

# AMERICAN MUSEUM *Novitates*

PUBLISHED BY THE AMERICAN MUSEUM OF NATURAL HISTORY  
CENTRAL PARK WEST AT 79TH STREET, NEW YORK, NY 10024  
Number 3656, 12 pp., 59 figures August 28, 2009

## A New Genus of the Spider Family Caponiidae (Araneae, Haplogynae) from Iran

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### ABSTRACT

A new genus and species, *Iraponia scutata*, are established for the first members of the Caponiidae to be found in Iran. Males of this new genus, the second known from Asia, are unique in the family in having an extensive ventral abdominal scutum, and in having lost the posterior median pair of spinnerets. These caponiids have six eyes, a character shared only with some members of the New World genus *Caponina*.

### INTRODUCTION

Members of the spider family Caponiidae have only recently been discovered in Asia. The genus *Laoponia* was established by Platnick and Jäger (2008) for a species from Laos, and congeneric specimens have since been found in Vietnam (Shuqiang Li, personal commun.).

In this paper, the seventh in a series on caponiids, we report on the first specimens of the family to be collected in Iran. As with the three

other caponiid genera known from the Old World (*Caponia* Simon, found from Ethiopia to South Africa; *Diploglena* Purcell, known only from South Africa and Namibia; and *Laoponia*), the Iranian specimens have entire, rather than subsegmented, tarsi, and are therefore placed in the subfamily Caponiinae, a presumably basal (and possibly paraphyletic) group whose members are united only by the absence of the many bizarre leg modifications found in members of the New World subfamily Nopinae (see

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Platnick, 1995; Platnick and Lise, 2007). In having six eyes (figs. 19, 26–28), the Iranian species resembles only some members of the New World caponiine genus *Caponina* (see Platnick, 1994a: figs. 19, 20, 1994b: fig. 1).

The Iranian specimens show several characters not previously found in caponiids (and rare among spiders in general). The abdomen of males bears an extensive ventral scutum that extends partly up the sides of the abdomen (figs. 1, 2, 8–10, 23–25), resembling that of females of the oonopid genus *Scaphiella* Simon (see Ubick, 2005: 187, fig. 44.3; males of *Scaphiella* have an additional dorsal scutum on the abdomen, so they look quite different).

The posterior median spinnerets of *Iraponia* are also distinctive. In females, they bear a single spigot that is greatly widened (figs. 54, 56, 57); similarly shaped spigots have been found in other caponiids, including the nopine *Tarsonops ovalis* (Banks), as shown by Platnick et al. (1991: fig. 148), the six-eyed *Caponina chilensis* Platnick (see Platnick, 1994a: fig. 14), and the eight-eyed *Calponia harrisonfordi* Platnick. Because spigots of this type have been found on juveniles (in *Calponia*, see Platnick, 1993: figs. 10, 12), they are presumed to serve the minor ampullate glands rather than the cylindrical glands (which are not known to occur in any haplogynes other than leptonetids and telemids). Even more oddly, in males of *Iraponia* the posterior median spinnerets seem to have been lost entirely (fig. 40).

Previous studies by scanning electron microscopy documented the presence of distinctive, transverse rows of tiny teeth on the anterior surface of the mouthparts (figs. 36, 37; cf. Platnick, 1993: figs. 5, 6; Platnick, 1994a: fig. 6; Platnick, 1995: figs. 21–23; Platnick and Jäger, 2008: fig. 8). These were previously thought to be situated on the labrum, but are actually on the labium itself; in at least some caponiids, the labrum seems to be remarkably reduced in size (fig. 36; cf. Platnick, 1993: fig. 5).

The female genitalic system of *Iraponia* resembles that of the Californian *Calponia harrisonfordi* (see Platnick, 1993: figs. 17, 18), consisting of a large receptacular sac, the bulk of which extends posteriorly from the epigastric furrow (figs. 46–50). The surface of that sac

shows scattered pores associated with presumed secretory glands, which are sometimes single and sometimes paired (figs. 51, 52).

## SYSTEMATICS

### *Iraponia*, new genus

TYPE SPECIES: *Iraponia scutata*, new species.

ETYMOLOGY: The generic name is a contraction of “Iranian *Caponia*” and is feminine in gender.

DIAGNOSIS: Males can easily be distinguished from those of all other known caponiids by the presence of an extensive postepigastric scutum on the abdominal venter (figs. 1, 2, 8–10, 23–25) and the absence of the posterior median pair of spinnerets (figs. 2, 40). Members of both sexes can be distinguished from the nopine genera (*Nops* MacLeay, *Nopsides* Chamberlin, *Orthonops* Chamberlin, *Nyetnops* Platnick and Lise, and *Tarsonops* Chamberlin) by having entire, rather than subsegmented tarsi, and from most of the other caponiine genera by having six eyes (members of *Calponia* Platnick and *Caponina* have eight eyes, members of *Notnops* Platnick have four eyes, and members of *Diploglena*, *Laoponia*, *Taintnops* Platnick, and *Tisentnops* Platnick have only two eyes). Only some species of the New World genus *Caponina* Simon have six eyes, and females of those species lack the posteriorly extended epigastric region found in those of *Iraponia* (figs. 4, 18, 21, 46).

DESCRIPTION: Moderate-sized caponiids (figs. 1–4, 8, 9, 17, 18, 23–25) with six eyes, four lateral eyes with distinct lenses (fig. 19), although those of posterior lateral pair less elevated than those of anterior, especially in males (figs. 28, 29). Carapace broadly oval, anteriorly narrowed to less than half its maximum width, pars cephalica depressed behind ocular area, with elevations extending toward coxae, pars thoracica short, sloping; cuticle with small hexagonal cells; few dorsally directed strong bristles on clypeus; scattered needle-like hairs on carapace; thoracic groove short, almost obsolete (figs. 26, 27). Six eyes, medians dark, separated by their radius, set back from anterior margin of clypeus by

about three times their diameter, surrounded by oval ring of black pigment, laterals white, with high, rounded lenses on anteriors, lenses lower on posteriors (especially in males). Cheliceral paturon with long, strong bristles, overlapping medially; base of fang unmodified; median lamina long, with sharply pointed anteromedian tip (fig. 34); most of space between lamina and base of fang occupied by white membranous lobe; lateral surface with stridulatory ridges (figs. 31–33), pick on prolateral side of palpal femur, situated at about one-fifth of femur length (figs. 53, 59). Endites convergent, acuminate, covered with many long setae (figs. 20, 22), with strong distal serrula consisting of single tooth row (fig. 35). Labium triangular, fused to sternum (fig. 30), slightly invaginated at base, covered with few scattered setae, anterior surface with transverse rows of tiny teeth (fig. 37); labrum long, narrow, triangular, distally elevated (fig. 36). Sternum as wide as long, microsculpture consisting of hexagonal cells, without radial furrows between coxae, covered with scattered setae, not fused to carapace (fig. 11); cephalothoracic membranes without epimeric sclerites, but long triangular sclerites extend from sternum between coxae I and II, II and III, and III and IV, shorter triangles extending to each coxae. Leg formula 4213; legs without spines; metatarsi and tarsi entire, without subsegmentation or membranous processes; tarsi with three claws; paired claws with about six teeth (more on leg I), distal teeth largest; unpaired claw shorter than paired ones, without teeth. Tibiae, metatarsi, and tarsi with trichobothria in single row, bases ridged (fig. 38); tarsal organ exposed (fig. 39); female palpal tarsus elongated, prolateral surface densely covered with setae. Abdomen of males with extensive postepigastric scutum covering anterior three-quarters of venter, extending dorsally on both sides, not completely surrounding pedicel; epigastric region slightly protruding, with two pairs of respiratory spiracles; posterior spiracles connected by rebordered groove extending farther back at middle than at sides (fig. 46), leading to two large tracheal trunks extending anteriorly into cephalothorax, single narrower trunk extending posteriorly for most of abdominal length, and few short, small trachaeoles extending

posteriorly (fig. 13); postepigastric scutum not fused to epigastric scutum; two small platelets visible in oval, unsclerotized male epigastric area (figs. 2, 10, 12). Males with only four spinnerets (fig. 40), posterior medians lacking; anterior laterals with single, presumably major ampullate gland spigot (fig. 41), posterior laterals with about seven aciniform gland spigots (fig. 42); females with six spinnerets (fig. 54), anterior laterals as in male (fig. 55), posterior medians with large, flattened minor ampullate gland spigot (figs. 56, 57), posterior laterals as in male (fig. 58). Male palpal patella and tibia short, unmodified; cymbium ovoid, prolateral surface densely covered with strong setae; bulb stout; embolus broad ribbon, slightly bent distally at about half its length, tip directed retrolaterally (figs. 5–7, 14–16, 43–45). Female genitalic area with postepigastric scutum represented only by pair of triangular sclerites at posteromedian corners (figs. 4, 21). Internal female genitalia consisting of long, posteriorly directed receptacular sac (figs. 47, 48), copulatory opening narrow (fig. 49), surface of sac with pores for secretory glands (figs. 50–52).

Distribution: Known only from Kohgiluyeh Province, Iran.

#### *Iraponia scutata*, new species

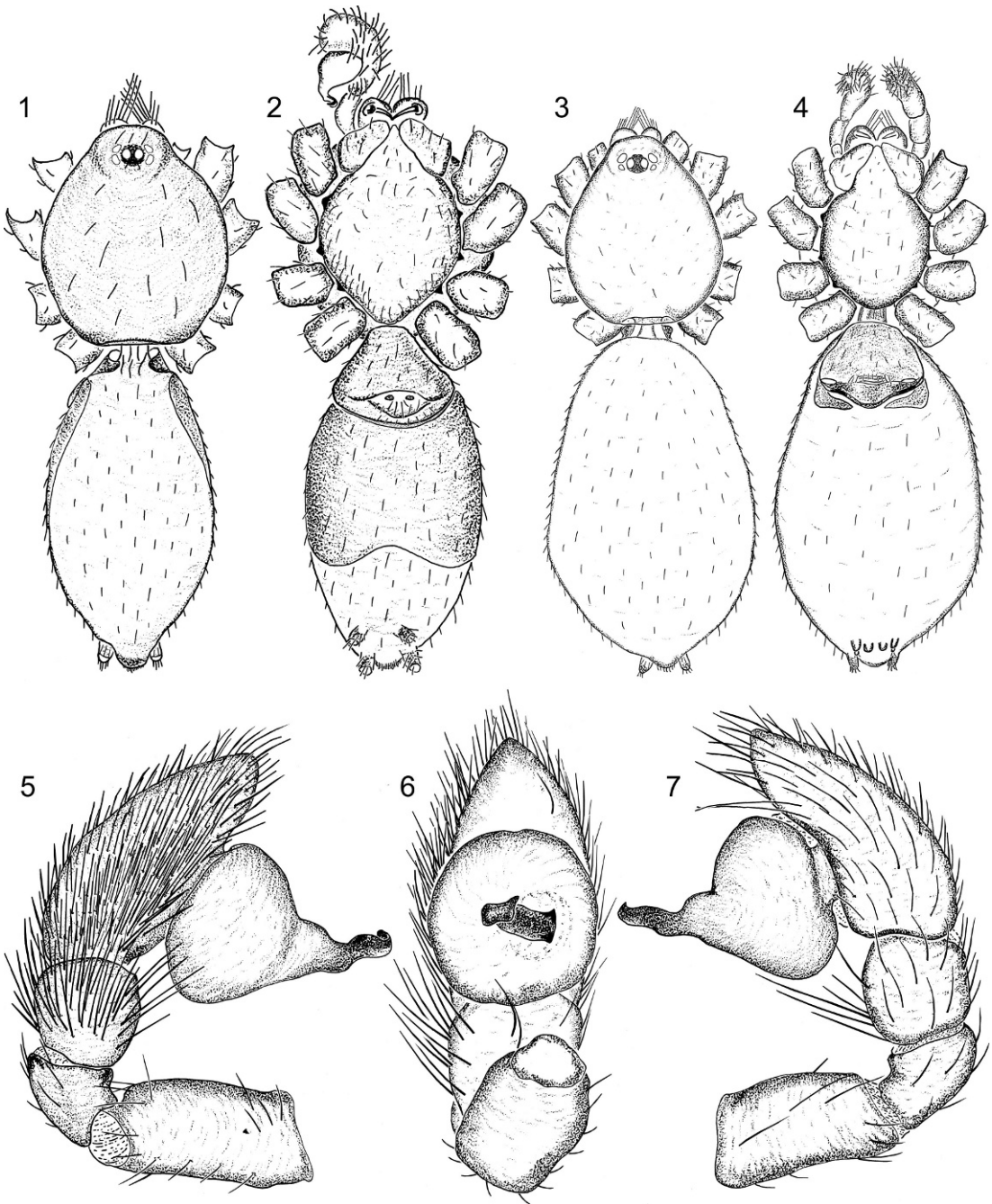
Figures 1–59

TYPES: Holotype male and allotype female taken on the road to Yasuj, 30°28'N, 51°30'E, Kohgiluyeh, Iran (May 25, 1974; A. Senglet), deposited in Muséum d'Histoire Naturelle, Geneva.

ETYMOLOGY: The specific name is a Latin adjective referring to the ventral abdominal scutum of males.

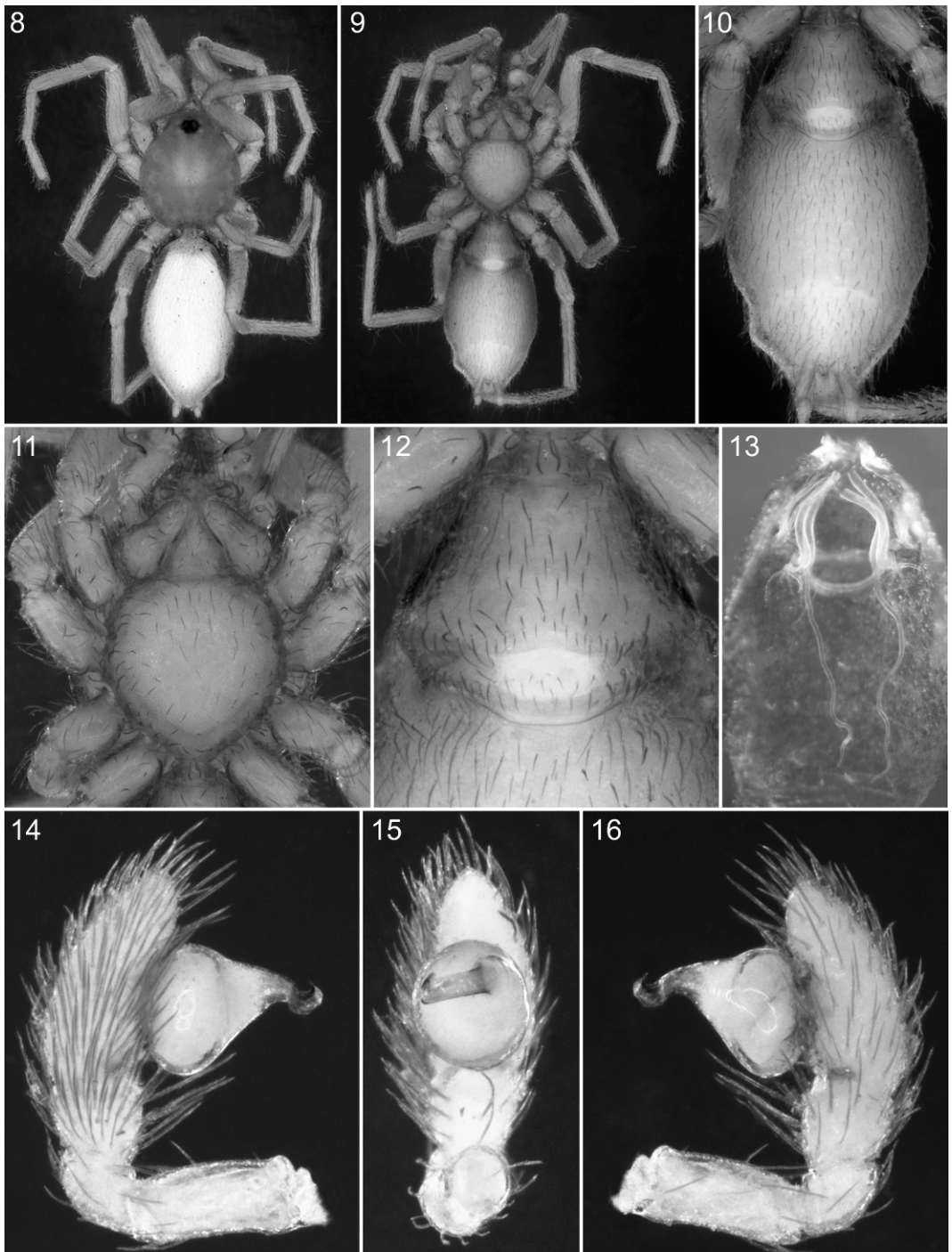
DIAGNOSIS: With the characters of the genus and genitalia as described.

MALE (holotype): Total length 3.54 mm. Carapace 1.48 mm long, 1.26 mm wide, uniformly orange; mouthparts pale orange; sternum orange; abdomen dorsally uniformly white, with scattered long setae, ventrally covered by orange scutum, extending dorsally on both sides. Palpal cymbium covered prolaterally with thick layer of setae; bulb rounded, embolus broad ribbon, slightly bent distally at about half its length (figs. 5–7, 14–16, 43–45).

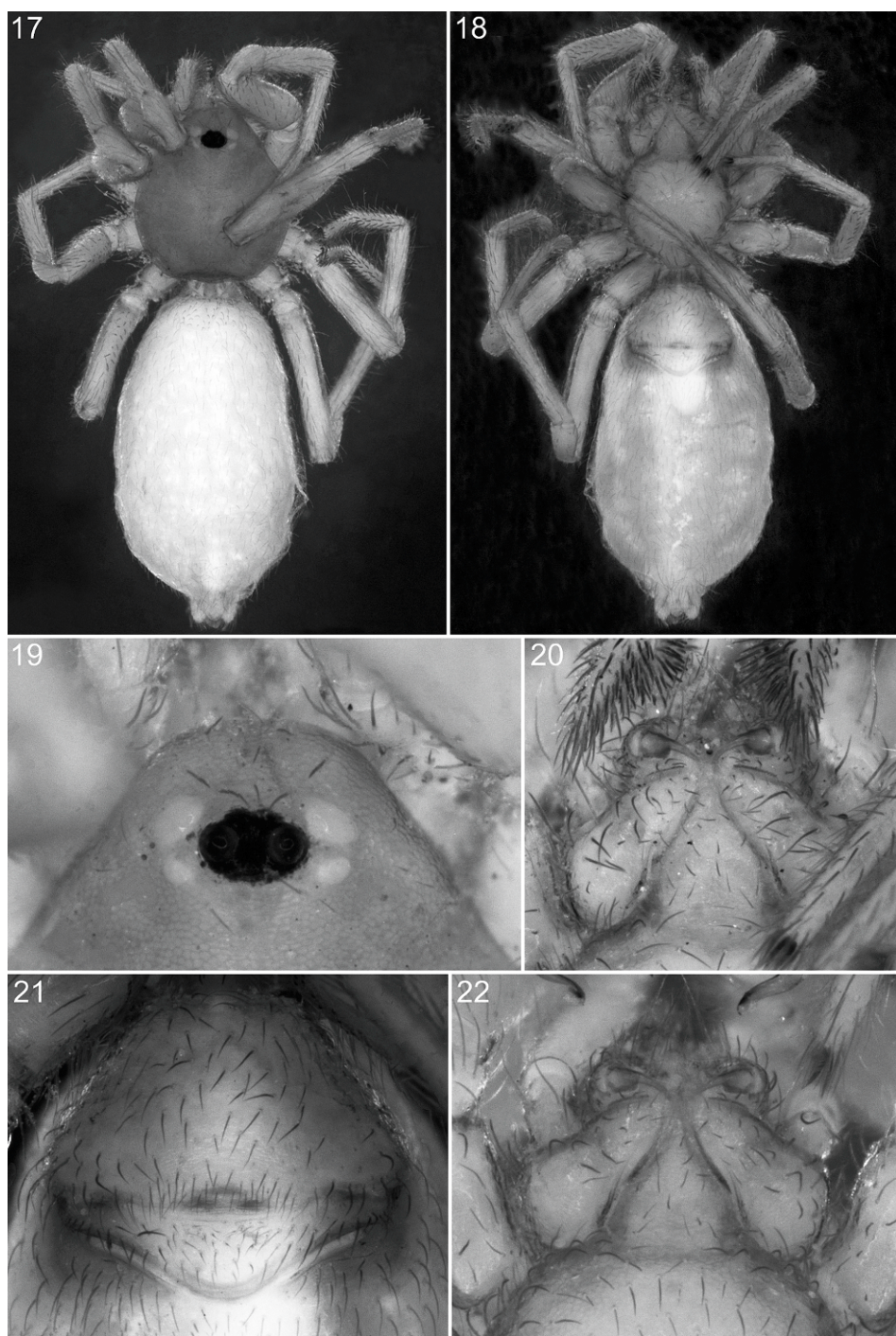


Figs. 1-7. *Iraponia scutata*, new species. 1. Male, cephalothorax and abdomen, dorsal view. 2. Same, ventral view. 3. Female, cephalothorax and abdomen, dorsal view. 4. Same, ventral view. 5. Left male palp, prolateral view. 6. Same, ventral view. 7. Same, retrolateral view.



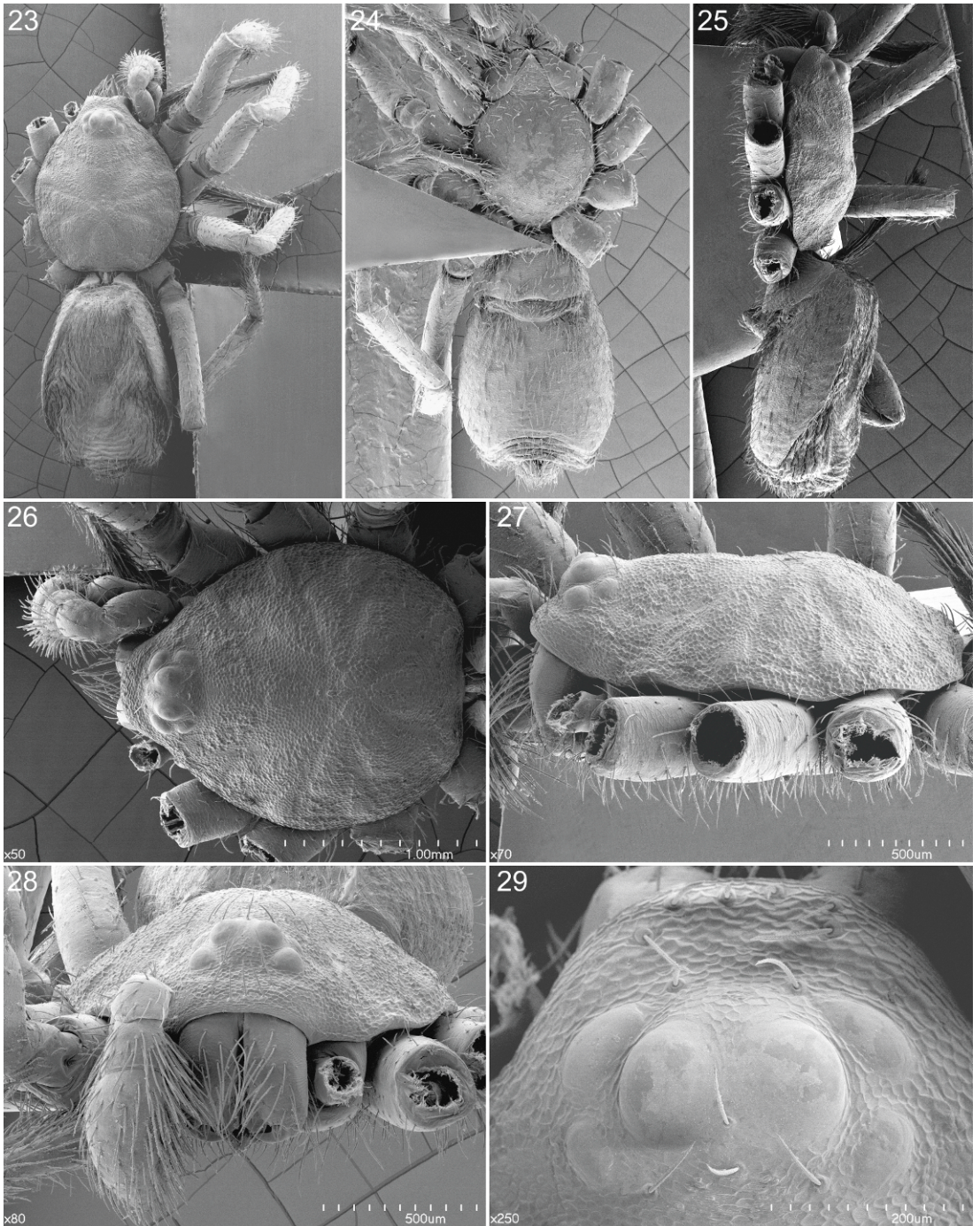


Figs. 8–16. *Iraponia scutata*, new species, male. **8.** Habitus, dorsal view. **9.** Same, ventral view. **10.** Abdomen, ventral view. **11.** Sternum and mouthparts, ventral view. **12.** Epigastric region, ventral view. **13.** Respiratory system, digested, dorsal view. **14.** Left palp, prolateral view. **15.** Same, ventral view. **16.** Same, retrolateral view.



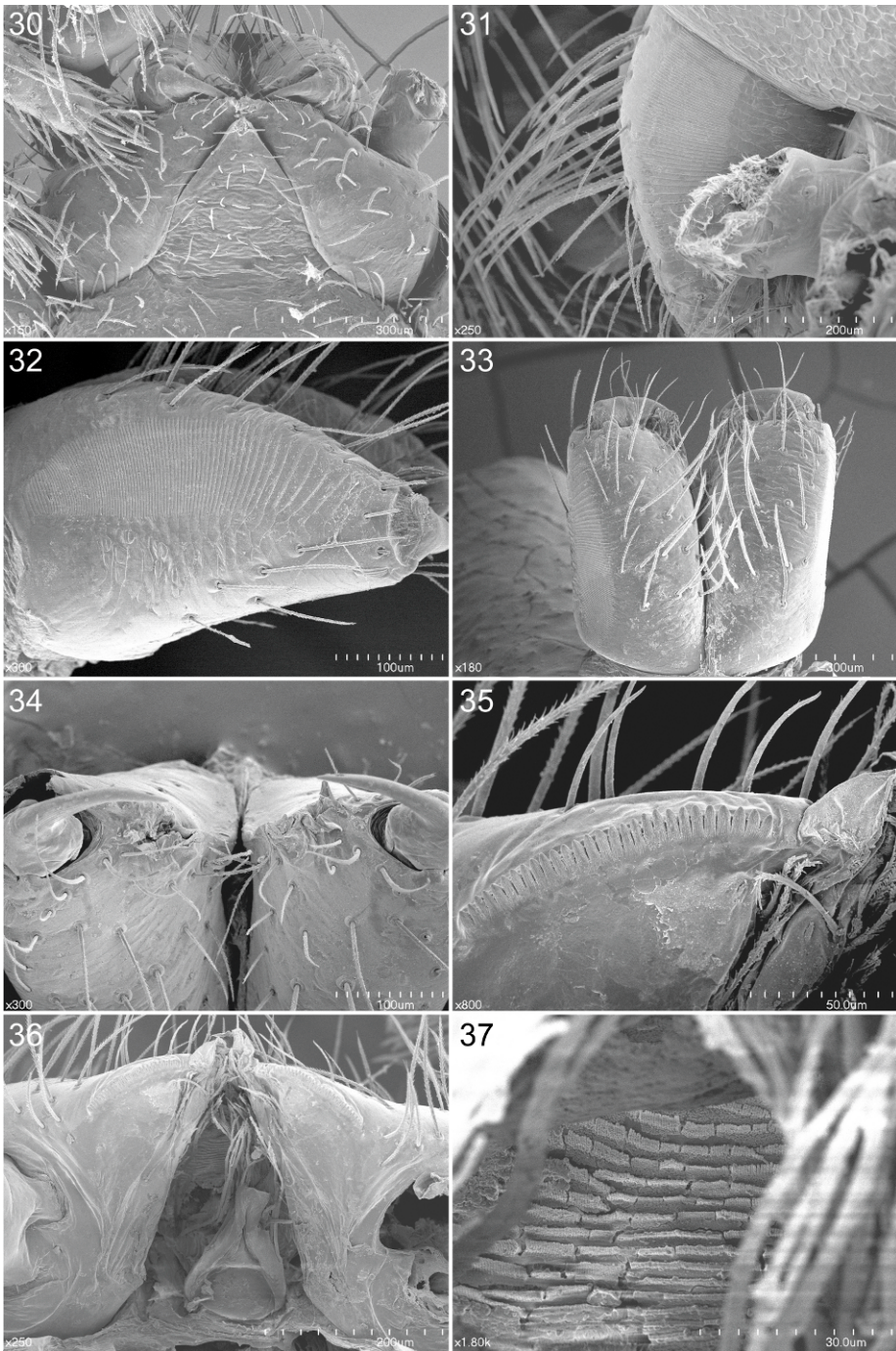
Figs. 17–22. *Iraponia scutata*, new species. 17. Female, habitus, dorsal view. 18. Same, ventral view. 19. Female, ocular area, dorsal view. 20. Female, mouthparts, ventral view. 21. Female, epigastric region, ventral view. 22. Male, mouthparts, ventral view.





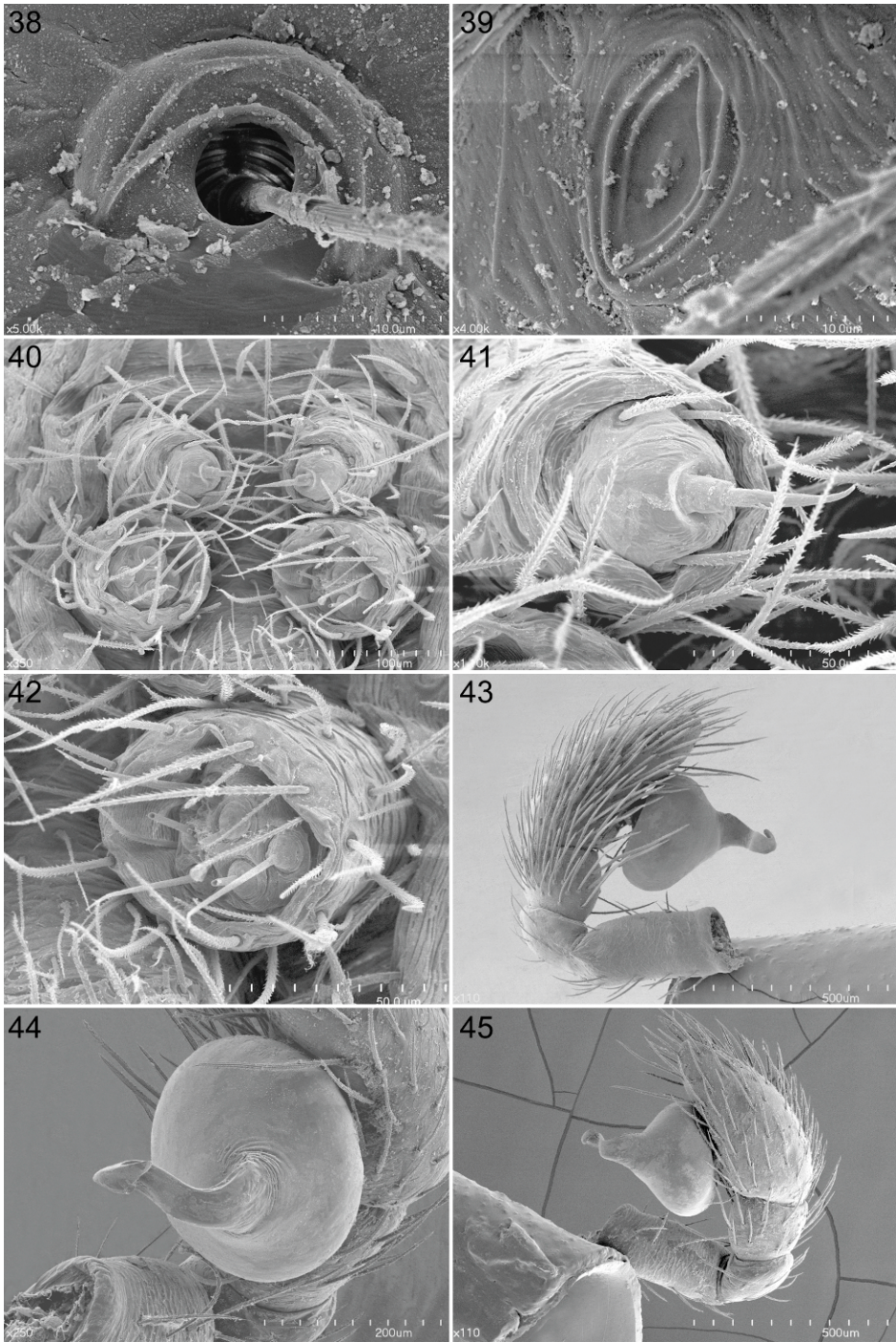
Figs. 23–29. *Iraponia scutata*, new species, male. 23. Habitus, dorsal view. 24. Same, ventral view. 25. Same, lateral view. 26. Carapace, dorsal view. 27. Same, lateral view. 28. Same, anterior view. 29. Ocular area, dorsal view.





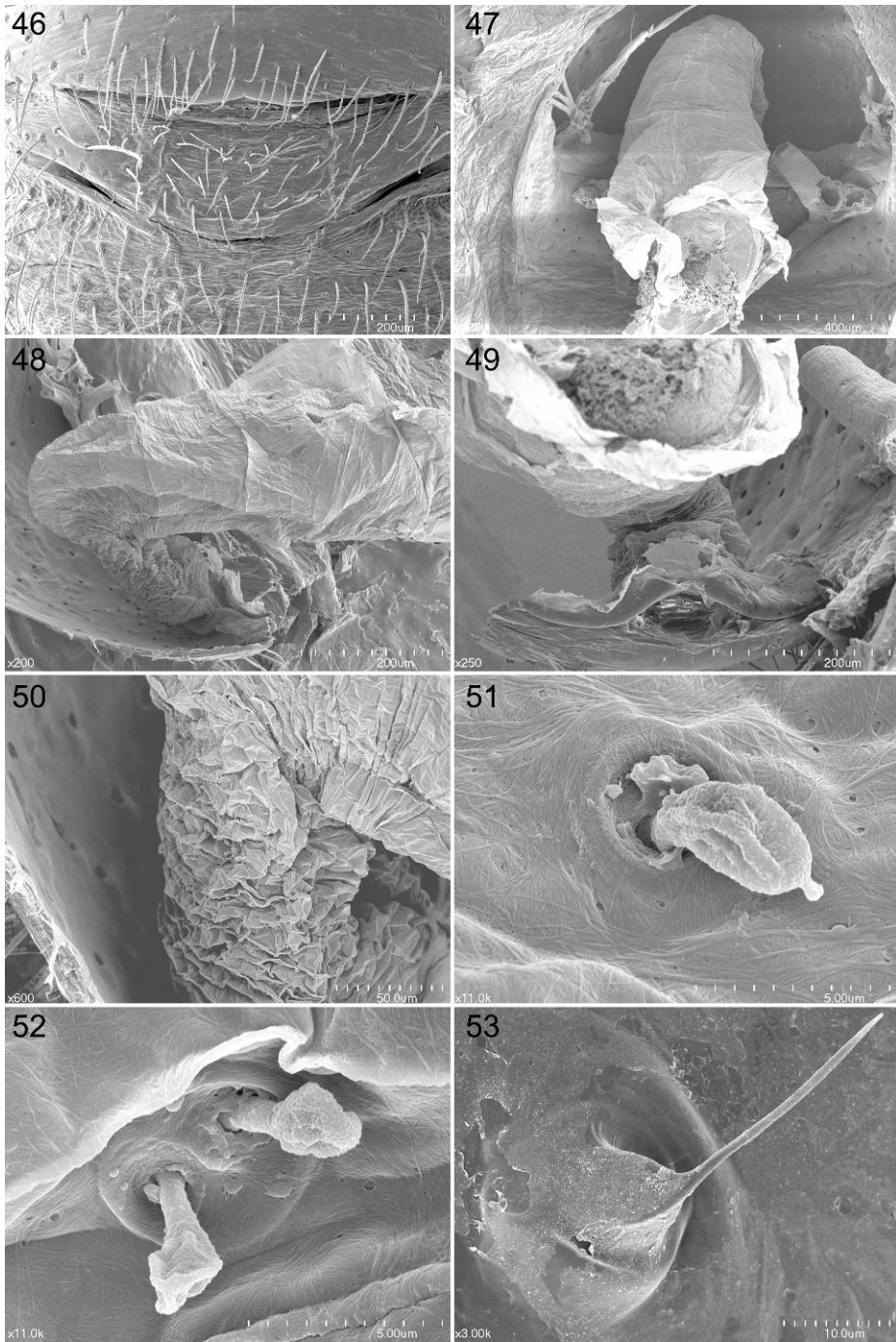
Figs. 30–37. *Iraponia scutata*, new species, male. 30. Mouthparts, ventral view. 31. Left chelicera, lateral view. 32. Right chelicera, lateral view. 33. Chelicerae, anterior view. 34. Same, ventral view. 35. Serrula, anterior view. 36. Mouthparts, anterior view. 37. Labial teeth, anterior view.





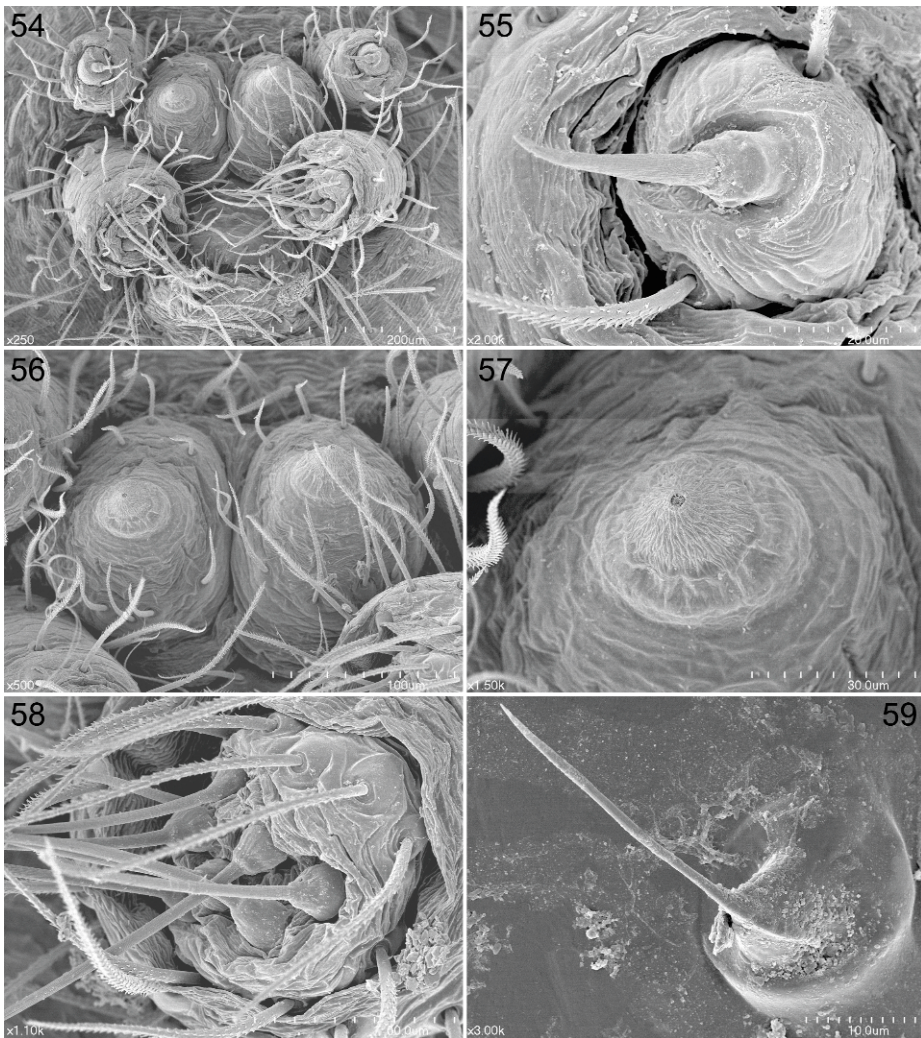
Figs. 38–45. *Iraponia scutata*, new species, male. 38. Trichobothrial base from metatarsus III, dorsal view. 39. Tarsal organ from leg I, dorsal view. 40. Spinnerets, posterior view. 41. Anterior lateral spinneret, posterior view. 42. Posterior lateral spinneret, posterior view. 43. Left palp, prolateral view. 44. Same, ventral view. 45. Same, retrolateral view.





Figs. 46–53. *Iraponia scutata*, new species. **46.** Female, epigastric region, ventral view. **47.** Receptaculum, digested, dorsal view. **48.** Same, lateral view. **49.** Same, posterior view, showing copulatory opening at bottom. **50.** Same, surface, lateral view, showing scattered glands. **51.** Same, gland and pore. **52.** Same, two adjacent glands and pores. **53.** Male, stridulatory pick from right palpal femur, lateral view.





Figs. 54–59. *Iraponia scutata*, new species, female. **54.** Spinnerets, posterior view. **55.** Anterior lateral spinneret, posterior view. **56.** Posterior median spinnerets, posterior view. **57.** Presumed minor ampullate gland spigot on posterior median spinneret, posterior view. **58.** Posterior lateral spinnerets, posterior view. **59.** Stridulatory pick from left palpal femur, lateral view.

**FEMALE (allotype):** Total length 4.76 mm. Carapace 1.66 mm long, 1.33 mm wide, coloration as in male but abdomen uniformly white except for orange epigastric area enclosing triangular white area. Epigastric scutum small, covering only epigastric area and ending posteriorly as sclerotized arch (fig. 46), internal genitalia consisting of long, posteriorly directed receptacular sac with secretory glands (figs. 47–52).

**OTHER MATERIAL EXAMINED:** Three males taken with the types, two in the Muséum

d'Histoire Naturelle, Geneva, one in the American Museum of Natural History.

**DISTRIBUTION:** Known only from the type locality in southwestern Iran.

#### ACKNOWLEDGMENTS

We thank Peter Schwendinger for the loan of the specimens, Shuqiang Li for his information on Vietnamese *Laoponia*, Peter Jäger and Darrell Ubick for their helpful comments

on a draft of the manuscript, and Steve Thurston for his skill in assembling the plates.

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