *Taim*, *Rio Grande*, 18 Mar. 1982, ♂ (J. Grazia, MCN 10247); *Vila Nova*, 23 May 1991, ♀ (F. Garcia, MCP 2729); *Xangrila*, 5 Jan. 1993, 24 Feb. 1993, ♀ (A. A. Lise, MCP 2902, 2974). ARGENTINA Specimens have been examined from northern Argentina without recording the data.

Argiope Audouin

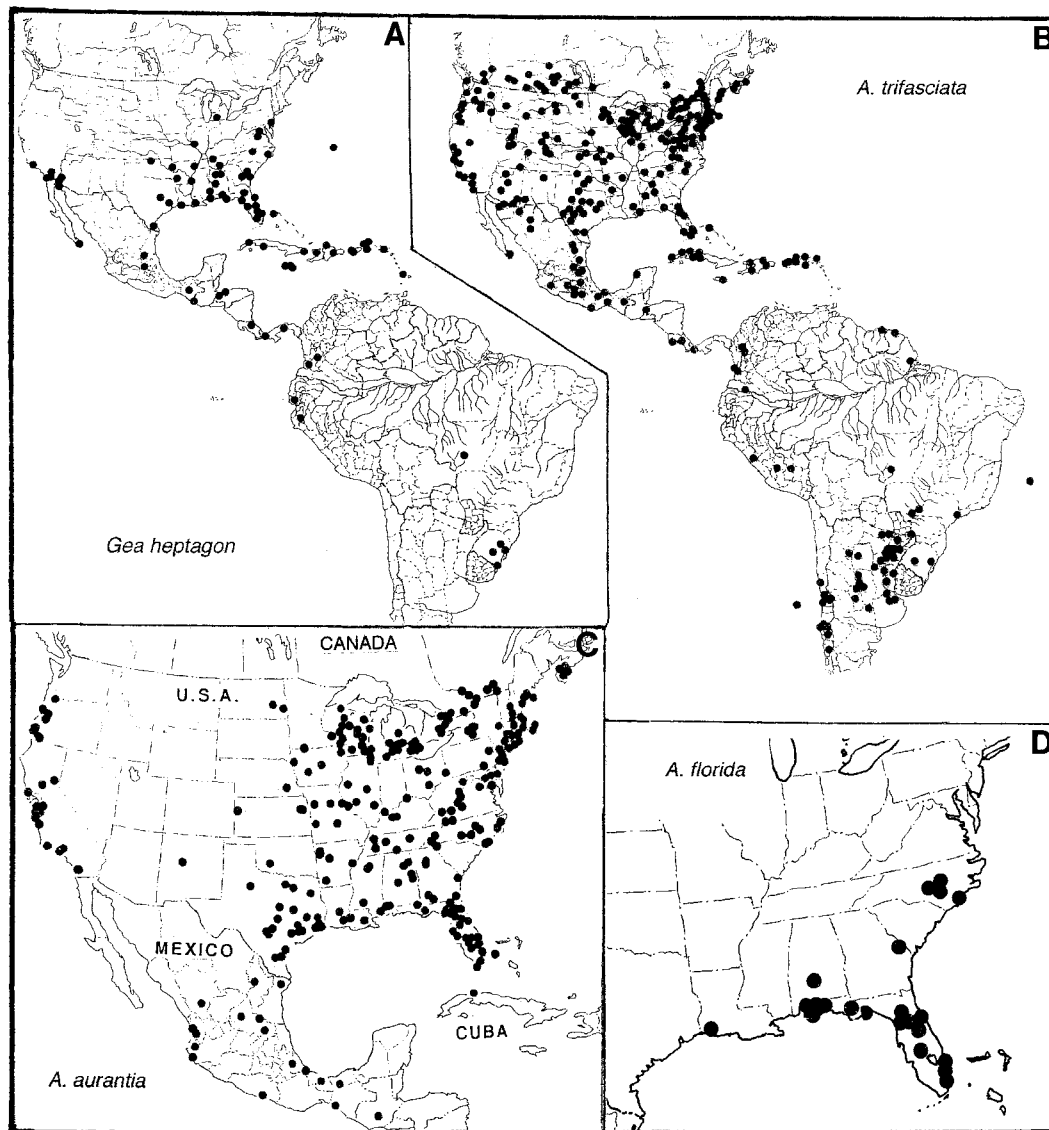
Argiope Audouin, 1826: 121. Type species designated by Thorell, 1869: 51, *Argiope lobata* from the Mediterranean and Africa.

Argiope Audouin, 1827: 328.

Miranda C. L. Koch 1835: 128, pl. 14. Type species *Miranda transalpina* C. L. Koch (= *Argiope bruennichi* (Scopoli)). First synonymized by Thorell, 1869: 51.

Metargiope F. P.-Cambridge, 1903: 451. Type species by monotypy *Argiope trifasciata*.

Note. The International Commission on Zoological Nomenclature (Opinion 1038, 1975: 105) validated the name *Argiope* Audouin, 1826, and placed it on the Official List of Generic Names in Zoology with the



Map 1. Distribution of *Gea* and *Argiope* species.

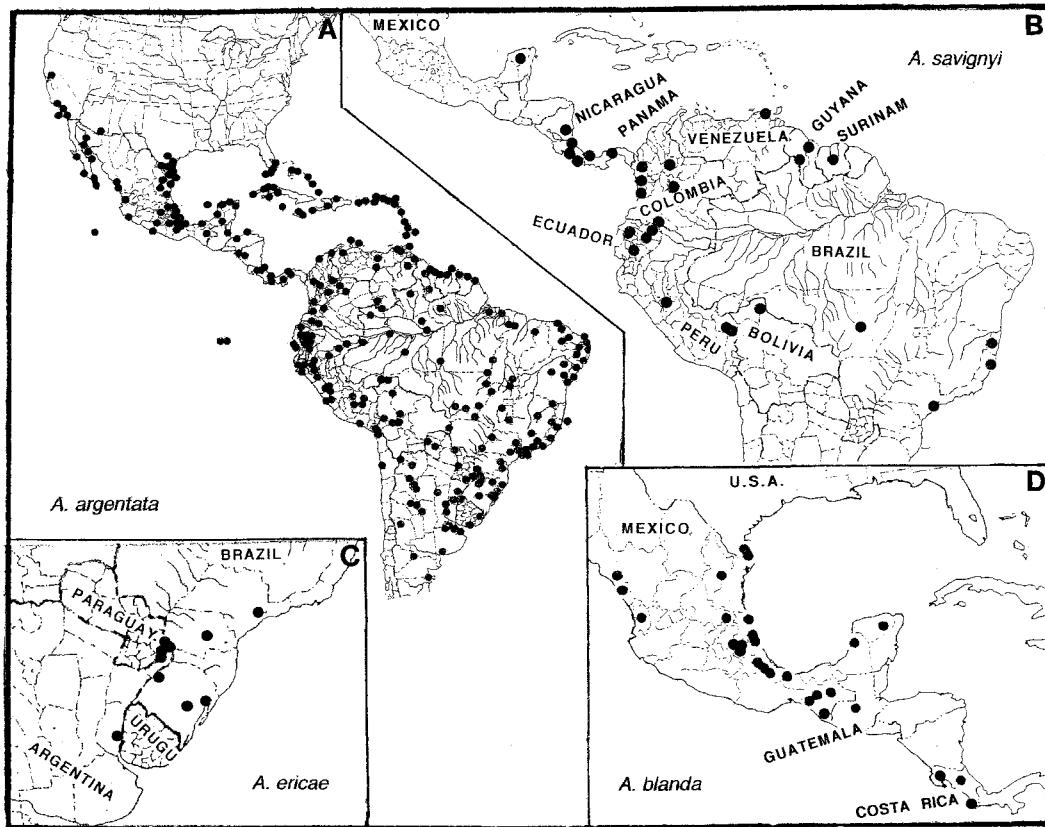
number 2009, and considered *Argyope* an incorrect spelling.

Diagnosis. *Argiope* and *Gea* differ from most araneids by having the posterior eye row procurved (Figs. 12, 14), from *Mangora* by their low thoracic region of the carapace and by lacking trichobothria on the third tibia, and from *Mecynogea* by a

wider carapace and a different structure of the palpus.

Argiope differs from *Gea* (Figs. 5, 7) by having the posterior median eyes smaller and closer to each other than to the laterals (Figs. 12, 14) and by females being larger (Fig. 12) than those of *Gea*.

Unlike most araneids, the epigynum of



Map 2. Distribution of *Argiope* species.

Argiope lacks a scape; it usually has a bulging hood with a cavity (Figs. 9, 10) or cavities below (Figs. 18, 20). The male palpus has a separate sclerite, the stipes, between the radix and embolus (Figs. 16I, 17I). The palpus lacks a terminal apophysis and has an elaborate conductor (Figs. 16C, 17C) supporting the embolus (Figs. 16E, 17E). A thin curved branch extends from the median apophysis (Figs. 16M, 17M).

KEY TO FEMALES

- | | |
|---|--|
| <p>1 Venter of abdomen with a central transverse white band (Figs. 39, 49) that may be broken (Fig. 58) 5</p> <p>– Venter of abdomen without central transverse band (Figs. 11, 21, 30) or lines (Fig. 67) on black 2</p> <p>2(1) Dorsum of abdomen with median black band (Fig. 12); epigynum a longitudinal bar (Figs. 9, 10); North America, Mexico (Map 1C)</p> | <p>– Abdomen otherwise <i>aurantia</i> 3</p> <p>3(2) Dorsum of abdomen with transverse lines or bands (Figs. 22, 68) 4</p> <p>– Dorsum of abdomen with pair of posterior, longitudinal bands (Fig. 31); SE United States (Map 1D) <i>florida</i></p> <p>4(3) Dorsum of abdomen with transverse bands (Fig. 68), abdomen with pair of anterior tubercles and three lateral pairs of tubercles (Fig. 68); São Paulo State to NE Argentina (Map 2C)</p> <p>..... <i>ericae</i></p> <p>– Dorsum of abdomen with transverse lines (Fig. 22); cosmopolitan (Map 1B) <i>trifasciata</i></p> <p>5(1) Transverse, ventral band wider than length of anterior median black trapezoid (Fig. 49); Texas to Central America (Map 2D) <i>blanda</i></p> <p>– Transverse band narrower than length of black patch (Figs. 39, 58) 6</p> <p>6(5) Transverse band pointing anteriorly and broken in middle (Fig. 58); dorsum with posterior black (Fig. 59); epigynum enlarged posteriorly (Fig. 55, 56); Mexico to Argentina (Map 2B)</p> |
|---|--|

- *savignyi*
 – Transverse band straight, rarely broken (Fig. 39); dorsum with posterior having windows in black area (Fig. 40); epigynum smaller posteriorly (Figs. 36, 37); Florida, Texas, California to southern Brazil (Map 2A) *argentata*

KEY TO MALES

- 1 Embolus straight (Fig. 15); North America, Mexico (Map 1C) *aurantia*
 – Embolus and conductor coiled (Figs. 16, 17, 26, 44) 2
 2(1) Base of sclerotized embolus with jointed to large flat stipes (arrow, Figs. 25, 34) 3
 – Base of embolus turning into a screw-shaped base (Figs. 43, 53, 62), stipes small, partly hidden (I in Figs. 16, 17) 4
 3(2) Curl of embolus small, showing stipes and tegulum on each side (Fig. 26); cosmopolitan (Map 1B) *trifasciata*
 – Curl of embolus large, hiding stipes and tegulum (Fig. 35); SE United States (Map 1D) *florida*
 4(2) Venter of abdomen with a pair of white patches on black (Fig. 70); São Paulo State to NE Argentina (Map 2C) *ericae*
 – Venter usually with broken longitudinal lines (Figs. 41, 51, 60) 5
 5(4) Tip of embolus with a spur (arrow, Fig. 43; Figs. 44, 45); Florida, Texas, California to Argentina (Map 2A) *argentata*
 – Embolus tip without spur (Figs. 54, 63) 6
 6(5) Embolus coil with a basal cone (arrow, Fig. 53; Fig. 54); Texas to Central America (Map 2D) *blanda*
 – Embolus without cone (Figs. 62, 63); Mexico to southern Brazil (Map 2B) *savignyi*

Argiope aurantia Lucas
 Map 1C; Figures 9–15

Argiope aurantia Lucas, 1833: 86, pl. 5, fig. 1. Female holotype from North America.

Argiope aurantia:—Levi, 1968: 338, figs. 43–57, ♀♂. Platnick, 2003.

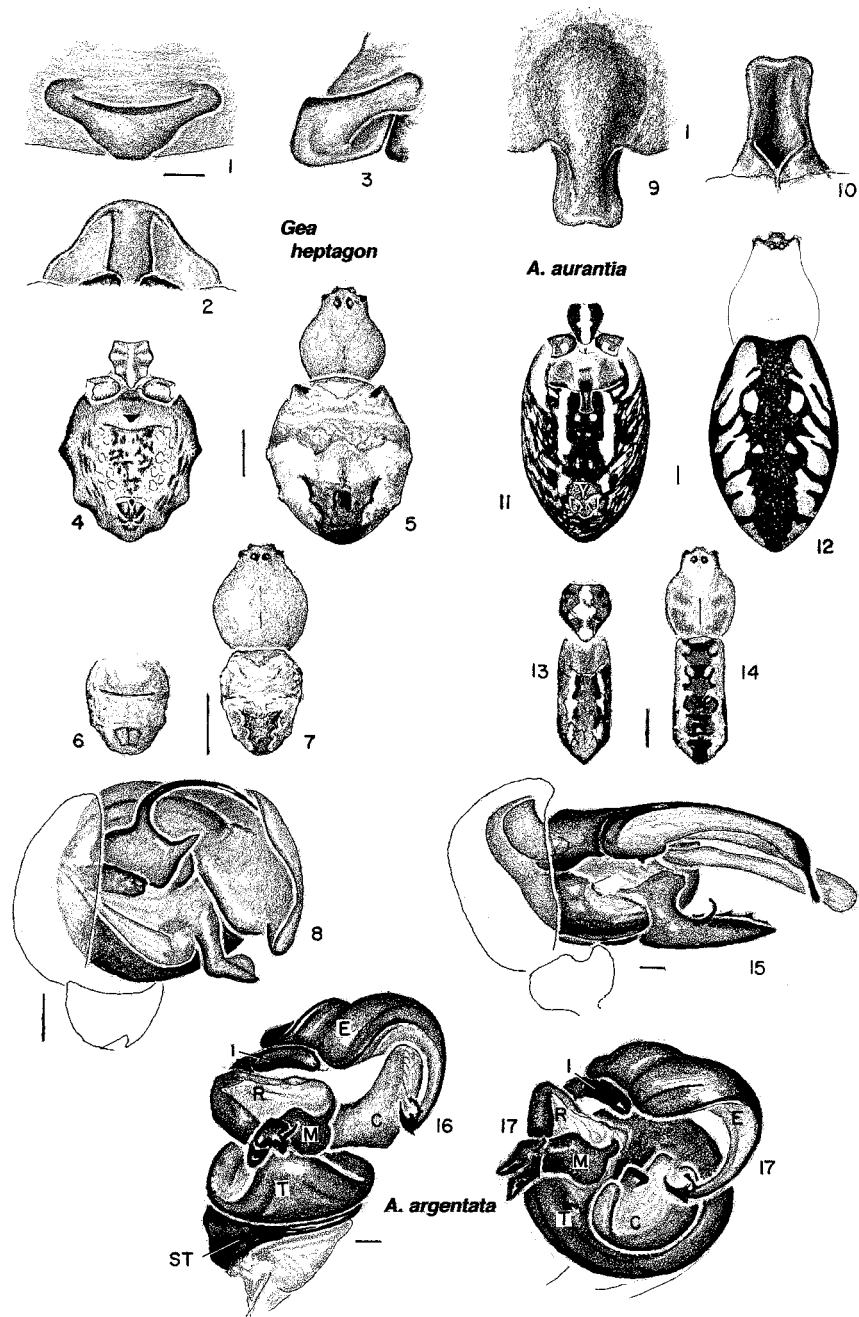
Diagnosis. Females are separated by the black and yellow pattern of the abdomen (Fig. 12) and the distinct genitalia, a posteriorly directed prong (Figs. 9, 10). The male is colored as in the female (Fig. 14) and has a projecting embolus and conductor (Fig. 15). The genitalia of *A. aurantia* are closest to the Eurasian *Argiope bruennichi* (Scopoli), which differs by having abdominal coloration resembling that of *A. trifasciata* (Fig. 22) (Roberts, 1995).

Variation. Total length of females 15–32

mm, males 5.5–9.9 mm. The largest females come from southern U. S. and Mexico. In southern Mexico, the median dark band on the dorsum of the abdomen is broken by transverse yellow and black bands. The female illustrated (Figs. 9, 10) came from Veracruz, Mexico; the male (Figs. 13–15) from Georgia.

Distribution. Southeastern Canada to Guatemala (Map 1C).

Additional Records. UNITED STATES, MASSACHUSETTS *Barnstable Co.*: Quisset (USNM). *Hampshire Co.*: Amherst (MCZ). *Middlesex Co.*: Weston (CAS). CONNECTICUT *Goshen* (USNM); *Jordan* (USNM); *Mt. Carmel* (USNM); *New Britain* (USNM); *New Haven* (USNM); *Newington* (USNM); *Oxford* (USNM); *Woodmont* (USNM). PENNSYLVANIA *York Co.*: 3.6 km W Ashville (USNM). MARYLAND *Prince Georges Co.*: *Bladensburg* (USNM); *Priest Bridge* (USNM); *Forestville* (USNM); *Takoma Park* (USNM). *Hyattsville Co.*: *West Lanham Hills* (USNM). DISTRICT OF COLUMBIA *Washington* (USNM); *Smith's Isl.* (USNM). OHIO *Crawford Co.*: *Galion* (USNM). VIRGINIA *Giles Co.*: (USNM). *Grayson Co.*: (USNM). *Rockbridge Co.* (USNM). KENTUCKY *Boone Co.*: *Florence* (CAS). NORTH CAROLINA *New Hanover Co.*: *Wilmington* (USNM). *Tyrrell Co.*: *Lake Landing* (USNM). TENNESSEE *White Co.*: *Bon Air, 10.2 km W Cumberland Co.* (USNM). *Giles Co.*: *Pearisburg* (USNM). SOUTH CAROLINA *Oconee Co.*: *Chattuga Riv. 1.5 mi. S Russell Bridge* (USNM). GEORGIA *Chatham Co.*: *Rt. 95* (USNM). FLORIDA *Alachua Co.*: *Gainesville* (USNM). *Bradford Co.*: *Starke* (USNM). *Dade Co.*: *Lemon City* (USNM). *Duval Co.*: *Jacksonville* (CAS). *Hillsborough Co.*: *Tampa* (USNM). *St. Lucie Co.*: *Ft. Pierce* (USNM). MICHIGAN *Oakland Co.*: *Birmingham* (CAS). *Wayne Co.*: *Detroit* (CAS). WISCONSIN *Dodge Co.* (USNM). *Marathon Co.* (USNM). *Winnebago Co.*: *Oshkosh* (USNM). ILLINOIS *Richland Co.*: *Olney* (USNM); *Centerville* (USNM). MINNESOTA *Wabasha Co.*: *4.8 km SE Kellogg* (USNM). IOWA *Woodbury Co.*: *Sioux City* (USNM); *Morningside* (USNM). *Dickinson Co.*: *Spirit Lake* (USNM); *Lake Okoboji* (USNM). MISSOURI *Travis Co.* (CAS). *Phelps Co.*: *Rolla* (CAS). ARKANSAS *Conway Co.* (CAS). LOUISIANA *Ascension Par.*: *Donaldsonville* (CAS). *New Orleans Par.*: *Harahan* (USNM). *Orleans Par.*: *New Orleans* (USNM). TEXAS *Bastrop Co.*: *21 km SSE Elgin* (USNM); *16 km NW Bastrop* (USNM). *Bell Co.* (USNM). *Bexar Co.*: *16 km N San Antonio* (CAS); *San Antonio* (CAS); *Fort Sam Houston* (CAS); *Lackland Air Force Base* (CAS). *Dallas Co.*: *Dallas* (USNM). *Harris Co.*: *3.2 km W of Alief* (CAS). *Leon Co.*: *SW Marques* (USNM). *Travis Co.*: *Austin* (CAS); *8 km SE Manor* (USNM); *Austin* (USNM). *Victoria Co.*: *Victoria*



Figures 1-8, *Gea heptagon* (Hentz). 1-5, Female. 1-3, epigynum. 1, ventral. 2, posterior, 3, lateral. 4, sternum and abdomen, ventral. 5, dorsal. 6-8, male. 6, abdomen, ventral, 7, dorsal. 8, left palpus.

Figures 9-15, *Argiope aurantia* Lucas. 9-12, Female. 9, 10, epigynum. 9, ventral. 10, posterior. 11, sternum and abdomen, ventral. 12, dorsal. 13-15, male. 13, sternum and abdomen, ventral. 14, dorsal. 15, palpus.

Figures 16-17, *A. argentata* (Fabricius), male, left palpus, expanded. Scale lines, 1.0 mm, genitalia, 0.1 mm.

Abbreviations: C, conductor; E, embolus; I, stipes; M, median apophysis; R, radix; ST, subtegulum; T, tegulum.

(USNM). CALIFORNIA *Alameda Co.*: Oakland (CAS). *Los Angeles Co.* (USNM). *Marin Co.*: Lake Bon Tempe (CAS); San Anselmo (CAS). *Monterey Co.*: Salinas (USNM). *San Mateo Co.*: Daly City (CAS); Menlo Park (USNM). MEXICO *Tamaulipas*: Paso del Abra, 22°37'N, 99°1'W (AMNH). *Nuevo León*: Villa de Santiago Las Ajuntas, 1,300 m elev. (MCZ). *Nayarit*: 11.7 km E San Blas (CAS); 3.2 km N Sayulita, 19 Nov. 1976, ♀ (D. D. Wilder, CAS). *Jalisco*: Chamela, 16 Oct. 1988, ♀ (Buickerood, E. S. Ross, CAS). *Veracruz*: Alto Lucera, 18°7'N, 94°50'W, 10 Aug. 1966, ♀ (J., W. Ivie, AMNH).

BAHAMAS ISLANDS South Bimini, ♀ (AMNH); Bimini, 30 Sep. 1947, ♀ (J. Oliver, AMNH).

Argiope trifasciata (Forskål)
Map 1B; Figures 18–26

Aranea trifasciata Forskål, 1775: 86. Holotype from Cairo, Egypt, lost.

Argiope trifasciata:—Thorell, 1873: 519. Levi, 1968: 340, figs. 58–72, 74–91, ♀♂. Platnick, 2003.

Diagnosis. Females can be separated from other American *Argiope* by the transverse dorsal lines on the abdomen, two longitudinal ventral lines (Fig. 21), and lack of posterior tubercles on the abdomen. It also differs in that the anterior, transverse lip of the epigynum lacks an anterior edge, present in all species with a similar epigynum (arrow, Fig. 18). The abdomen is similar to that of *A. bruennichi* of Eurasia, but *A. bruennichi* has an epigynum like that of *A. aurantia*.

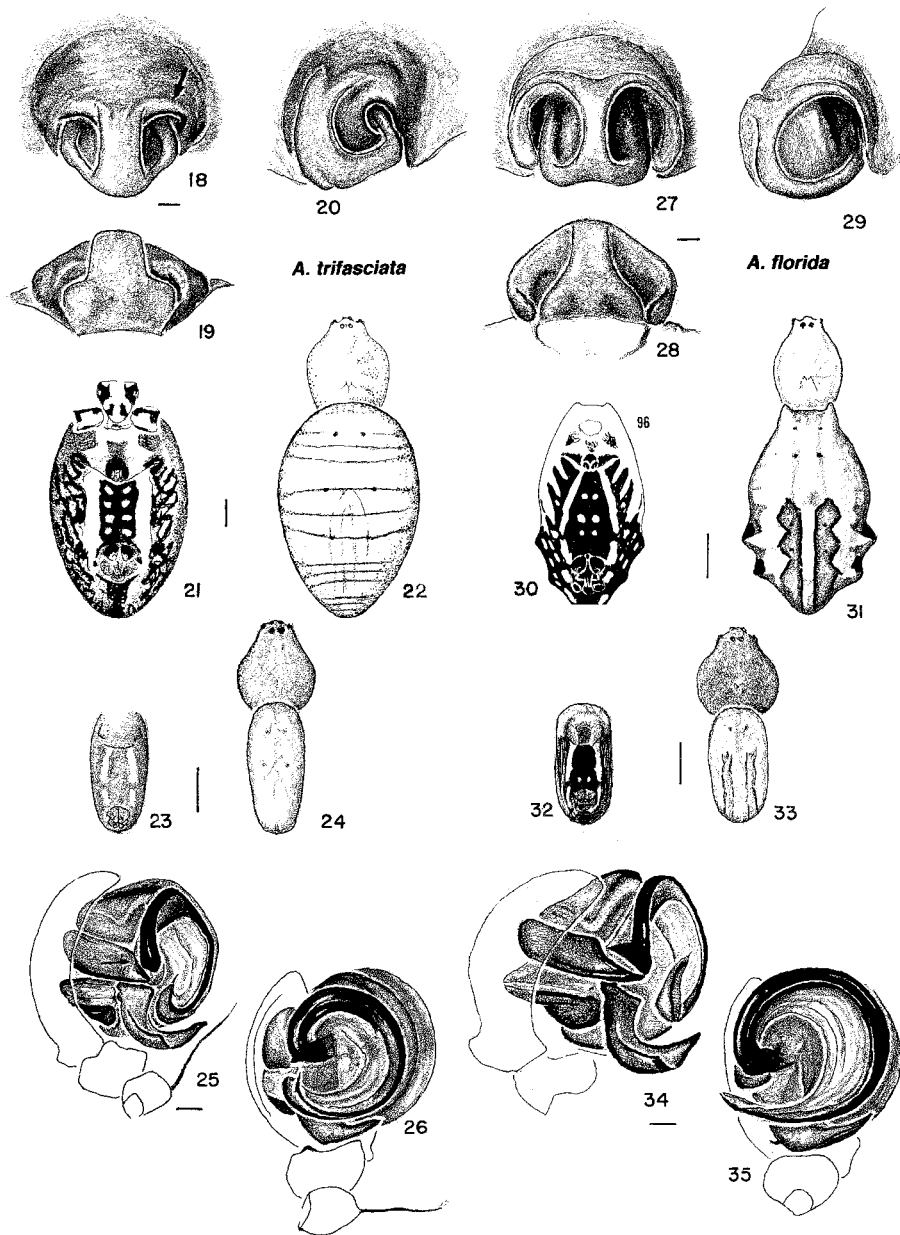
The male palpus differs from others with a similar palpus by having a joint between the embolus and the very large stipes (arrow, Fig. 25), as is also found in *A. florida* (Fig. 34). *Argiope trifasciata* differs from *A. florida* (Fig. 35) in having a smaller embolus circle in ventral view (Fig. 26), still showing stipes to the left and the tegulum on the right (if the left palpus is viewed as in Fig. 26).

Variation. Total length of females 10.3–21.0 mm, males 3.8–7.3 mm. Abdomen variable, rarely with transverse grooves, sometimes with a tail (Levi, 1968). A female and males from Costa Rica were used for Figures 18–20, and 23–26.

Distribution. Cosmopolitan, but absent from Europe. (American distribution, Map 1B.)

Additional Records. UNITED STATES, MAINE *Washington Co.*: Lubec, Moosehorn Natl. Wildlife Refuge (MCZ). MASSACHUSETTS *Barnstable Co.*: Teaticket (USNM). *Dukes Co.*: Nashawena Isl. (C. Parsons, MCZ). Penikese Isl. (MCZ). *Nantucket Co.*: Nantucket, Almanach Pond (USNM). CONNECTICUT *Cheshire* (USNM); *Colchester* (USNM); *Goshen* (USNM); *Monroe* (USNM); *New Britain* (USNM); *Newington* (USNM); *Rocky Hill* (USNM); *South Meriden* (USNM); *Storrs* (USNM). NEW YORK *Madison Co.*: Lebanon (USNM). PENNSYLVANIA *York Co.*: W Ashville (USNM). DISTRICT OF COLUMBIA (USNM). WEST VIRGINIA *Pocahontas Co.*: Watoga State park (USNM). *Tucker Co.*: Canaan Valley State Park (USNM). OHIO *Portage Co.*: 8 km ESE Ravenna, 41°8.5'N, 81°90'W (CAS). VIRGINIA *Allegheni Mts.*, Hone Quarry Camp (USNM). *Montgomery Co.* (USNM); *Blacksburg* (USNM); *Shawsville* (USNM). *Grayson Co.*: Galax (USNM). NORTH CAROLINA *Allegheny Co.*: Sparta (USNM). WISCONSIN *Dane Co.*: Madison (USNM). *Oconto Co.*: (USNM). IOWA *Clarke Co.*: Osceola (USNM). *Woodbury Co.*: Sioux City (USNM). MISSOURI *Vernon Co.*: 24 km S Nevada, from mud dauber nest (MCZ). NORTH DAKOTA *Slope Co.*: vic. Burning Coal Mines (AMNH). KANSAS *Pottawatomie Co.*: Onaga (USNM). NORTH DAKOTA *Slope* (USNM). ARKANSAS *Laurence Co.*: Imboden (USNM). OKLAHOMA *Woods Co.*: Alva (USNM). TEXAS *Bell Co.*: Paire Dell (USNM). *Burleson/Lee Cos.*: Yegua Creek, NE Giddings (USNM). *Burnet Co.*: Sycamore Creek, 16 km ENE Marble Falls (USNM). *Denton Co.*: Lake Dallas (MCZ). *Travis Co.*: Austin (USNM); 3.2 km W Manor (USNM). COLORADO *Boulder Co.*: Boulder (USNM). ARIZONA *Santa Cruz Co.*: Sycamore Canyon (MCZ). WASHINGTON *Benton Co.*: 8 km N Prosser (USNM). *Chelan Co.*: Lake Chelan, 47°88'N, 120°8'W (USNM). OREGON *Umatilla Co.*: Pendleton (CAS). CALIFORNIA (USNM). *San Diego Co.*: San Diego (AMNH); Del Mar (USNM). MEXICO *Tamaulipas*: 24 km S Victoria, 23°38'N, 99°12'W, 22 July 1966, ♀ (J., W. Ivie, AMNH). *Chihuahua*: 25.6 km NNW Chihuahua, 28°47'N, 106°10'W, 8 Sep. 1964, ♀ (J., W. Ivie, AMNH). *Baja California Sur*: 4.8 km NW San Antonio, 13–18 Dec. 1977, ♀ (L. Vincent, C. Griswold, CAS). *México*: 38 km NW Mexico City, 6 June 1948, ♀ (AMNH). *Oaxaca*: nr. San Gabriel, 900 m, N Puerto Escondido, S of Oaxaca, 1963, ♀ (C. M. Bogert, AMNH). *Yucatan*: Uxmal, 29 Sep. 1959, ♂ (O., I. Degener, AMNH); Chichen Itza, Feb. 1934, ♂ (AMNH). COSTA RICA *Guanacaste*: Palo Verde, ca. 27 km SSW Bagaces, Jan. 1978, ♀♂ (W. Eberhard, MCZ).

BAHAMAS Hatchet Bay, Eleuthera Isl., 2 Apr. 1953, ♀♂ (Hayden, Giovannoli, AMNH). HAITI *Furey*, Nov. 1942, ♀ (R. Curtiss, USNM). VIRGIN ISLANDS St. Thomas, ♀ (ZMK). ANTIGUA June 1918, ♀ (Univ. Iowa Exped., USNM). WEST ANTIGUA nr. Jolly Beach, 2 July 1963, ♀; 20 Sep. 1963, ♀ (E. N. Kj.-Waering, AMNH).



Figures 18–26, *Argiope trifasciata* (Forskål). 18–22, female. 18–20, epigynum. 18, ventral. 19, posterior. 20, lateral. 21, sternum and abdomen, ventral. 22, dorsal. 23–26, male. 23, abdomen, ventral. 24, dorsal. 25, 26, palpus. 25, mesal. 26, ventral.

Figures 27–35, *Argiope florida* Chamberlin and Ivie. 27–31, female. 27–29, epigynum. 27, ventral. 28, posterior. 29, lateral. 30, abdomen, ventral. 31, dorsal. 32–35, male. 32, abdomen, ventral. 33, dorsal. 34, 35, palpus. 34, mesal. 35, ventral.

Scale lines, 1.0 mm, genitalia, 0.1 mm.

SURINAME Matapica Beach, 4 Oct. 1962, ♂ (B. Malkin, AMNH). COLOMBIA *Antioquia*: Belmira Paramo, 3,150 m, 12 Apr. 1988, ♀ (M. A. Serna, MHNM). *Cundinamarca*: Monterredondo, 1,200 m, 25 Feb. 1975, ♂ (P. A. Schneble, MCZ). *Valle*: Buena Ventura, 4 Nov. 1950, ♀ (E. S. Ross, CAS); Jamundi, Oct. 1991, ♀ (A. Batista, MCP 2861). PERU *Ancash*: nr. Colca, Río Fortaleza, 2,150 m, 1 Oct. 1956, ♀ (W. Weyrauch, CAS). *Ayacucho*: Ayacucho, Jan. 1967, ♀ (T. A. Galarza, IBSP). *Cuzco*: Machu Picchu, 2,600–2,800 m, 1–5 July 1964, ♀ (B. Malkin, AMNH); 24 Feb. 1971, ♀ (W. D. Wood); 24 Jan. 1973, ♀ (A. Moreton, MCZ); 2,400 m, 16 Oct. 1987, ♀ (J. Codrington, USNM). BRAZIL *Amapá*: Macapa, nest of *Eumenes*, June 1966, ♂ (Becker, MACN). *Espírito Santo*: Ilha da Trindade, 1992, 1995, ♀ (R. Castelli, D. Lewis, MCP 1675, 6144, 6145, 7600). *Mato Grosso*: Porto Cercado, 2 Aug. 1992, ♂ (G. A. Brault, MCP 2486); Santa Antonio de Levergene, 6 Oct. 1991, ♂ (M. I. Marques, MCP 2557). *Mato Grosso do Sul*: Anaurilândia, 22°22'S, 52°48'W, 15 Nov.–23 Dec. 1998, ♀ (IBSP). *São Paulo*: Presidente Epitácio, 16 Jan.–13 Feb. 1999, ♀ ♂ (IBSP); São Paulo, 14 July 1995, ♀ (C. M. P. Nascimento, IBSP). *Rio Grande do Sul*: Capão Novo, 1992, ♂ (C. Mazzilo, MCP 4606); Itapuã, Porto Alegre, 4 Feb. 1975, ♂ (A. Lise, MCN 02450); Santa Maria, Apr. 1988, ♀ (A. A. Lise, MCP 4897); 16 Mar. 1990, ♀ (D. Linck, MCP 6016). URUGUAY 1913, ♀ (Copuelo, MACN). PARAGUAY Feb. 1945, ♀ (J. Cranwell, MACN); Isla Yasilen, Nov. 1975, ♂ (A. Martins, MACN). *Paraguari Prov.*: Ybycui, 27 May 1980, ♀ (P. J. Spangler, USNM). ARGENTINA *Misiones*: Pto. Aguirre, 1943, ♀ (J. M. Viana, MACN); Santa María, Oct. 1944, ♀ (J. M. Viana, MCN); Pto. Iguazú, Dec. 1959, ♀ (MCN). *Formosa*: Palo Santo, ♀ (H. Hepper, MACN). *Chaco*: Agua de Oro, ♀ (Apóstol-Tonina, MACN); Resistencia, July 1934, ♀ (J. B. Daguerre, MCN); Basail, ♀ (M. Birabén, MLP 15116). *Corrientes*: Corrientes, Jan. 1949, ♀ (J. Lieberman, MACN); Solari, ♀ (M. Birabén, MLP 16559); Manantiales, ♀ (Apóstol, MCN); Apipé, 1945, ♀ (W. Hanke, MACN). *Entre Ríos*: Diamante, 19 Mar. 1918, ♀ (A. G. Frers, MCN); Villaguay, 26 Apr. 1918, ♀ (A. G. Frers, MCN). *Santa Fé*: Las Gamas, 20 km W Vera, Oct. 1994, ♂ (M. Ramírez et al., MACN); 9 July 1945, ♀ (E. Aiello, MACN); Tostado, 1944, ♀ (A. Gai, MACN); Aug. 1945, ♀ (MCN); Mar. Chiquita, May 1962, ♀ (C. Hepper, MACN). *Córdoba*: Calamuchita, Dec. 1940, ♀ (J. M. Viana, MACN); Leones, 5 Feb. 1946, ♀ (MACN); Agua de Oro, Mar. 1940, ♀ (J. A. de Carlo, MACN). *San Luis*: Villa Elena, Oct. 1974, ♂ (J. M. Viana, MACN). *Buenos Aires*: Buenos Aires, ♀ (Zotta, MACN); Pergamino, Mar. 1963, ♀ (Sucro, MACN); Zekya, 3 Mar. 1935, ♀ (MACN); Bella Vista, 11 Mar. 1984, ♀ (J. M. Gallardo, MACN). *La Pampa*: General Pico, Mar. 1975, ♀ (J. Williamson, MACN). CHILE *Reg. Metropolitana*: Talagante, 15 Dec. 1974, ♀, 18 Sep. 1975, ♀ (L. Berrios, AMNH); Conchali, Santiago, 1 Feb. 1972, ♀ (I. Maller, AMNH); Antumapu, Mar. 1973, ♀ (MCZ); El Monte, 27 Feb. 1973,

♂ (MCZ); Lampa, May 1979, ♀ (L. Peña, AMNH); Quilicura, 1979, ♀ (L. Peña, AMNH). *Arauco*: Angol, 1950, ♀ (D. S. Bullock, CAS). *Ñuble*: Chillan, 10 Apr. 1976, ♀ (G. Moreno, MCZ); Puente Río Cato, 26 Mar. 1981, ♀ (G. Moreno, MACN). *Llanquihue*: Llanquihue, Mar. 1942, ♀ (Lieberman, MACN). JUAN FERNANDEZ ISL. Más Afuera, Cerro Inocentes, 1,000 m, 18 Mar. 1962, ♀ (B. Malkin, AMNH).

HAWAII Oahu, 1961, ♀ (O., I. Degener, AMNH).

Argiope florida Chamberlin and Ivie Map 1D; Figures 27–35

Argiope florida Chamberlin and Ivie, 1944: 95, figs. 93, 94, 96, ♀. Female holotype from Lake Worth, Florida, lost, not examined. Levi 1968: 344, figs. 92–111, ♀ ♂. Platnick, 2003.

Diagnosis. Females of *A. florida*, as well as *A. trifasciata*, differ from females of *A. argentata*, *A. blanda*, and *A. savignyi* by having a pair of longitudinal white bands on the black venter of the abdomen (Fig. 30). They differ from *A. trifasciata* by the dorsal coloration and shape of the abdomen. Dorsally, there is a pair of longitudinal bands (Fig. 31), and the sides of the abdomen have tubercles (Fig. 31). The epigynum, unlike that of *A. trifasciata*, has a lip on the anterior rim of the epigynum (Fig. 27).

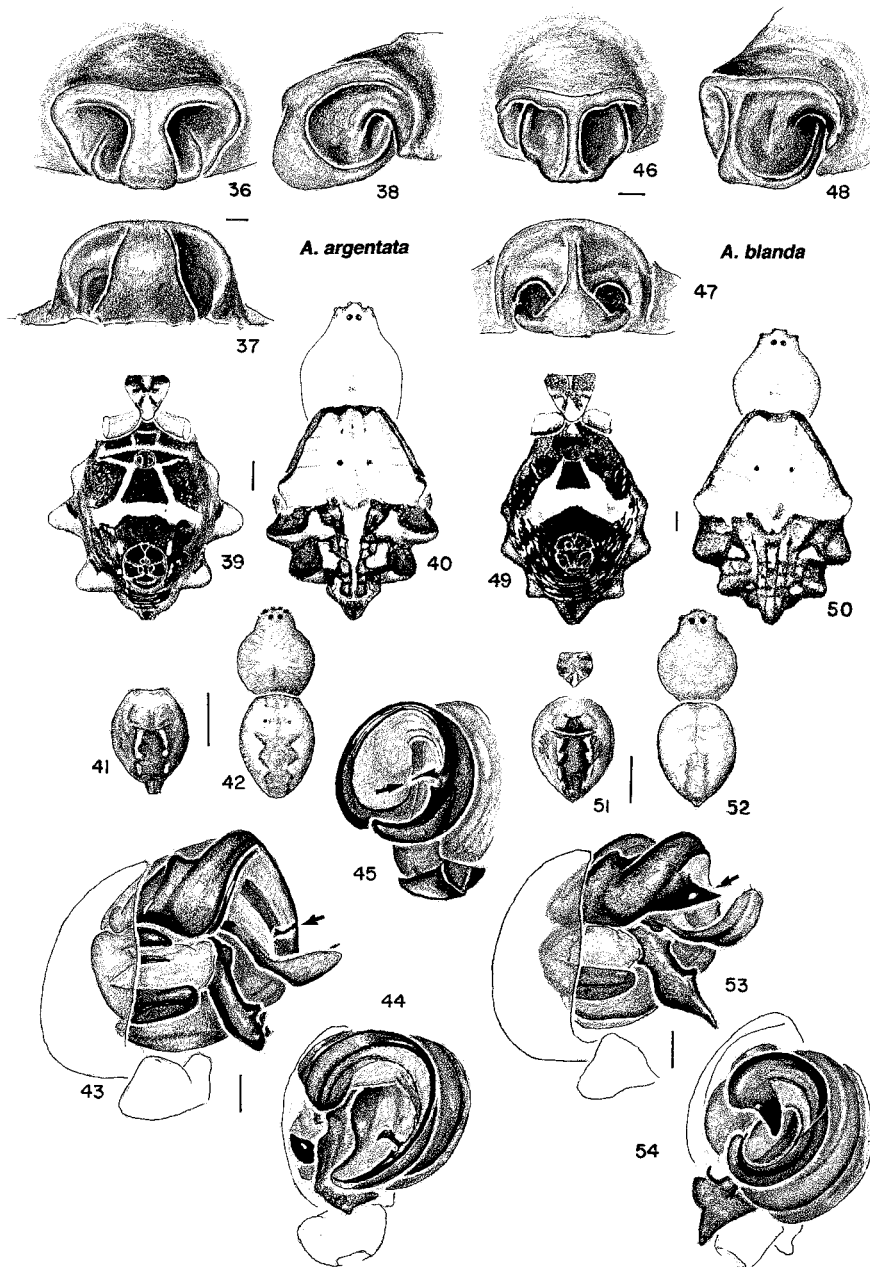
Males differ from most *Argiope*, except *A. trifasciata*, by having a joint between the embolus and stipes in the palpus (arrow, Fig. 25). They differ from *A. trifasciata* in having the embolus longer and with a wider circle. The embolus coil covers both the tegulum and stipes on each side if viewed face on (Fig. 35).

Variation. Total length of females 12.5–18.0 mm, males 5.1–6.7 mm. The illustrations (Figs. 27–29, 31) were made from a female from Georgia, the male (Figs. 32–35) from Florida.

Natural history. Spiders were collected between trees in open pine scrub on sand at 1 m height by F. Enders in North Carolina.

Distribution. North Carolina to Florida; west to Louisiana, Arizona (Map 1D).

Additional records. UNITED STATES, NORTH CAROLINA *Bladen Co.*: 13 km S White Lake, 22



Figures 36–45, *Argiope argentata* (Fabricius), 36–40, female. 36–38, epigynum. 36, ventral. 37, posterior. 38, lateral, 39, sternum and abdomen, ventral. 40, dorsal. 41–45, male. 41, abdomen, ventral. 42, dorsal. 43–45, left palpus. 43, mesal. 44, ventral. 45, subventral.

Figures 46–54, *Argiope blanda* O. P.-Cambridge. 46–50, female. 46–48, epigynum. 46, ventral. 47, posterior. 48, lateral, 49, sternum and abdomen, ventral. 50, dorsal. 51–54, male. 51, sternum and abdomen, ventral. 52, dorsal. 53, 54, palpus. 53, mesal. 54, ventral.

Scale lines, 1.0 mm, genitalia, 0.1 mm.

Aug. 1970, 11 ♀ (F. Enders, MCZ). *Hanover Co.*: Carolina Beach, Wilmington, 27 Aug. 1932, 1 ♀ (A. M. Chickering, MCZ). GEORGIA *Richmond Co.*: Augusta, 18 Aug. 1944, 1 ♀ (P. W. Fattig, AMNH). FLORIDA *Broward Co.*: Fort Lauderdale, Sep. 1932, 1 ♀ (M. Bates, MCZ). *Highlands Co.*: Rt. 70, 3.2 km E Rt. 27, Aug. 1963, 1 ♀ (T. Eisner, MCZ). *Lake Co.*: Altoona, 1 ♂ (N. Banks, MCZ). *Liberty Co.*: 18–20 Aug. 1960, 1 ♀ (J. McCrone, MCZ). *Marion Co.*: 14 Aug. 1959, 1 ♀ (J. McCrone, MCZ). LOUISIANA *Cameron Par.*: Cameron, 1 ♀ (N. Banks, MCZ).

Argiope argentata (Fabricius)
Map 2A; Figures 16, 17, 36–45

Aranea argentata Fabricius, 1775: 433. Type specimens from the Indies [West Indies] lost.

Argyopes argentata:—C. L. Koch, 1839: 38, pl. 361.
Argiope argentata:—Levi, 1968: 345, figs. 42, 73, 112–136, ♀ ♂. Platnick, 2003.

Diagnosis. Females of *A. argentata* can be separated from similar species *A. blanda* and *A. savignyi* by the coloration of the abdomen (Fig. 40), especially by the relatively narrow, transverse white line on the venter of the abdomen (Fig. 39).

Males have a spur on the tip of the embolus (arrow, Figs. 43, 45), usually sclerotized, black and easy to see, not found in any other *Argiope*.

Variation. Total length of females 6.2–18.8 mm, males 2.8–5.2 mm. The smallest females, those less than 8 mm total length, mostly from the Amazon area, have the dorsal pattern of the abdomen as in *A. florida*, with two longitudinal stripes and the coloring of an immature, but have the epigynum containing broken off embolus tips of a male of *A. argentata*.

The illustrations of the female (Figs. 36–38) were made from a specimen from Colombia, the male (Figs. 41–45) from Minas Gerais, Brazil.

Distribution. Southern Florida, California to Argentina and northern Chile (Map 2A).

Additional Records. UNITED STATES, FLORIDA *Monroe Co.*: Greyhound Key (CAS); Key West (USNM); Aiken, Key Largo (USNM). TEXAS *Cameron Co.*: Brownsville (USNM); Port Isabel (USNM). CALIFORNIA *San Joaquin Co.*: Clemente, 3 May 1887, ♀ (USNM). *Contra Costa Co.* (AMNH). *San Obispo Co.*: Cuyama River at Santa Barbara Co. line (CAS). *Los Angeles Co.*: San Clemente Isl. (AMNH). *San Diego Co.*: La Jolla (CAS); Torrey Pines, La Jolla

(USNM); San Diego (USNM); Del Mar (USNM). MEXICO *Tamaulipas*: 24 km S Victoria (AMNH); 19 km SE Victoria (AMNH); NE of Pedilla, 24°3'N, 98°43'W (AMNH); 8 km S Tres Palos, 24°28'N, 98°20'W (AMNH); 21 km N Aldama (CAS); nr. Altamira (USNM); Río Cherreras, 24°N, 98°W (AMNH). *Sonora*: 11 km N El Desemboque (CAS). *Baja California Norte*: 19 km S Punta Calaveras (AMNH); Isla San Martín (CAS); Isla de Cedros (CAS); Lion Cove (CAS); Isla Natividad (CAS). *Baja California Sur*: Bullenas Bay (USNM); Isla Partida (CAS); 8 km S Miraflores road to Las Casitas (CAS); 5 km NW San Antonio (CAS); Santa Margarita, sand dunes, 3 km W Puerto Cortes (CAS); 24 km W El Crucero (CAS); Isla Magdalena (CAS); St. Margarita Isl. (USNM). *Sinaloa*: 3.2 km S Elota, 23°55'N, 106°48'W (AMNH); Mazatlán (CAS); 8 km NW Mazatlán (CAS). *Nayarit*: San Blas, Mantauchen Beach (AMNH, CAS). *Guerro*: 3.6 km N Millipánias (AMNH); Acapulco (AMNH). *Veracruz*: 8 km S Veracruz, 19°8'N, 96°8'W (AMNH); Veracruz (AMNH, CAS, MCZ); betw. Veracruz and Alvarado (AMNH). *Tabasco*: coast (CAS). *Campeche*: Chicanna ruins, ca. 8 km W Xpujil, 89°31'W, 18°32'N (MCZ). *Yucatan*: Chichen Itza (AMNH). *Quintana Roo*: 50 km S Cancún (CAS); Islas Revilla Gegido, I. Carión (AMNH). HONDURAS Roatan Isl., French Harbour (AMNH). COSTA RICA *Limón*: Hacienda de Limón (USNM). *Cartago*: Turrialba (AMNH). *Puntarenas*: (USNM). PANAMA *Bocas del Toro*: Río Changuila, Corriente (MCZ). *Chiriquí* (AMNH). *Panamá*: Barro Colorado Island (AMNH, MCZ); Balboa (AMNH); Frijoles (USNM); Canal Zone Forest [Soberiana Natl. Park] (MCZ); Soberiana Natl. Park, Pipeline Road (USNM); Cerro Azul (CAS); Cerro Campana (AMNH); Summit (AMNH); Gamboa (AMNH); Madden Dam (AMNH); 7–14 km N El Llano (CAS); Panamá City (CAS); Paraíso (USNM).

WEST INDIES Very common on smaller Islands, also Jamaica, Puerto Rico, few records from Cuba and Hispaniola.

VENEZUELA *Delta Amacuro*: Canon Jobure (AMNH). *Sucre*: Cumana (MCN 2689). *Monagas*: Caripito (AMNH). *Bolívar*: 64 km N Guesipati (USNM). *Dist. Federal*: Caracas (USNM); *Aragua*: M. Pittier Natl. Park, Rancho Grande (AMNH, FSCA, USNM). *Miranda*: 34 km N Altigracia, Guatopa Natl. Park (AMNH). *Guárico*: Hato Masaquarai, 8°34'N, 67°35'W, 60 m (MCZ); Parque Nacional Aquara-Guariquito (MCN 21345). *Carabobo*: San Esteban (AMNH). *Amazonas*: Neblina Massif, 12.5 km NNW of Pico Phelps, 1,670–1,690 m, 0°54'N, 66°2'W (MCZ); 2.8 km NE Pico Phelps 0°49'N, 65°59'W, 2,100 m (AMNH). *Zulia*: Maracaibo (AMNH); nr. Rosario (FSCA). GUYANA Georgetown (AMNH); Sauri-Wau River (AMNH); Isher-tun, 16 km E Rupununi River (AMNH); nr. Yupukarri, Rapununi River (AMNH). *Mazaruni/Potaro*: Takutu Mts., 6°15'N, 59°5'W (USNM). SURINAME *Marrowijne*: Christian Kondre (AMNH); Mangaman Kondre (AMNH, MZSP 5511); Christian Kondre (B.

Malkin); Paramaribo Agr. Sta. (AMNH, MCZ); Matapica Beach (AMNH); Voltzberg-Raleighvallen Nature Reserve, Saramanca, 4°32'N, 56°33'W (MCZ). FRENCH GUIANA St. Laurent du Maroni (AMNH). *Cayenne*: Montagnes Kaw, nr. Camp Calman, 27 km SE Roura, 4°33'N, 52°0'W (USNM). COLOMBIA *Bolívar*: Río Frío (AMNH); Cartagena to Bocagrande (CAS). *Santander*: Río Suarez (AMNH). *Boyacá*: Muzo (MCZ). *Antioquia*: Amaga, 1,400 m (MCZ); Mutatá (MCZ); Medellín (MCZ); Santa Fé de Antioquia, 700 m (MCZ); La Estrella, 1,700 m (MCZ); El Peñol, 2,100 m (MCZ); El Santuario, 2,150 m (MCZ). *Cundinamarca*: Monterredondo, 1,300 m (MCZ). *Meta*: ca. 20 km N Río Muco, 20 km S el Porvenir, Finca Chenevo, 170 m (MCZ); Puerto Lleras, Lomalinda, 3°18'N, 73°22'W (CAS). *Huila*: Parque Arqueológico de San Agustín (CAS). *Valle*: Buga (CAS); Cali, 1,000 m (MCZ) 29 km W Cali (MCZ); Palmira (CAS); Finca Iberia (MCP 2860). *Cauca*: Popayán (CAS). *Nariño*: Boca Grande (SMNK 3048); Junin, 140 m (SMNK 3052); Barbacoas (SMNK 1937); nr. Consaca, 1,700 m (SMNK 3049); El Pepino (SMNK 3099). *Putumayo*: road from Puerto Lima to Santa Lucia, 240 m (SMNK 3059); Puerto Asis (SMNK 3100). ECUADOR *Xapatal* (CAS). *Esmeraldas*: 11 km SE of Lorenzo, La Chiquita (MCZ). *Napo*: 20 km E Puerto Napo, Alinahuí, 1°0'S, 77°75'W (CAS); Via Acua, 55 km S Coca (CAS). *Pichincha*: Pera (MACN); 17 km SE Santo Domingo (AMNH). *Pastaza*: 3–13 km N Puyo, 953 m (CAS); 12 km W of Puyo (USNM). *Tungurahua*: Río Topo (CAS); Baños, 1,800 m (AMNH, CAS, USNM). *Guayas*: Macuchi (CAS); 3.2 km NE La Libertad (CAS); 3.2 km S Manglaralto (CAS); Manta (CAS); Guayaquil (CAS). GALAPAGOS ISLANDS Tower Isl. (AMNH); Isla Santa Cruz, Darwin Research Station (CAS); Indefatigable Isl. (CAS); Conway Bay (USNM); Albemarle Isl. (CAS); Elizabeth Bay (USNM); Isla Isabela (CAS); Chatham Isl. (USNM); Baltra Isl. (USNM). PERU *Loreto*: Río Momón, nr. Iquitos (CAS); Río Mamore nr. Iquitos (CAS); Parinari Canyon, Río Samiria (AMNH). *Amazonas*: Montenegro, Bagua (AMNH). *Piura*: Cerra Prieto (CAS); Sechura (CAS); Sullana (CAS); Cabo Blanco (CAS); El Muerto (CAS). *Puñapí* (CAS); Negritos (CAS); Quebrada Charanal (CAS). *Cajamarca*: Nanchoc Quebrada, 400 m, 6°57'S, 79°15'W (MCZ); San José de Lourdes, 1,200 m, 05°4'S, 78°54'W (CAS). *La Libertad*: El Alto (CAS). *Huánuco*: Hualaga Vall, Cucharas (CAS); Huaquareo, Río Huallaga, Paray, Cuchuras (CAS); Tocache, Río Huallago, 670 m (CAS); Tingo María, 670 m (CAS); 98 km E Tingo María (CAS). *Lima*: 8 km NE Pucusana (CAS); Barranco (CAS); Ventanilla, 40 km N Lima (MZSP 8233). *Ayacucho*: Huanta, 2,400 m (CAS); 16 km N Huanta, nr. Río Mantaro (CAS); Río Pampas, Hwy. 7 (CAS). *Cuzco*: Machu Picchu (AMNH, USNM). *Arequipa*: Magña (MCZ); Atiquipa, Chala, 200 m (CAS); Chala, 300 m (CAS); Atico (AMNH); Alto Q. del Toro, S Camana (AMNH). *Tacna*: S Camiara (AMNH); Las Yaras (AMNH). BRAZIL. *Pará*: Jaca-

reacanga (AMNH); Belém (MACN, IBSP); Maritus, Ananindéua (AMNH); Rio Gurupi, Canindé (AMNH); Conceição do Araguaia (AMNH); Canuaná, Melgaço (MCP 9367); Pedras, Rio Cuminá (MZSP 13091). *Roraima*: Ilha de Maracá (MCP 1825); Rio Branco (IBSP). *Amazonas*: Manaus (CAS, MZSP 13090, SMNK 0064, 0065, 0066); 12 km NE Manaus, Itacoatiara Hwy. (AMNH); Reserva Ducke, Manaus, 2°55'12"S, 59°58'48"W (MCN 18386, 18387, SMNK 1931); Igarapé Belém nr. confluence with Rio Solimões (AMNH); Presidente Figueiredo (IBSP); Maturaca, São Gabriel da Cachoeira (MCP 1257, 1352); Uaupés (IBSP); Fonte Boa (AMNH). *Acre*: Reserva Extrativista de Humaitá, 9°58'12"S, 67°48'36"W (SMNK 2013, 2023). *Maranhão*: Aldeia Yavaruhu, 50 km E Candidé, Pará (AMNH). *Ceará*: Ceará, Fortaleza (MCZ); Limoeiro do Norte (SMNK 1942); Nova Olinda, 7°5'24"S, 39°40'48"W (SMNK 1943). *Rio Grande do Norte*: Estação Ecológica do Seridó, Serra Negra (IBSP); Natal (MZSP 13089); Macalbo (MZSP 5567). *Paraíba*: Independência (MCZ); Represa da Farinha, Patos (IBSP). *Pernambuco*: between Catimbu Buíque (MCN 25576); Serra Negra (MCN 24956); João Pessoa (IBSP); Recife (IBSP); Sítio São Miguel, São José da Mata (A. D. Brescovit, IBSP); Tappacurá (IBSP). *Alagoas*: São Miguel (MZSP 9540); Mangabeiras (MZSP 13088). *Sergipe*: Crasto, Santa Luzia do Itanhi (IBSP); São Cristovão (IBSP); Santa Luzia do Itanhi (IBSP); Barra dos Coqueiros (IBSP). *Bahia*: Galeão (ZMK); Bejoes (MCP 11886); Porto Seguro (MCN 28472); Toca Esperança Central (IBSP); Ilha Santa Bárbara, Arq. De Abrolhos (IBSP); Cabruçu, Ilhéus (IBSP); Tinedi, Central (IBSP); Barra do Mendes (IBSP); Pratinha Iraquara, 12°21'S, 41°32'W (IBSP); Parque Ipê, Feira de Santana (IBSP); Raso da Catarina (IBSP). *Tocantins*: Serra do Lageado, Palmas (MCN 28705). *Goias*: Alto Paraíso (IBSP); Anápolis (MZSP 603); Aragarças (MZSP 13 086); Santa Isabel do Morro, Ilha de Banalal (AMNH). *Mato Grosso*: Alta Floresta (IBSP); Barra do Tapirape (AMNH); Chavantina (MZSP 3928); 260 km N Xavantina, 12°49'S, 51°46'W, campo-grassland (MCZ); Chapada dos Guimarães (MCP 2162, 11572); San Antônio de Levergere (MCP 2409). *Mato Grosso do Sul*: Anaurilândia, 22°22'S, 52°48'W (IBUS); Morro do Azaité, Corumbá (IBSP); Paranaíba (IBSP). *Espírito Santo*: Guarapari (MZSP 9574); Linhares (MZSP 5308); 20 km N Linhares, Forest Reserve (CAS); Reserva da Aracruz Celulose, Linhares (IBSP); Reserva Florestal Vale do Rio Doce, São Marcos (IBSP); Rio Itabapua, São José do Calçado (IBSP); San Gabriel Bay (CAS). *Rio de Janeiro*: Angra dos Reis (MZSP 5137); Ilha de Governador (MCN 9406); Leblon (AMNH); Mangaratia (AMNH); Ilha Marambaia (IBSP); Maricá (MZSP 15333, 15357, 15354, 15372, 15394); Mendes (MZSP 8073); Nova Iguaçu, Miguel Couto (AMNH); Petrópolis, 850 m (AMNH); Represa, Rio Grande (AMNH); San Antonio de Imbe, S. Maria (AMNH); São José, Rio Prêto (MZSP 1936); Silva Jardim (AMNH); Serinha (IBSP); Serra do Mandanha, 22°50'S, 43°34'W

(CAS); Teresópolis (USNM); Valença (MZSP 15536, 15537); Volta Redonda (IBSP). *Minas Gerais*: Coimbra (IBSP); Gov. Valadares, building rubble (AMNH); Horizonte (AMNH); Uberlândia (MCP 1986); Lavras (MCZ); Minas de Serinha Diamantina (AMNH); Pedra Azul (AMNH). *São Paulo*: Água Funda [?] (MZSP 4499); Americana (MZSP 4643); Amparo (MZSP 586, 4658); Barueri (MZSP 5871); Boraceia (MZSP 3520, 4836, 4839, 5948, 8081 9323, 10511); Boraceia, Salesópolis (AMNH); Caraguatubo (MZSP 4689, 4804); Cocaia, Represa Nova (MZSP 4647, 9767); Corumbataí (IBSP); Cotia (IBSP); Guanabara (MZSP 3238, 4010); Ibitu (MZSP 6755); Ilha Quelma de Grande (IBSP); Ilha S. Sebastian (MZSP 8082); Itararé (IBSP); Mairiporã (MZSP 5673); Mogi das Cruzes (MZSP 4618); Nazaré Paulista (IBSP); Nova Europa (MCN 3950; MZSP 4329, 5313); Osasco (IBSP); Pindamonhangaba (IBSP); Piracicaba (IBSP); Ribeirão Preto (IBSP); São Paulo (IBSP, MZSP 148, 4648, 6743, 8078, 8084); Caminho de Mar, 33 km S São Paulo (MCZ); Ipiranga (MZSP 3124, 6867); São Sabastião (MZSP 4457, 9757); Serra Bocaina (MZSP 5754); Ubatuba, Praia de Lázaro (MCN 17416); Parque Estadual da Serra do Mar, Ubatuba, Picinguaba (IBSP); Vila Mercedes [?] (MZSP 6646). *Paraná*: Chac. S Manoel, Cachoeira (IBSP); Corupa (AMNH); Curitiba (IBSP); Iguaçu, forest along shore (MCN 21836, MCZ); Parque Estadual do Cerrado, Jaguariá (IBSP); Pilar do Sul [?] (MZSP 6548); Rio Jaguaçu, Salto Caxias, Capitão Leonidas Marques (MCN 23450); São Luis do Purunã (MZSP 7023); Villa Velha [?] (MZSP 7850). *Santa Catarina*: Palhoça (IBSP); Pinhal (AMNH); São Domingos (MCP 11352). *Rio Grande do Sul*: Alvorade (MCP 1576); Bom Jesus (MCN 17397, 29291); Cacapava de Sul (MCP 1438); Capoa da Genova, Capoa Nova (MCP 3139); 116 km 124 Camaquã (MZSP 7000); Caxias do Sul (MCP 11776); Cidreira (MCP 2240); Cruz Alta (F. Silveira, MCN 4380); Erechim (MCN 19572); Erval Grande (MCP 1556, 4452); Guaíba (MCN 14418, MCP 4843, 7546, 7403, 7547); Montenegro (MCN 7153, 7154); Nova Milano Farroupilha (MCP 3097); Pelotas (AMNH); Porto Alegre (MCN 3834, 15901, 3543, MCP 1031, 1039, 0062, 2691, 0463); Br. 116, Porto Alegre-Pelotas, R. 3 (MZSP7570); Santa Maria (MCN 4004, 4894, 6013, 6014, 6015, 6017); São Francisco de Paula (MCN 29200, MCP 9837); São Leopoldo (MZSP 4721); Tenente Portela (MCP 10205); Viamão (MCP 5806, 4732, 5834, 5928, 4709, 8449); Xangrilá, Capão Canoa [?] (MCN 12070). *URUGUAY Artigas*: Arroio Duas Cruzes (MCN 18537). *Lavalleja*: Cerro Arequita, Arequita (IBSP). *Maldonado*: Piriapolis (CAS). *Treinta y Tres*: Rio Olmar Chico, 25 km WSW Treinta y Tres (AMNH). *PARAGUAY Transchaco*, km 470, Laguna Negro (IRSNB); km 640, La Medlon (IRSNB); Asunción (IBSP, MLP 13509). *BOLIVIA Pando*: San Borja, near Río Maniqui, Estac. Biolog. (SMNK 1291, 1330). *Cochabamba*: Cochabamba (CAS). *La Paz*: El Chiquimeni, Poço Petrolero, Sapecho (MCN 24080);

Yungas, Mapiri (AMNH); Apolol (AMNH). *ARGENTINA Misiones*: Cataratas del Iguazú (CAS, MACN); San Ignacio (MLP 13992); Santa María (MACN); Posadas (MACN); Puerto Bemberg (MACN). *Catamarca*: Catamarca (MACN). *Salta*: P. N. El Rey (MACN). *Corrientes*: Mercedes (MLP 16473). *Formosa*: Formosa, Arroyo Guaycolec (USNM). *Salta*: Santa Inapia (MACN); Rosari (ZMK); 8.4 km S Cafayate, 1,660 m (AMNH); El Rey Natl. Pk. 950 m (AMNH). *Chaco*: Formosa (MACN). *Santiago del Estero*: Termas de Río Hondo (AMNH). *Entre Ríos*: Entre Ríos (MACN); Salto Grande (MACN); Rosario de la Frontera (ZMK); Entre Ríos (MLP 13556); Villa Federal (MLP 13973); Reserva Mocoretá (MACN); Gualaguay (MACN); La Paz (MACN); San José (MACN). *Santa Fé*: Las Gamas, 20 km W Vera (MACN); Tostado (MACN). *Córdoba*: Valle Hermoso, 800 m (AMNH); La Falda [?] (MACN); Leones, many coll. (MACN); Calamuchita (MCN). *Buenos Aires*: Buenos Aires, many coll. (MACN); Colastiné (MLP); Moreno (MACN); Buenos Aires (CAS); San Isidro (MACN); Hurlingham (MACN); Sierra de la Ventana (MACN); Del Viso (MCN); Ascension (MCN); Florida (MACN); San Isidro (MACN); Tortugas (MACN); Lanos (MACN); Zelaya, many coll. (MACN); Punta Lara (MACN). *Río Negro*: Cororel Gómez, Nov. 1945, ♂ (I. Grasso, MLP); General Roca, Balsa C, Dec. 1962, ♀ (A. Bachmann, MACN). *La Pampa*: Santa Rosa, Dec. 1966, ♀ (MACN). *Chubut*: Puerto Madryn, ♀ (M. Doello, MCN). *CHILE Tarapacá*: Arica, 5 Apr. 1976, ♀ (N. Hichins, AMNH); Lluta River Valley nr. Arica, ♀ (G. Mann, AMNH); Pocon, 27 Jan. 1978, ♀ ♂ (W. Sedgwick, MCZ); Azapa, Jan. 1978, ♂ (W. Sedgwick, MCZ). *Antofagasta*: Caleta del Cobre, Taltal, 30, 31 Apr. 1959, ♀ (R. Wagenknecht, AMNH).

Argiope blanda O. P.-Cambridge
Map 2D; Figures 46–54

Argiope blanda O. P.-Cambridge, 1898: 267, pl. 37, fig. 2, ♂. Male holotype from Santa Ana, 20 km SW Cobán, Guatemala, in BMNH. Levi, 1968: 348, figs. 137–153, ♀ ♂. Platnick, 2003.

Diagnosis. The female differs from *A. argentata* in ventral coloration of the abdomen. The transverse band is as wide as the length of the anterior median black trapezoid (Fig. 49); there do not seem to be distinct differences from the epigynum of *A. argentata*, but the hole in the epigynum depression is round (Fig. 48).

The palpus of the male differs from all other species by having a large cone at the base of the embolus (arrow, Fig. 53; Fig. 54).

Variation. Total length of females 9.0–

14.5 mm, males 2.7–4.3 mm. The size of the round opening inside the epigynum depression varies. The illustrations (Figs. 46–48, 53, 54) were made from specimens from Costa Rica.

Distribution. Southern Texas to Costa Rica (Map 2D).

Additional Records. UNITED STATES, TEXAS *Cameron Co.*: Sabal Palm Grove, ca. 6.4 km SE Brownsville, 31 May 1983, 1♂ (W. Maddison, MCZ). MEXICO *San Luis Potosí*: 13 km W San Joaquin, 21°45'N, 88°57'W, 19 Apr. 1963, 1♂ (W. J. Gertsch, W. Ivie, AMNH); Rt. 120, NE Xilitla, 27 May 1982, 1♀ (F. Coyle, MCZ). *Veracruz*: Catemaco, 95°4'W, 18°25'N, 9 Aug. 1966, 1♀ (J. W. Ivie, AMNH); 4 Sep. 1968, ♀ (A. F. Archer, AMNH). *Chiapas*: 8 km NE Huixtla, 1 Sep. 1980, 1♀ (E. S. Ross, CAS); Chiapas, 1920, 1 imm. (L. Hotzen, USNM). COSTA RICA *Guanacaste*: Palo Verde Biol. Station, 25 km SSW Bagaces, 16–22 Jan. 1978, 1♂ (W. Eberhard, MCZ). *Puntarenas*: Osa Peninsula, 4 km SW Rincon, Mar. 1967, 1♀ (OTS course, MCZ). *San José*: San José, ca. 1945, 1♂ (E. Schmidt, AMNH).

Argiope savignyi Levi
Map 2B; Figures 55–63

Argiope savignyi Levi, 1968: 350, figs. 154–169, ♀♂.
Male holotype from Barro Colorado Island, Lago Gatun, Panama in the MCZ. Platnick, 2003.

Diagnosis. The female differs from all others by the coloration of the abdomen dorsally, the posterior being black, containing few white spots (Fig. 59), ventrally by the broken transverse line, each half angled anteriorly (Fig. 58). The epigynum differs by having the posterior portion larger; posteriorly the septum is more massive (Figs. 55, 56).

Males of *A. savignyi* differ from *A. argentata* by lacking the spur near the embolus tip (Fig. 63), and from *A. blanda* by lacking the cone at the base of the embolus (Figs. 62, 63) and by having the hematodocha within the embolus coil (Fig. 63) and the base of the embolus slightly different in shape (Fig. 62).

Variation. Total length of females 12.7–18 mm, males 3.2–4.7 mm. The septum of the epigynum is quite variable in width and length (Levi, 1968). All illustrations were made from specimens from the for-

mer Canal Zone [now Panamá Prov.], Panama.

Natural History. In seasonal forest and roadside bushes in Yucatan.

Distribution. From Yucatan, Mexico, to southern Brazil (Map 2B).

Additional Records. MEXICO *Yucatan*: 3 km E Chichen Itza ruins on Hwy. 180, 19–20 July 1983, 1♂ (W. Maddison, R. S. Anderson, MCZ); Balankanche Cave 2 km E of Chichen Itza, 19 July 1983, 1♂ (W. Maddison, MCZ). NICARAGUA *Escondida River*, 80 km from Bluefields, 25 Oct. 1892, 1♀ (C. W. Richmond, USNM). COSTA RICA *Heredia*: Puerto Viejo de Sarapiquí, La Selva, 50 m, 12 Jan. 1986, 1♀ (J. Coddington, USNM). *Puntarenas*: Golfita, 3–8 July 1957, 1♀ (F. S. Truxal, AMNH). PANAMA *Panamá*: Forest Reserve [Soberiana Natl. Park], 23 July 1950, 1♀, 1♂ (A. M. Chickering, MCZ); Pipeline Road [Soberiana Natl. Park], 6 Jan. 1977, 1♀ (H. Levi, M. Robinson, MCZ); Barro Colorado Island, 13 Jan. 1968, 1♀ (M. Robinson, MCZ); Carti Road, 8 km NNW El Llano, 400 m, 4 Aug. 1983, ♀ (H. Stockwell, MCZ); Cerro Galero, July 1985, ♂ (W. Eberhard, MCZ). SURINAME *Brokopondo*: Brownsberg Reserve, 4°50'N, 55°15'W, May 1984, ♀ (D. Smith, MCZ). COLOMBIA *Santander*: Río Suarez, 800–1,000 m, 11–17 Aug. 1946, ♀ (AMNH). *Antioquia*: Mutatá, Dec. 1963, 1♀ (P. B. Schneble, MCZ). *Meta*: Puerto Lleras, Lomalinda, 3°18'N, 73°22'W, Sep. 1987, 1♀ (B. T. Carroll, CAS). *Choco/Putumayo*: S Quibdo, Río Atrata, 19 July 1983 (Coyle, AMNH); road from Puerto Lima to Santa Lucia, 240 m, 1 Jan. 1973, 3♀ (Leist, SMNK 3059a). *Valle*: Baja Calima nr. Puerto Patiña, 10–13 July 1981, 1♂ (B. Opell, MCZ). ECUADOR *Quevedo*, 20 Apr. 1976, 1♀ (Fritz, MACN) *Pichincha*: Tinalandia, nr. Santo Domingo de las Colorados, 7 Dec. 1981 (E. Schlinger, CAS). *Napo*: 20 km E Puerto Napo, Alinahuí, 1°0'S, 77°25'W, Nov.–Dec. 1995, 1♀ (E. S. Ross, CAS); Limoncocha, 240 m, 6 Feb. 1979, 1♀ (L. Burnham, MCZ); 20 km E. Puerto Napo, Alinahuí, 1°0'S, 77°25'W (E. S. Ross, CAS). PERU *Huanuco*: Hualaga Vall., Cucharas, Feb.–Apr. 1954, 1♀ (F. Woytkowski, CAS). *Madre de Dios*: Reservada Tambobata, 31 Oct.–6 Nov. 1986, 1♀ (A. Rypstra, USNM); Zona Reservada de Manu, Puesto de Vigil. Pakitza, 11°58'S, 71°18'W, 4 Oct. 1987, 1♀ (D. Silva, J. Coddington, USNM). BRAZIL *Bahia*: Fazenda Jacarandá, Itamarajú, 9 Dec. 1977, 1♀ (J. S. Santos, MCN 11028); Fazenda Nosso Senhora das Neves, Itamarajú, 9 Oct. 1978, 1♂ (J. S. Santos, MCN 11020). *Espirito Santa*: Linares, 31 Aug. 1966, imm. (H. Reichardt, 5308a). *Mato Grosso*: Sinop, 1976, 1♀ (O. Roppa, AMNH). *São Paulo*: Res. Ecol. Juréia-Itatins, Iguape, 19 Feb. 1996, 1♀ (R. S. Bérnils, MZSP 15514).

Argiope ericae new species

Map 2C; Figures 64–73

Holotype. Male holotype from Garruchos, São Borja, Rio Grande do Sul, Brazil, 6 Dec. 1975 (A. Lise, MCN 3181). The species is named after Erica Helena Buckup, arachnologist and helpful curator of the MCN collection.

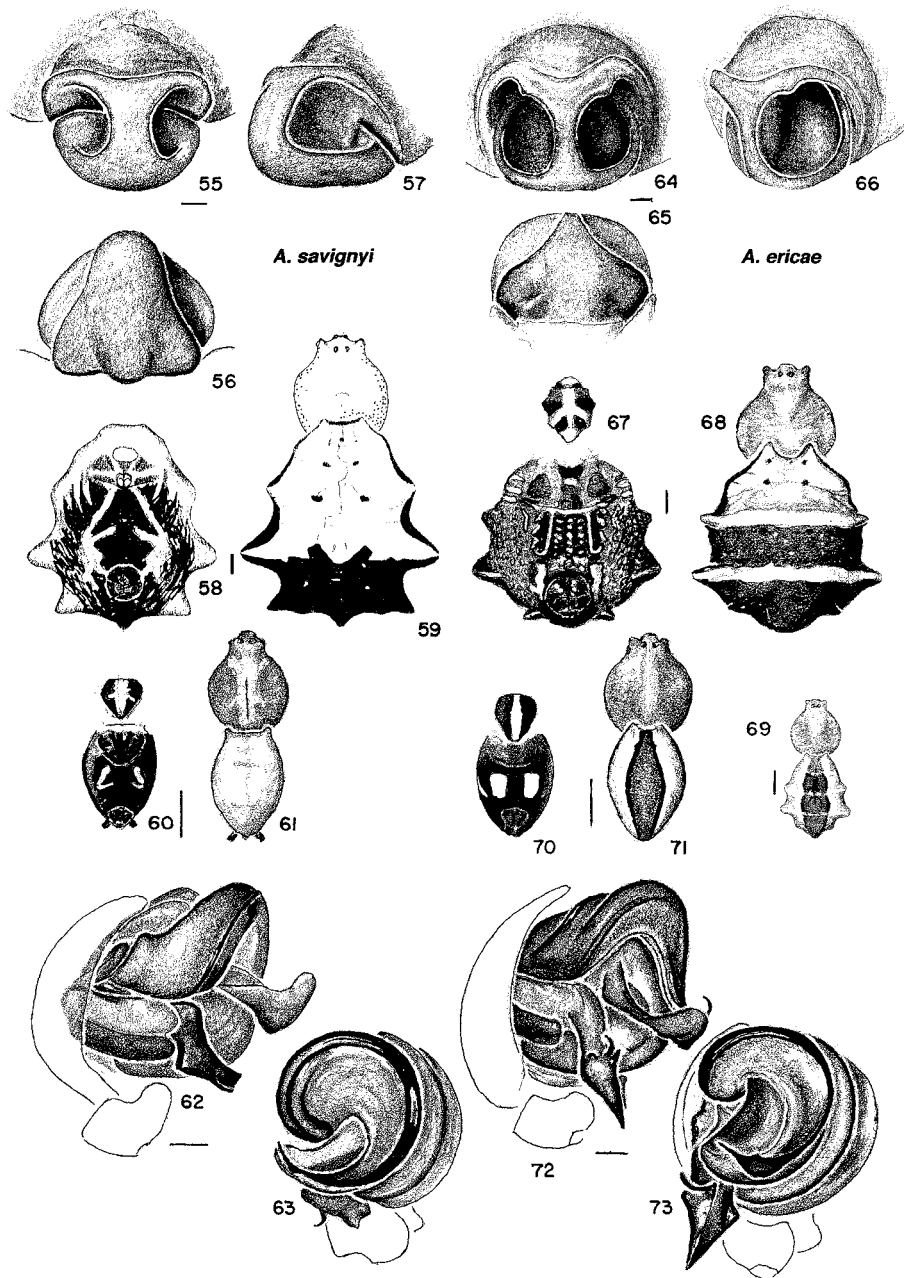
Description. Female allotype. Carapace, brown, lighter in median longitudinal area, eye region darker (Fig. 68). Chelicerae brown, distally light yellowish. Endites, labium dark brown, distally light. Sternum black with median, longitudinal white band having a pair of posteriorly directed branches (Fig. 67). Legs black with yellow rings almost as wide as black areas, more distinct ventrally. Abdomen with two dorsal black transverse bands and a gray one anteriorly, and a dusky spot between anterior tubercles (Fig. 68). Venter black, with a pair of thin white longitudinal lines, a narrow transverse line behind epigynum and on sides of spinnerets a large white patch; numerous white spots on sides and between white lines (Fig. 67). Anterior lateral eyes 0.6 diameters of anterior medians, posterior median eyes 1.0, posterior lateral eyes 1.2 diameters. Anterior medians 1.2 diameters apart, posterior medians 1.5 diameters apart. Lateral eyes on a tubercle, anterior eye facing ventrally and forward, posterior eye facing ventrally and half forward and to the side. Abdomen anteriorly with a pair of small projections, and three pairs of lateral humps, the third very small (Fig. 68). Total length 13 mm. Carapace 5.2 mm long, 4.8 wide in thoracic region, 2.2 wide in cephalic region. First femur 8.0 mm, patella and tibia 9.2, metatarsus 8.7, tarsus 2.1. Second patella and tibia 8.0 mm, third 5.2. Fourth femur 9.1 mm, patella and tibia 8.0, metatarsus 7.7, tarsus 2.2.

Male holotype. Carapace, chelicerae, endites, labium colored as in female (Fig. 71). Sternum dark brown with median, longitudinal white band. Legs dark brown, not banded. Abdomen with dorsal, medi-

an, longitudinal nearly black band with white on each side (Fig. 71); venter with a pair of white spots on black, and laterally a diagonal white line (Fig. 70). Anterior lateral eyes 0.8 diameters of anterior medians, posterior median eyes 1.2, posterior lateral eyes 1 diameter. Anterior medians 1.3 diameters apart, 1.3 from laterals. Posterior medians 1.5 diameters apart, 1.6 from laterals. Abdomen oval, pointed behind and anteriorly with a pair of small projections (Fig. 71). Total length 4.6 mm. Carapace 2.3 mm long, 2.0 wide in thoracic region, 0.8 wide behind posterior lateral eyes. First femur 3.2 mm, patella and tibia 3.4, metatarsus 2.8, tarsus 1.2. Second patella and tibia 3.3 mm, third 1.7, fourth 2.7.

Variation. Total length of females 13.0–16.5 mm, males 4.8–5.6 mm. The penultimate female has dorsal transverse bands as in the adults, the black venter has a pair of exclamation point marks, the dots whiter than the line above. The dots are anteriorly lateral to spinnerets, apparently derived from the pair of white ventral spots of the immature. A younger female shows the dorsal longitudinal abdominal white band of early instars, changing into transverse bands (Fig. 69). The male paratypes have the conductor straighter than the curled one of the illustrated male holotype (Figs. 72, 73).

Diagnosis. No other American species is marked as is *A. ericae* (Figs. 67, 68, 70, 71). The absence of the white, transverse, ventral band separates *A. ericae* from *A. argentata*. The epigynum has a distinct tubercle on the anterior lip of the opening (Figs. 64, 66). The third and fourth femora are slightly longer than their respective tibiae. The male markings, a dorsal, longitudinal, dark band on the abdomen (Fig. 71) and a pair of ventral white patches (Fig. 70) separate *A. ericae* from all other American species. The median apophysis of the palpus is distally pointed (at 5h in Fig. 72, at 7h in Fig. 73) and the tip of the embolus has a distinct shape (Fig. 73).



Figures 55–63, *Argiope savignyi* Levi. 55–59, female. 55–57, epigynum. 55, ventral. 56, posterior. 57, lateral. 58, abdomen, ventral. 59, dorsal. 60–63, male. 60, sternum and abdomen, ventral. 61, dorsal. 62, 63, left palpus. 62, mesal. 63, ventral.

Figures 64–73, *Argiope ericae*, new species. 64–69, female. 64–66, epigynum. 64, ventral. 65, posterior. 66, lateral. 67, abdomen, ventral. 68, dorsal. 69, immature, dorsal. 70–73, male. 70, sternum and abdomen, ventral. 71, dorsal. 72, 73, palpus. 72, mesal. 73, ventral.

Scale lines, 1.0 mm, genitalia, 0.1 mm.

Distribution. São Paulo State, Brazil, to northeastern Argentina (Map 2C).

Paratypes. BRAZIL *Rio Grande do Sul:* Garruchos, S Borja, 7 Dec. 1975, 1♂ (A. Lise, MCN 3197). ARGENTINA *Misiones:* Iguazú, 1♂ (Prosen, MLP); Río Urugua-í, Pto. Bemberg [Pto. Libertad], 1 Feb. 1950, penult. ♀ (Giai-Partridge, MACN 3161); San Antonio, 2 Mar. 1951, ♀ (W. Partridge, MACN 3410). *Entre Ríos:* Parque Nacional El Palmar, Feb. 1981, ♀ allotype (P. Goloboff, MACN).

Specimens Examined. BRAZIL *São Paulo:* São Roque, 14 June 1959, 1 imm., 1♂ (F. Lane, AMNH). *Paraná:* Ponte do Rio Coutinho, Guarapuava, 28 Apr. 1967, 1 imm. (P. de Biasi, MZSP 6990). *Rio Grande do Sul:* Porteira Sete, Cachoeira do Sul, 31 Oct. 1992, 1 imm. ♂ (R. G. Buss, MCP 3423); Capão de Padre Reus, São Leopoldo, 27 Aug. 1966, 1 imm. (MZSP 5506). ARGENTINA *Misiones:* Eldorado, 26°28'S, 54°43'W, 1 Sep.–15 Nov. 1964, 3 imm. (A. Kovacs, AMNH).

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LITERATURE CITED

- ABALOS, J. W. 1980. Las areñas del género *Latrodectus* en la Argentina. *Obra Centen. Museo de la Plata*, **6**: 29–51.
- AUDOUIN, J. V. 1826. pp. 1–339. *In* Savigny, J. C., *Descriptions de l'Égypte et de la Syrie*, Paris, vol. 1, no. 4, p. 121.
- . 1827. pp. 291–430. *In* Savigny, J. C., *Descriptions de l'Égypte et de la Syrie*, Paris, 2 edit. vol. 2, no. 22.
- BJØRN, P. DE P. 1997. A taxonomic revision of the African part of the orb-weaving genus *Argiope* (Araneae: Araneidae). *Entomologica Scandinavica*, **28**: 199–240.
- CAMBRIDGE, F. P. 1897–1905. Arachnida, Araneidea. *Biologia Centrali-Americana, Zoologia*, London, **2**: 1–610.
- CAMBRIDGE, O. P. 1889–1902. Arachnida, Araneidea. *Biologia Centrali-Americana, Zoologia*, London, **1**: 1–317.
- CHAMBERLIN, R. V., AND W. IVIE. 1944. Spiders of the Georgia region of North America. *Bulletin of the University of Utah*, **35**(9): 1–267.
- DONDALE, C. D., J. H. REDNER, P. PAQUIN, AND H. W. LEVI. 2003. The orb-weaving spiders of Canada and Alaska. Araneae: Uloboridae, Tetragnathidae, Araneidae, Theridiosomatidae. *The Insects and Arachnids of Canada*, **20**: 1–321.
- FABRICIUS, J. C. 1775. *Systema Entomologiae, sistens Insectorum classes, ordines, genera, species, adiectis, synonymis, locis descriptionibus observationibus*. Flensburgi et Lipsiae, **1775**: 1–832.
- FORSKÅL, P. 1775. *Descriptiones Animalium, Avium, Amphibiorum, Piscium, Insectorum, Vermium; quae in itinere orientali observavit Petrus Forskål. Hauniae, [Araneae]: 85–86.*
- HENTZ, N. M. 1850. Descriptions and figures of the Araneides of the United States. *Boston Journal of Natural History*, **6**: 18–35.
- INTERNATIONAL COMMISSION ON ZOOLOGICAL NOMENCLATURE. 1975. Opinion 1038. *Bulletin of Zoological Nomenclature*, **32**: 105.
- KEYSERLING, E. 1892–1893. *Die Spinnen Amerikas, Epeiridae*. Nürnberg: Verlag von Bauer und Raspe, **4**: 1–377.
- KOCH, C. L. 1835. *Deutschlands Crustaceen, Myriapoden und Arachnidan*, H. Schaeffer (ed.). 40 sections. Regensburg: .
- . 1839. *Die Arachniden*. Nürnberg, **5**: 1–158.
- . 1843. *Die Arachniden*. Nürnberg, **10**: 1–143.
- LEVI, H. W. 1968. The spider genera *Gea* and *Argiope* in America (Araneae: Araneidae). *Bulletin of the Museum of Comparative Zoology*, **136**: 319–352.
- . 1983. The orb-weaver genera *Argiope*, *Gea* and *Neogea* from the western Pacific region (Araneae: Araneidae, Argiopinae). *Bulletin of the Museum of Comparative Zoology*, **150**: 247–338.
- . 1993. The Neotropical orb-weaving spiders of the genera *Wixia*, *Pozonia* and *Ocrepeira* (Araneae: Araneidae). *Bulletin of the Museum of Comparative Zoology*, **153**: 47–141.
- LEVY, G. 1998. Twelve genera of orb-weaving spiders (Aranea, Araneidae) from Israel. *Israel Journal of Zoology*, **43**: 311–365.
- LUCAS, H. 1833. Descriptions d'une espèce nouvelle d'Arachnide appartenant au genre *Argiope* de Savigny. *Annales de la Société entomologique de France*, Paris, **2**: 86–88.
- PLATNICK, N. 2003. *The World Spider Catalog*. Version 3.5. American Museum of Natural History, on line at <http://research.amnh.org/entomology/spiders/catalog>.
- ROBERTS, M. J. 1995. *Spiders of Britain and North-*

- ern Europe. Collins Field Guide. London: Harper Collins Publ. 383 pp.
- THORELL, T. 1870. On European spiders. *Nova Acta Regiae Societatis Scientiarum Upsalensis*. (3)7:1–108.
- . 1873. Remarks on Synonyms of European Spiders. Upsala, pp. 375–645.
- YIN, CHANGMIN. 1997. Arachnida Araneae: Araneidae. *Fauna Sinica*. Beijing: Science Press. 460 pp.

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