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## A Revision of the Spider Genus *Orthonops* (Araneae, Caponiidae)

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### ABSTRACT

The nine known species of *Orthonops* Chamberlin are diagnosed and illustrated. *Nops ovalis* Banks is transferred to *Orthonops*. The males of *O. oertus* Chamberlin and *O. gertschi* Chamberlin

are described for the first time. Five new species (*johnsoni*, *icenoglei*, *zebra*, *iviei*, and *giulianii*) are described from California, Arizona, and Sonora.

### INTRODUCTION

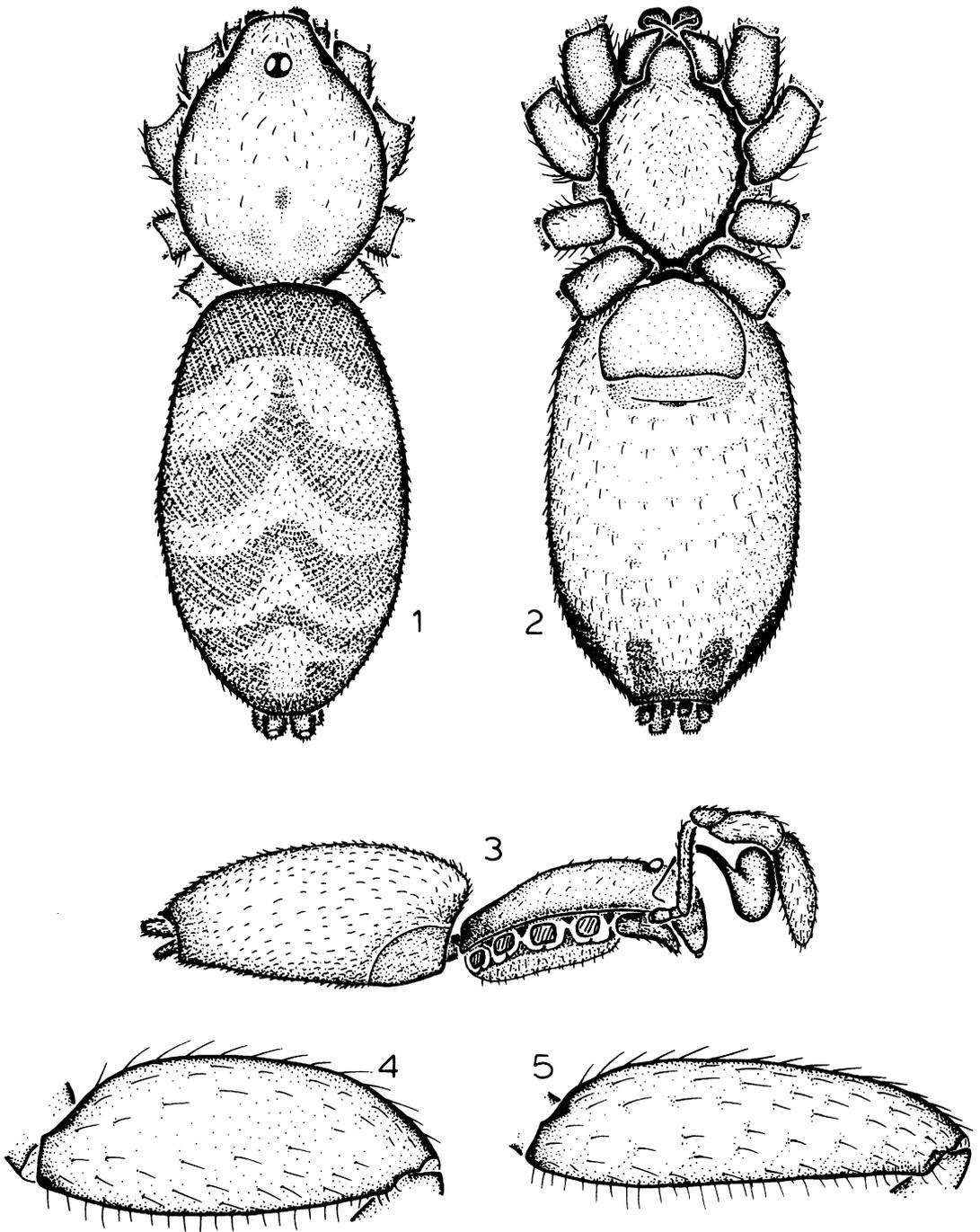
The present paper, the fourth in a series on the haplogyne spider family Caponiidae, begins coverage of the Nopinae, a seemingly monophyletic group defined by the presence of subsegmented tarsi (figs. 6, 9). Members of the subfamily occur from the southwestern United States south to Argentina. Aside from the classical, Neotropical genus *Nops* MacLeay, the other genera currently assigned to the group were all initially described by Chamberlin (1924) on the basis of material from Baja California: *Nopsides*, *Tarsonops*, and the genus revised here, *Orthonops* (figs. 1–5).

Brignoli (1977) suggested that both *Tarsonops* and *Orthonops* might be synonymous

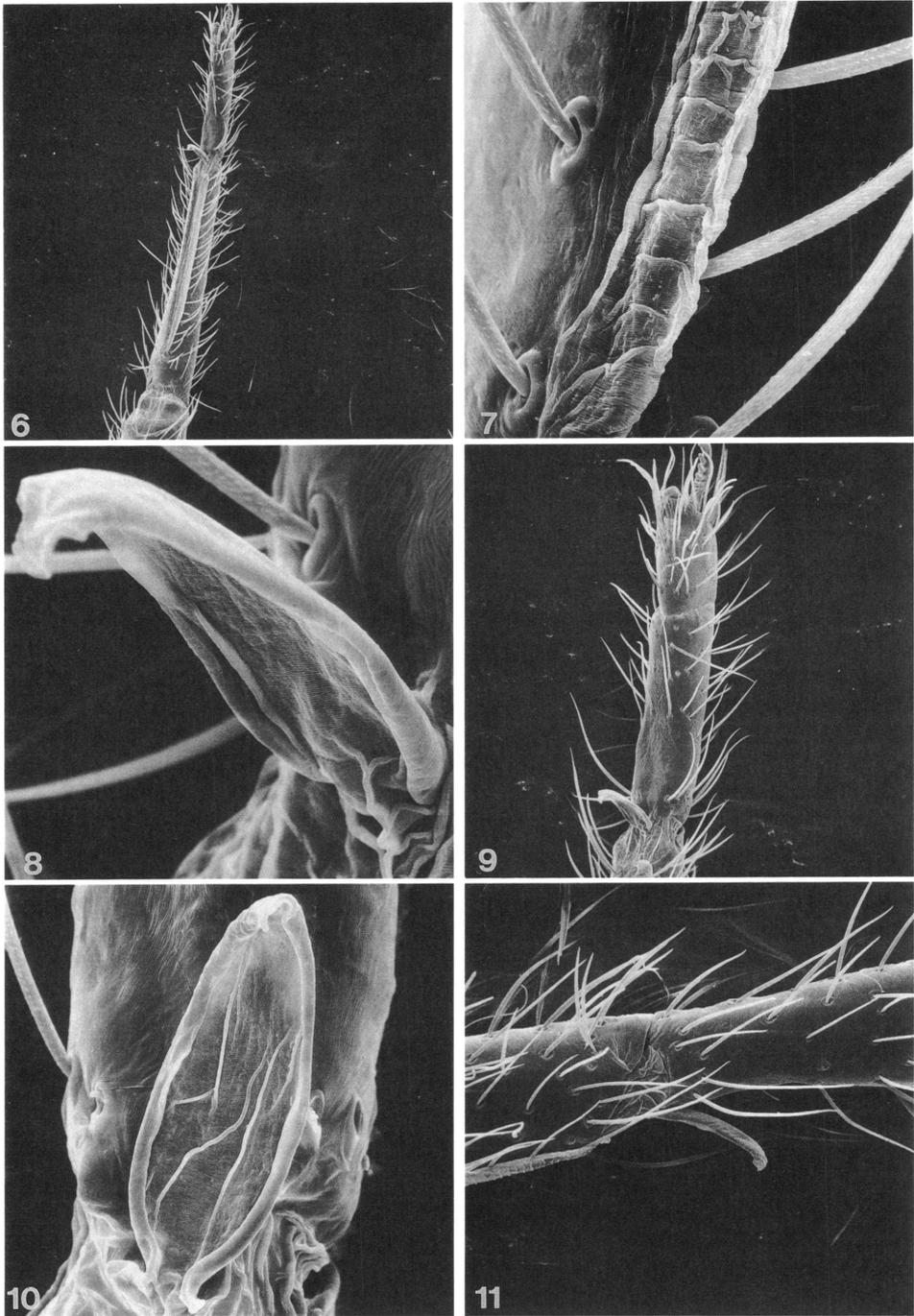
with *Nops*, but that suggestion was apparently not based on examination of specimens and is clearly erroneous. The three genera are easily distinguished, and there are several additional, as yet undescribed nopine genera that will be discussed in subsequent papers in this series. *Orthonops* is even allopatric relative to *Nops*, occurring from California and Baja California east to Texas and northeastern Mexico (map 1), whereas true *Nops* are all tropical.

In addition to the subsegmented tarsi, nopine legs generally have additional bizarre features, two of which occur in *Orthonops*. These are a peculiar, ventral, longitudinal keel of membranous cuticle occupying most of the

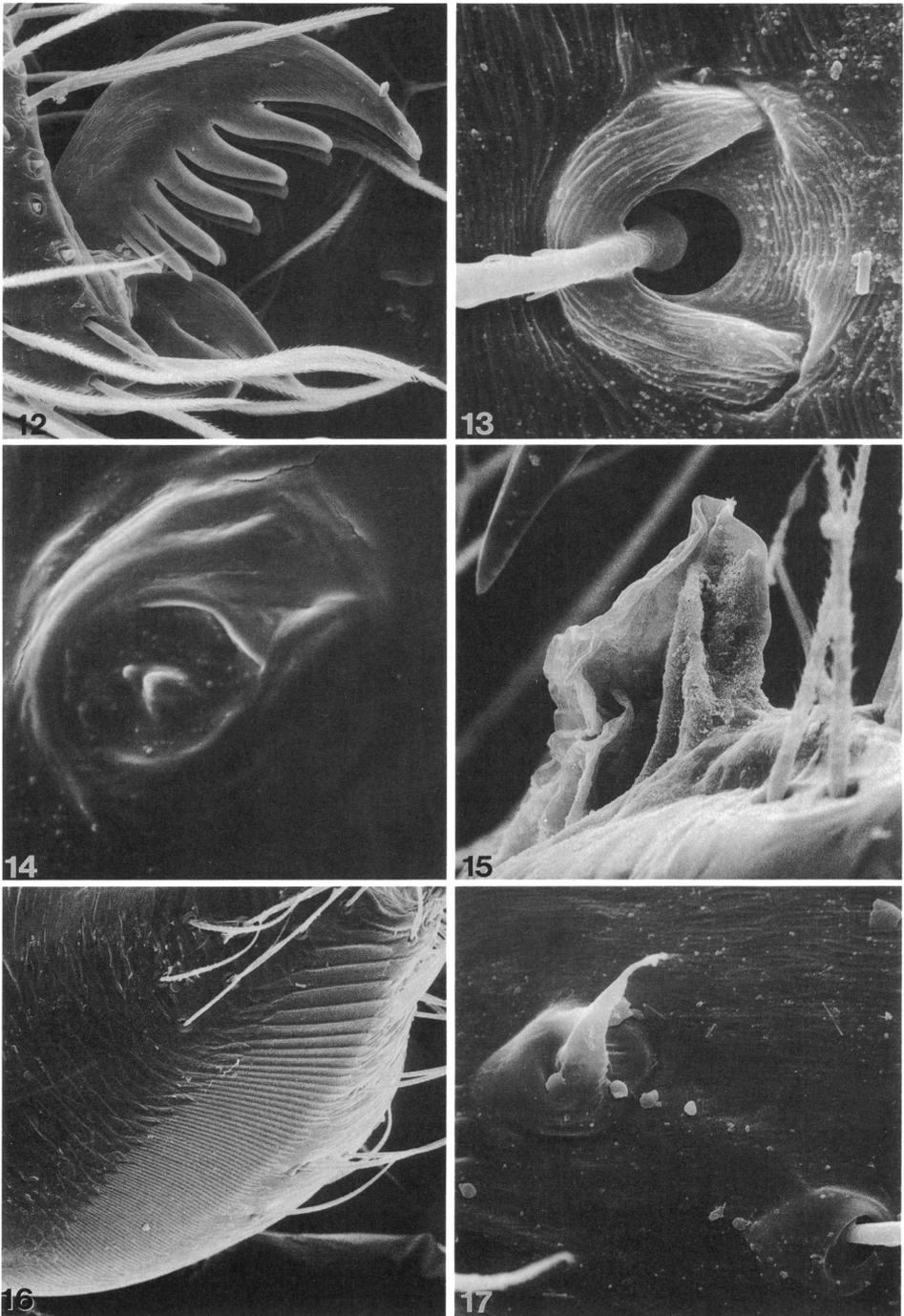
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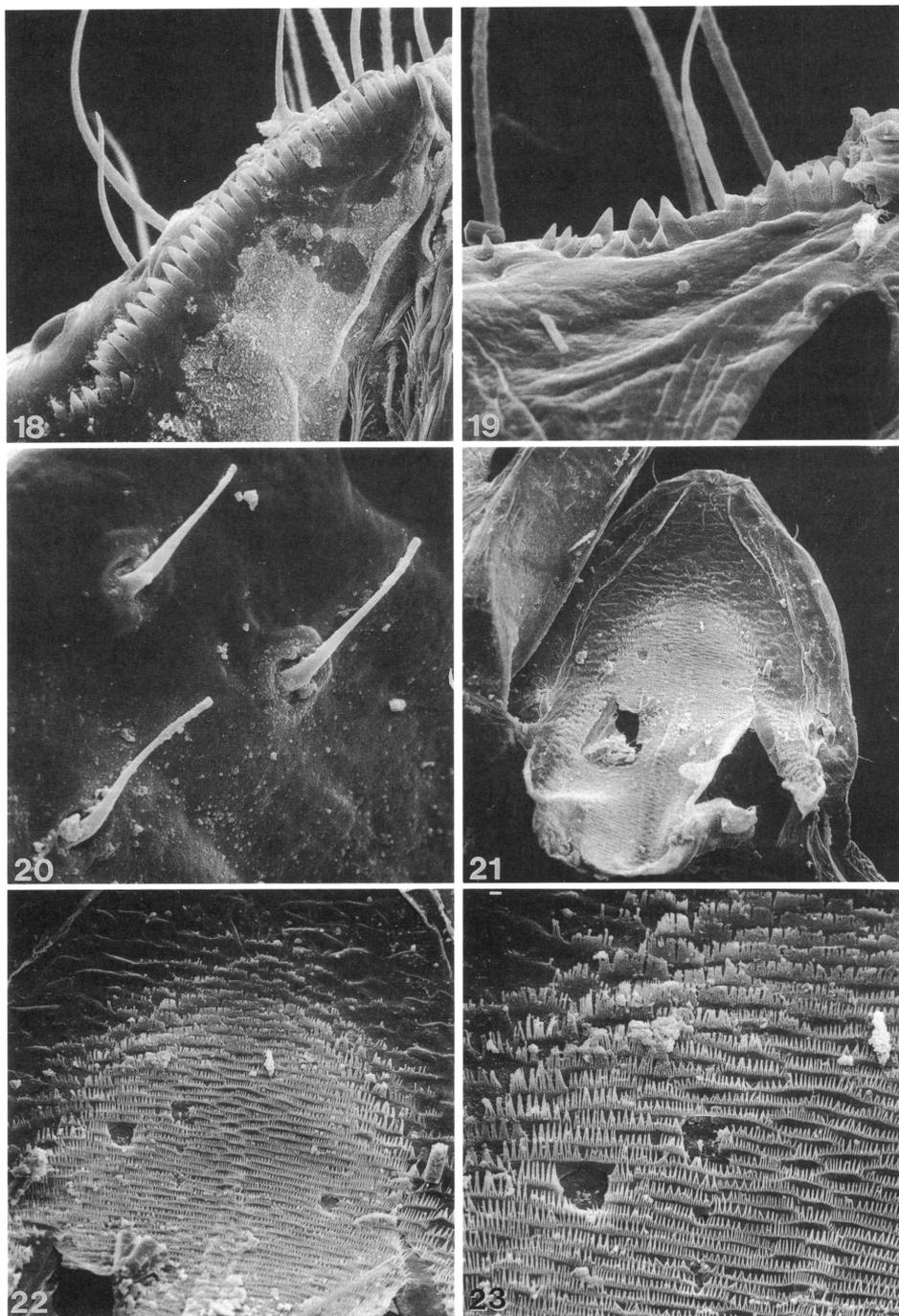
Figs. 1-5. 1, 2. *Orthonops zebra*, new species, female, cephalothorax and abdomen, dorsal and ventral views. 3. *O. icenoglei*, new species, male, cephalothorax, abdomen, and pedipalp, lateral view. 4, 5. Femur I of females, lateral view. 4. *O. johnsoni*, new species. 5. *O. iviei*, new species.



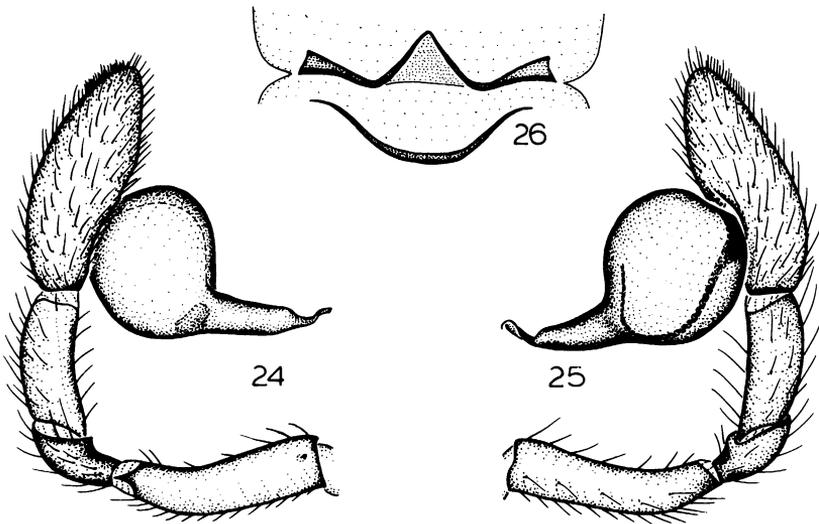
Figs. 6–11. *Orthonops gertschi* Chamberlin, female. 6. Metatarsus and tarsus I, ventral view. 7. Keel of metatarsus I, ventral view. 8. Extension of metatarsus I, in reflexed position, ventral view. 9. Tarsus I, lateral view, showing subsegmentation. 10. Extension of metatarsus II, in normal position, ventral view. 11. Keel and extension of metatarsus II, lateral view.



Figs. 12–17. *Orthonops gertschi* Chamberlin. 12. Claws of tarsus II of female, lateral view. 13. Trichobothrial base on tarsus III of female, dorsal view. 14. Tarsal organ on leg IV of female, dorsal view. 15. Translucent cheliceral lobe of male, posterior view. 16. Cheliceral stridulatory file of female, oblique lateral view. 17. Stridulatory pick on palpal femur of female, prolateral view.



Figs. 18–23. *Orthonops gertschi* Chamberlin. 18. Serrula of male, anterior view. 19. Serrula of female, anterior view. 20. Modified setae on anterior surface of endite of female, anterior view. 21–23. Teeth on anterior surface of labium, anterior views.



Figs. 24–26. *Orthonops overtus* Chamberlin. 24. Left male palp, prolateral view. 25. Same, retrolateral view. 26. Internal female genitalia, dorsal view.

length of metatarsi I and II (figs. 6, 7, 11) and an equally peculiar, translucent, ventral extension of the membrane between the metatarsi and tarsi of legs I and II (figs. 6, 8–11). The function of these cuticular elaborations is unknown, but may be related to these animals' apparent preference for other spiders as their prey. Although *Orthonops* specimens will occasionally capture small flies (at least in captivity), they will often repeatedly ignore small insects and then readily attack other spiders (W. Icenogle, in litt.); prey records for captive *O. zebra*, new species, include adult *Erigone* Audouin (Linyphiidae) and *Oecobius* Lucas (Oecobiidae) and juvenile *Neoscona* Simon (Araneidae) and *Latrodectus* Walckenaer (Theridiidae). A female of *O. icenoglei*, new species, was found feeding on a filistatid spider. It is possible that the enlarged anterior femora also play a role in capturing other spiders, as palpimanid spiders (which also frequently prey on Araneae) have similarly enlarged legs.

Although most specimens have been found under rocks on sloping surfaces adjacent to extensive rock outcrops, Ryckman and Lee (1956) recorded specimens that were collected in the lodge of the wood-rat *Neotoma fuscipes* Baird. The lodges were constructed in dense brush at Reche Canyon, near Loma Linda in San Bernardino County, California, at San Timoteo Canyon near the junction

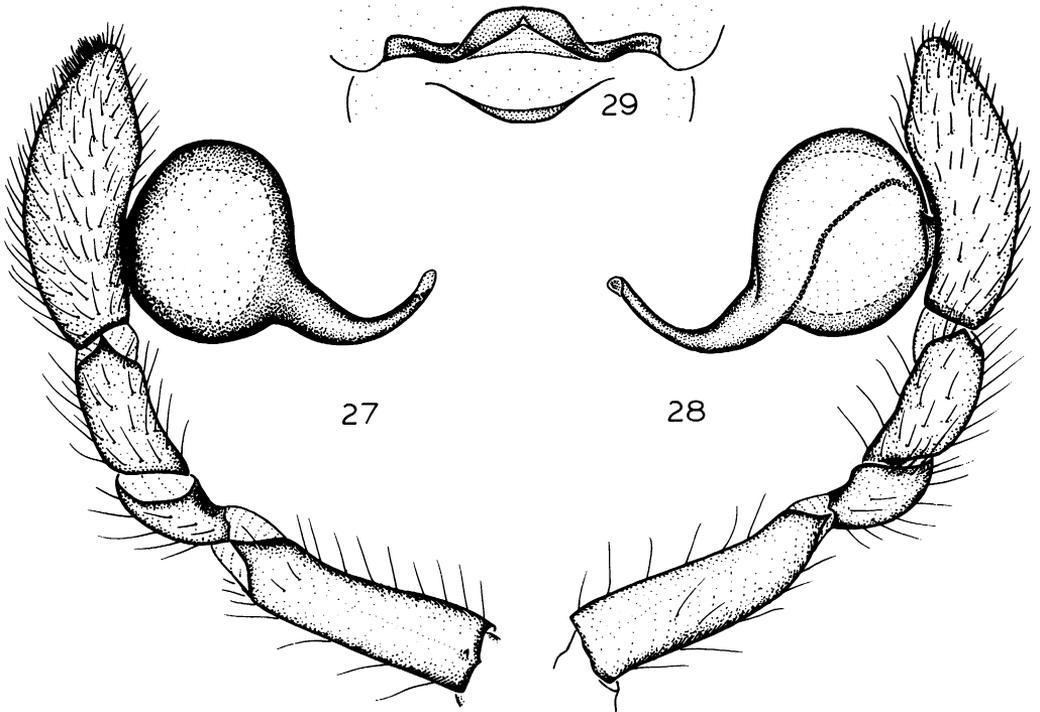
with Redlands Boulevard in Riverside County, California, and near Congress junction in Yavapai County, Arizona (R. Ryckman, personal commun. to W. Icenogle). Wendell Icenogle has recently visited the San Timoteo Canyon site and found an almost complete absence of typical *Orthonops* habitat, suggesting that for at least some species of *Orthonops*, *Neotoma* nests in wooded areas provide alternative but favorable conditions.

Members of the oonopid genus *Scaphiella* Simon are frequently collected at the same place and time as various *Orthonops* species; apparently members of the two genera have similar microhabitat preferences in addition to a similar orange coloration (although *Scaphiella* specimens are usually smaller and more commonly encountered).

The collection dates for most adult *Orthonops* indicate that they are active (at least on the ground surface) for only a brief period after the soil has been well moistened by winter and early spring rains (even at localities that receive more rain during the summer). However, *O. lapanus* Gertsch and Mulaik is an exception, as its adults have been taken in both winter and summer.

#### ACKNOWLEDGMENTS

I'm deeply indebted to Mohammad Shadab and Peling Fong-Melville of the American



Figs. 27–29. *Orthonops johnsoni*, new species. 27. Left male palp, pro-lateral view. 28. Same, retro-lateral view. 29. Internal female genitalia, dorsal view.

Museum of Natural History (AMNH) for help with illustrations and scanning electron micrographs, to Wendell Icenogle of Winchester, California, for access to his extensive collections and use of his notes on many aspects of the natural history of *Orthonops*, and to Charles Griswold and Darrell Ubick of the California Academy of Sciences, Wendell Icenogle, and John Murphy of Hampton, England, for helpful comments on a draft of the manuscript. The specimens studied were supplied by the following collections and curators, whose help is greatly appreciated.

AMNH American Museum of Natural History  
 CAS California Academy of Sciences, C. Griswold, D. Ubick  
 CDFA California Department of Food and Agriculture, M. Moody  
 CDU Darrell Ubick, San Francisco, California  
 CGL Graeme Lowe, Drexel Hill, Pennsylvania  
 DEB David E. Bixler, Chaffey College, Rancho Cucamonga, California  
 JLO James L. Ortiz, Laguna Niguel, California  
 MCZ Museum of Comparative Zoology, Har-

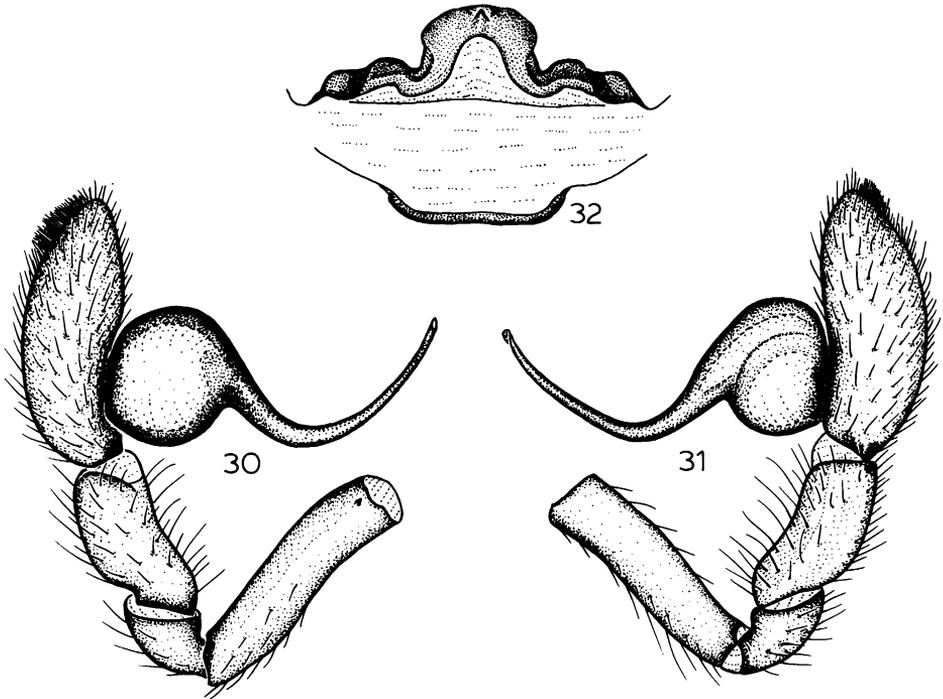
vard University, H. W. Levi, L. Leiben-  
 sperger  
 UCR University of California, Riverside, S.  
 Frommer, R. Vetter  
 VDR Vincent D. Roth, Portal, Arizona  
 WRI Wendell Icenogle, Winchester, California

## SYSTEMATICS

### *Orthonops* Chamberlin

*Orthonops* Chamberlin, 1924: 597 (type species by original designation *Orthonops overtus* Chamberlin).

**DIAGNOSIS:** Members of the genus can be separated from the other described caponiid genera as follows: from *Caponia* Simon, *Diploglena* Purcell, *Caponina* Simon, *Calponia* Platnick, *Notnops* Platnick, *Taintnops* Platnick, and *Tisentnops* Platnick by having subsegmented tarsi, from *Nops* by having the unpaired tarsal claws in their normal position (rather than reflexed dorsally), from *Nopsides* by having two (rather than four) eyes, and from *Tarsonops* by having entire (rather than subsegmented) metatarsi.

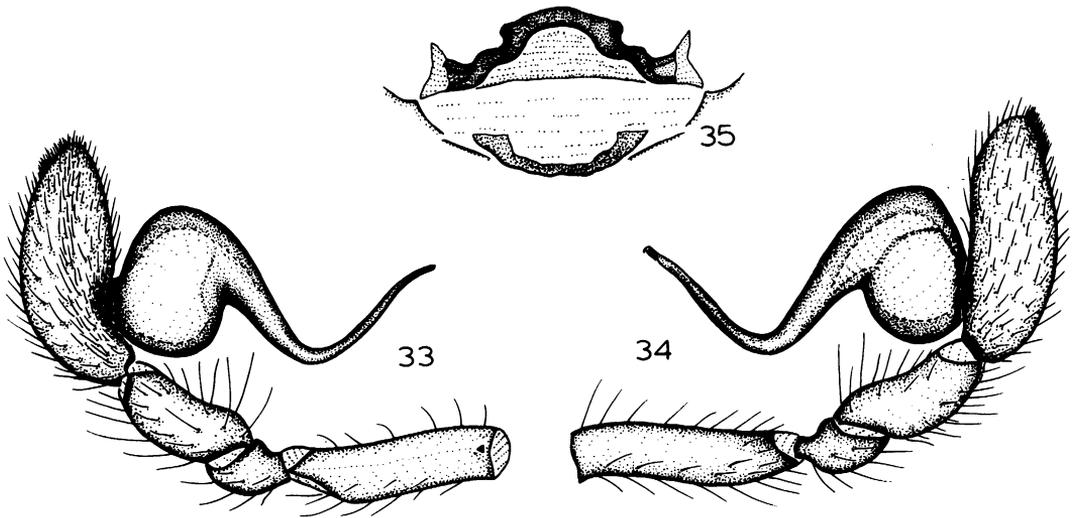


Figs. 30–32. *Orthonops ovalis* (Banks). 30. Left male palp, prolateral view. 31. Same, retrolateral view. 32. Internal female genitalia, dorsal view.

The probable closest relatives of *Orthonops* belong to as yet undescribed genera, but the monophyly of the genus (as delimited here) is supported by both the male and female genitalic conformations, which are not duplicated in those undescribed taxa (which occur allopatrically in more southern parts of Mexico and elsewhere in the Neotropics). The long embolus of male *Orthonops* seems typically to be held in a distinctive position, with the embolar tip situated on the medial side of the palp, extending over the carapace between the bases of the front legs and the ocular area (fig. 3).

**DESCRIPTION:** Medium-sized caponiids (figs. 1–5) with carapace uniformly orange, forming elongate oval, widest at rear of coxae II, only gradually narrowed anterior of eyes; pars cephalica not elevated at rear, with only slightly elevated ocular tubercle; pars thoracica high anteriorly, steeply sloping posteriorly, with only very slight submarginal depressions opposite intercoxal spaces; cuticle with low sculpturing consisting of roughly hexagonal cells, with few long, dark setae in

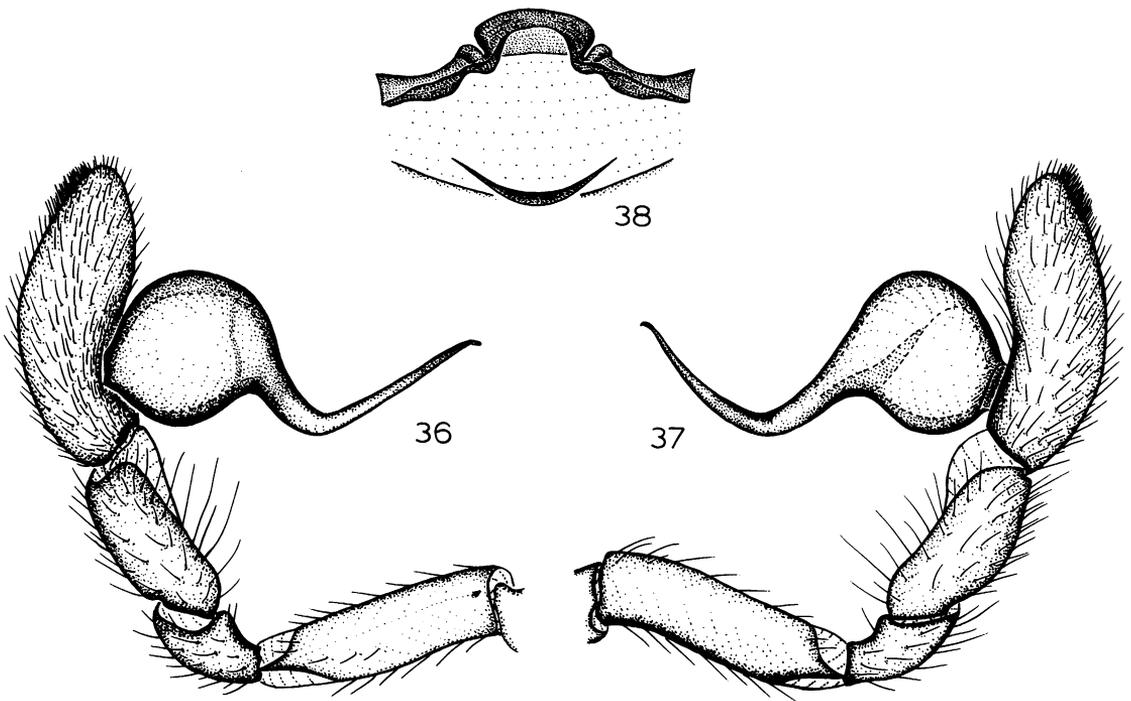
ocular area and along posterior margins of pars cephalica; thoracic groove not entirely obsolete, discernible as longitudinal depression occupying about one-tenth of carapace length, posterior margin situated back at about three-quarters of carapace length; clypeus without pair of rounded elevations at lateral corners, over three times as long as eyes. Two large, dark eyes separated by less than their diameter, posterior margins situated at about one-tenth of carapace length, united by oval ring of black pigment. Chelicerae orange, with median lamina; most of distance between lamina and fang base occupied by white membranous lobe (fig. 15); lateral surface flattened, with long series of stridulatory ridges closely spaced proximally, wider apart near fang (fig. 16); pick for stridulatory ridges at base of prolateral side of palpal femur (fig. 17). Endites orange except for white anterior tips, wide, convergent but not meeting, not protuberant posteriorly, triangular distally, anterior surface distally with strong serrula consisting of long tooth row accompanied laterally by short additional row of smaller teeth



Figs. 33–35. *Orthonops icenoglei*, new species. 33. Left male palp, prolatral view. 34. Same, retro-lateral view. 35. Internal female genitalia, dorsal view.

(figs. 18, 19), proximally with strong setae originating from enlarged bases (fig. 20), set in long membranous area. Labium orange, broad, triangular, fused to sternum along deep posterior groove; anterior surface bearing rows of tiny teeth, teeth at lateral edges of rows larger than medially situated teeth (figs. 21–23, cf. Platnick, 1993: figs. 5, 6, erroneously labeled as labral rather than labial teeth). Sternum orange, oval, cuticle with roughly hexagonal cells and numerous long, stiff setae; cephalothoracic membranes with three weakly sclerotized epimeric sclerites dorsal of coxae I, II, and III plus IV; epimeric sclerites not fused with triangular sclerites extending from sternal margin to and between coxae. Female palpal tarsus not expanded, without claw, with conspicuous, dense patch of thick setae prolaterally and dorsoapical pad of shortened setae. Leg formula 4123; legs orange, without spines; anterior femora usually enlarged (figs. 4, 5), metatarsi entire, I and II with translucent median, ventral, longitudinal keel (figs. 6, 7, 11) and distal, translucent extension originating from intersegmental membrane (figs. 6, 8–11); tarsi subsegmented, proximal subsegment longer than distal one (fig. 9); tarsi with three claws; paired claws usually with 5–6 teeth, most distal of which are largest; unpaired claw without teeth,

distinctly protruding from onychium, which bears single transverse ridge (fig. 12). Tarsal organ exposed (fig. 14); trichobothria extremely long, in single row on tarsi and metatarsi, two rows on tibiae, their bases with semicircular rim bearing slight longitudinal ridges (fig. 13). Abdomen pale gray dorsally, lighter ventrally, without dark markings (except in *O. zebra*, figs. 1, 2), with two pairs of respiratory spiracles clustered around epigastric groove; anterior spiracles leading to numerous tracheoles; posterior spiracles each leading to three large tracheal trunks (two extending anteriorly, one posteriorly); posterior spiracles connected by transverse duct. Spinnerets in typical caponiid arrangement; for details on spinneret morphology see Platnick et al. (1991: 56, figs. 145–153, based on Nevada specimens of *O. gertschi* misidentified as *Nops ovalis* by R. Schick). Male palpal femur without dorsal tubercle; patella short; tibia excavated ventrally to cup bulb, distal promargin without row of stiff preening setae; cymbium only slightly expanded, with distinct dorsal pad of short setae; alveolus situated at proximal end of cymbium; embolus distal, at least as long as bulb, typically held in resting position over carapace (fig. 3). Internal female genitalia consisting of sclerotized, transverse anterior receptaculum bear-



Figs. 36–38. *Orthonops lapanus* Gertsch and Mulaik. 36. Left male palp, prolateral view. 37. Same, retrolateral view. 38. Internal female genitalia, dorsal view.

ing lateral sclerotized elements (as in fig. 26), without median receptaculum extending posteriorly.

**IDENTIFICATION:** As is many groups of haplogyne spiders, the genitalic differences among species can be subtle. The male palpal bulb can rotate easily within the alveolus; for comparison with the figures provided, it is therefore essential that the palp be positioned with the ventral edges of the palpal bulb and of the embolus aligned along an imaginary straight line. The subtle genitalic differences are sometimes supplemented by differences in the degree of expansion of femur I (figs. 4, 5), as indicated in the measurements provided with the species descriptions (all measurements are in millimeters).

*Orthonops overtus* Chamberlin  
Figures 24–26

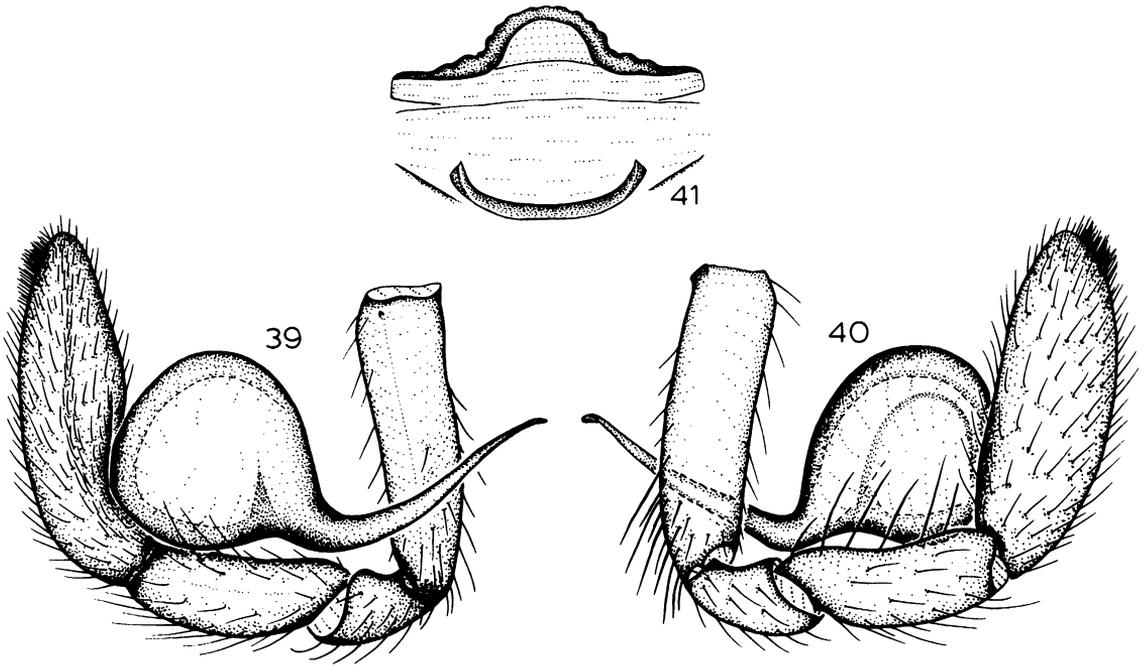
*Orthonops overtus* Chamberlin, 1924: 598 (female holotype from Isla San Luis, Baja California, Mexico, in CAS, examined).

**DIAGNOSIS:** This species seems most closely related to *O. johnsoni*, with which it shares an unusually short embolus and a small, narrow-rimmed median receptaculum, but can be distinguished by the distally constricted embolus (figs. 24, 25) of males and the anteriorly narrowed median receptaculum (fig. 26) of females.

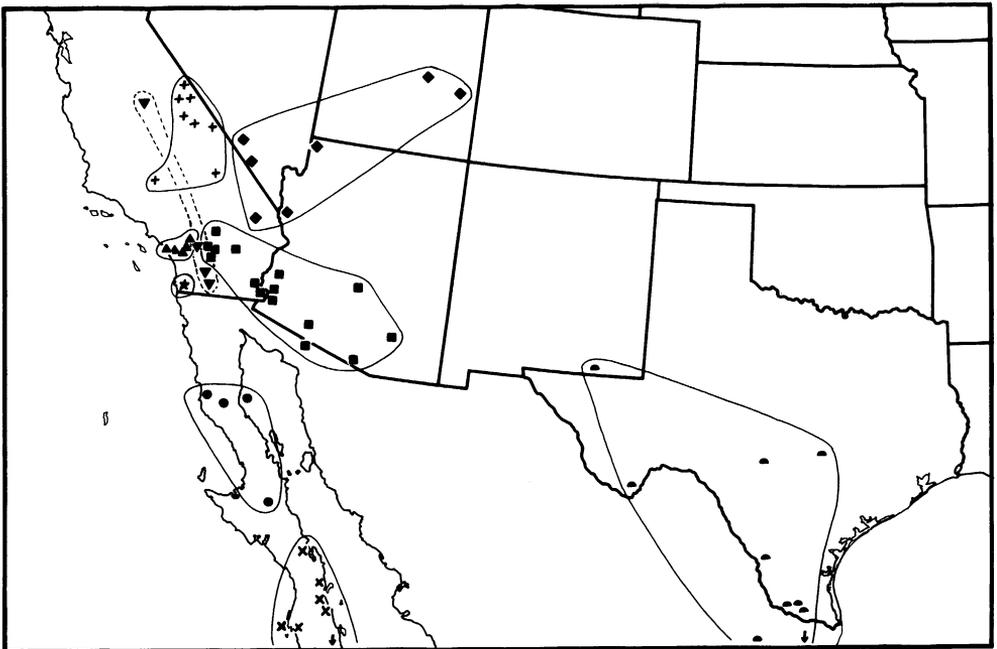
**MALE:** Total length 3.84. Carapace 1.80 long, 1.28 wide. Anterior femora enlarged, femur I 1.35 long, 0.48 high. Embolus short, abruptly narrowed at about two-thirds its length, tip sinuous (figs. 24, 25).

**FEMALE:** Total length 5.34. Carapace 1.89 long, 1.32 wide. Anterior femora enlarged, femur I 1.49 long, 0.53 high. Median receptaculum tiny, tent-shaped, with thin anterior margins (fig. 26).

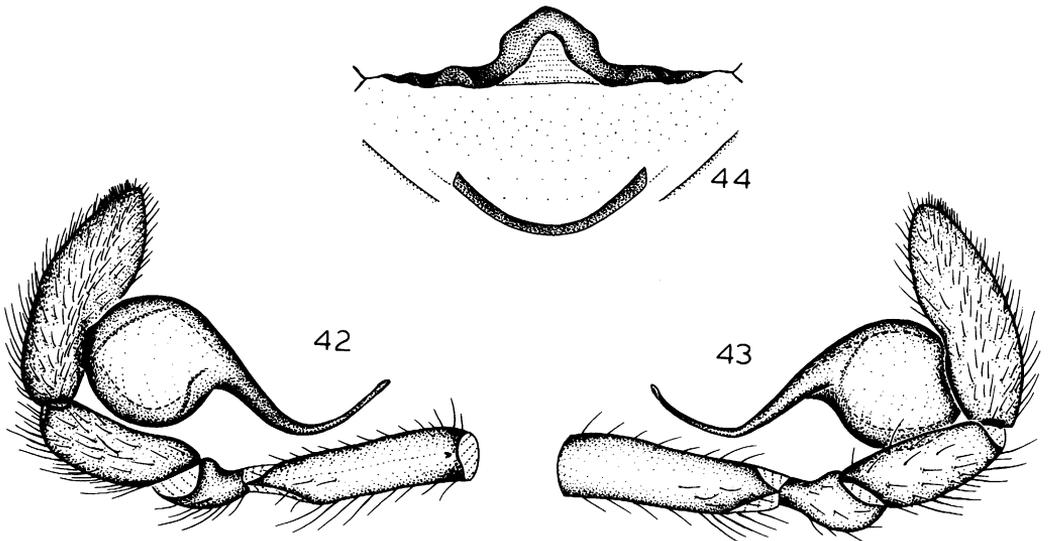
**MATERIAL EXAMINED:** MEXICO: Baja California: Cataviña, Jan. 15, 1982 (D. Ubick, CDU), 1♀; 11.7 km E El Rosario, 30°04'30"N, 115°37'55"W, Feb. 7–Apr. 2, 1984–1985, elev. 180 m, pitfall trap (W. H. Clark, P. E. Blom, MCZ, AMNH), 4♂, 1♀; 12.7 km E El



Figs. 39–41. *Orthonops zebra*, new species. 39. Left male palp, prolateral view. 40. Same, retrolateral view. 41. Internal female genitalia, dorsal view.



Map 1. Southwestern United States and Mexico, showing records of *Orthonops overtus* (circles), *O. johnsoni* (star), *O. ovalis* (x), *O. icenoglei* (squares), *O. lapanus* (half circles), *O. zebra* (triangles), *O. iviei* (inverted triangles), *O. giulianii* (crosses), and *O. gertschi* (diamonds). Arrows indicate records south of map limits.



Figs. 42–44. *Orthonops iviei*, new species. 42. Left male palp, prolateral view. 43. Same, retrolateral view. 44. Internal female genitalia, dorsal view.

Rosario, 30°04'15"N, 115°37'10"W, Feb. 7–Apr. 2, 1984–1985, elev. 180 m, pitfall trap (W. H. Clark, P. E. Blom, MCZ), 3♂, 1♀; Isla San Luis, Apr. 28, 1921 (J. C. Chamberlin, CAS), 1♀ (holotype). **Baja California Sur:** San Ignacio, Dec. 31, 1981, palm grove (D. Ubick, CDU), 1♀.

**DISTRIBUTION:** Known only from central Baja California Norte south to northern Baja California Sur (map 1).

***Orthonops johnsoni*, new species**

Figures 4, 27–29

**TYPES:** Male holotype and female allotype taken under rocks on cracked, clay soil on grassy, north facing slope at an elevation of 500 ft in Johnson Canyon at the N end of Harvest Road, Otay Mesa, 2 mi SW Lower Otay Lake, San Diego Co., California (Apr. 5, 1977; S. C. Johnson and W. Icenogle), deposited in AMNH.

**ETYMOLOGY:** The specific name is a patronym in honor of one of the collectors.

**DIAGNOSIS:** Males resemble those of *O. overtus*, and differ from those of the remaining species, in having a relatively short embolus, but differ in having the embolus gradually, rather than abruptly, narrowed distally (figs. 27, 28). Females resemble those of *O. overtus* in having a tiny median receptaculum, but

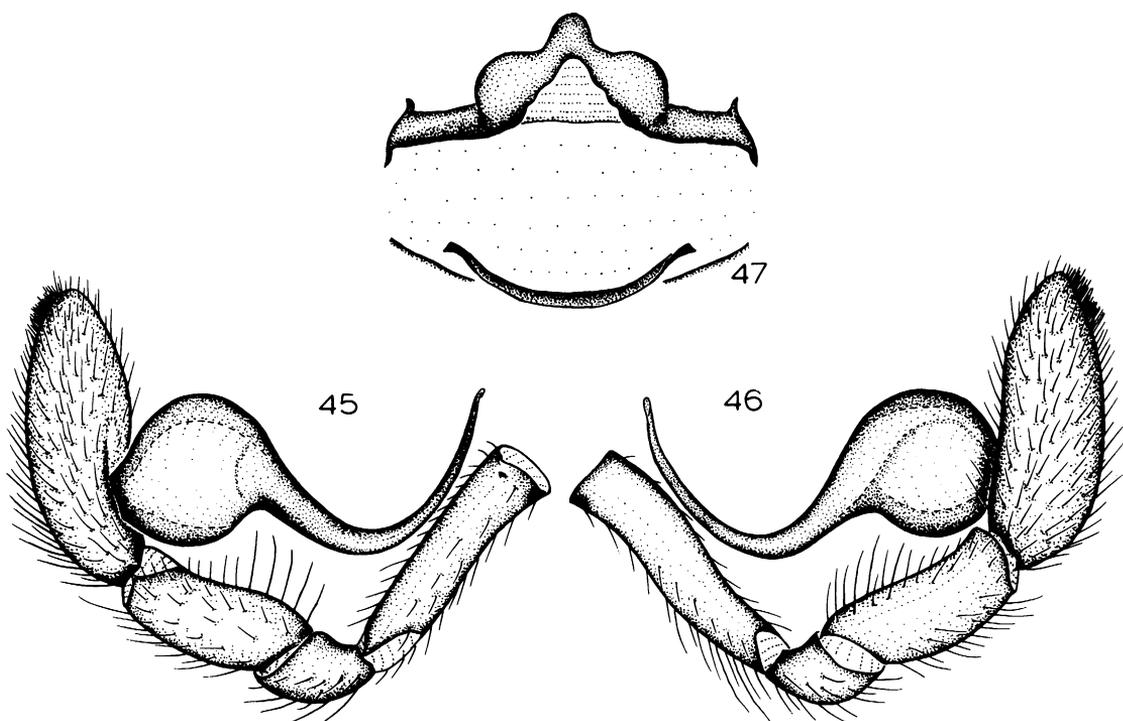
the receptaculum is wider anteriorly than in that species (fig. 29).

**MALE:** Total length 2.74. Carapace 1.20 long, 0.90 wide. Anterior femora enlarged, femur I 0.86 long, 0.34 high. Embolus short, gradually narrowed along its length, tip slightly expanded (figs. 27, 28).

**FEMALE:** Total length 3.23. Carapace 1.32 long, 0.96 wide. Anterior femora enlarged, femur I 0.96 long, 0.36 high. Median receptaculum short, wide, with thin anterior margins (fig. 29).

**OTHER MATERIAL EXAMINED:** One male taken at the type locality on Apr. 23, 1987 (W. Icenogle, AMNH).

**NATURAL HISTORY:** The three known specimens were taken under rounded, deep-set rocks on moist gray clay soil; the steep canyon side has tall, dense grass but few shrubs and no trees. During the hot summer months, the spiders probably retreat into the many deep, more or less permanent cracks in the soil. Other unusual spiders found in the same habitat include *Hexurella rupicola* Gertsch and Platnick (Mecicobothriidae) and *Zelotes mesa* Platnick and Shadab (Gnaphosidae). Unfortunately, extensive farming, overgrazing, and increasing development along the border with Mexico have been damaging this habitat for several years (W. Icenogle, in litt.).



Figs. 45–47. *Orthonops giulianii*, new species. 45. Left male palp, pro-lateral view. 46. Same, retro-lateral view. 47. Internal female genitalia, dorsal view.

**DISTRIBUTION:** Known only from the type locality in San Diego Co., California (map 1).

*Orthonops ovalis* (Banks),  
new combination

Figures 30–32

*Nops ovalis* Banks, 1898: 211, pl. 13, fig. 6 (male syntype from Sierra San Lazaro, Baja California Sur, Mexico, in MCZ, examined).

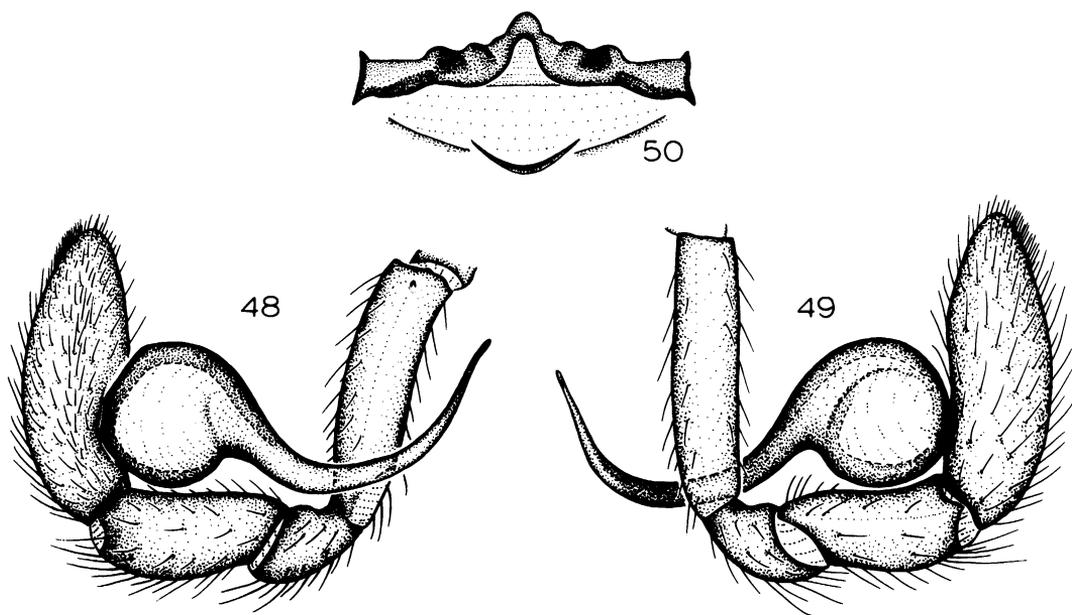
**DIAGNOSIS:** This species resembles *O. icenoglei* and *O. lapanus*; males can be distinguished by the relatively smaller invaginated triangle formed between the bulb and the base of the embolus (figs. 30, 31), females by the narrower median receptaculum (fig. 32).

**MALE:** Total length 5.26. Carapace 2.54 long, 1.80 wide. Anterior femora enlarged, femur I 1.69 long, 0.68 high. Embolus long, total height less than that of bulb, slightly expanded at tip, separated from bulb by small triangle (figs. 30, 31).

**FEMALE:** Total length 8.44. Carapace 3.63 long, 2.61 wide. Anterior femora enlarged,

femur I 2.99 long, 0.90 high. Median receptaculum n-shaped, deeply excavated medially (fig. 32).

**MATERIAL EXAMINED:** MEXICO: **Baja California Sur:** Bahía Concepción, near El Coyote, Feb. 17, 1966 (V. Roth, AMNH), 1♀; Bahía Concepción, Santispac, Jan. 1, 1982 (D. Ubick, CDU), 1♀; Bahía Magdalena, Feb. 13, 1966 (V. Roth, AMNH), 1♀; El Triunfo, S La Paz, Feb. 3, 1965 (V. Roth, AMNH), 1♂; S Ensenada de los Muertos, Jan. 31, 1988 (V. Roth, M. L. Jiménez, CAS), 1♀; La Laguna, Sierra de La Laguna, Oct. 14, 1941 (E. S. Ross, Bohart, CAS), 1♀; 6 mi N La Paz on road to Pichilinique, Nov. 1, 1959 (H. B. Leech, CAS), 1♀; Mulejé, Jan. 26, 1965 (V. Roth, AMNH), 1♂, 2♀; 11 mi S Mulejé, on Bahía Concepción, Jan. 27, 1965 (V. Roth, AMNH), 1♀; 40 mi S Mulejé, S end, Bahía Concepción, Jan. 27, 1965 (V. Roth, AMNH), 1♀; Rancho de Parras, 12 mi S Loreto, Jan. 29, 1965 (V. Roth, AMNH), 1♀; 6 mi S San Antonio, Dec. 31, 1976 (C. Griswold, L. Vincent, CAS), 1♀; San Ignacio (Mission), Jan.



Figs. 48–50. *Orthonops gertschi* Chamberlin. 48. Left male palp, prolateral view. 49. Same, retrolateral view. 50. Internal female genitalia, dorsal view.

21–25, 1965 (V. Roth, AMNH), 2♂, 3♀; San José del Cabo, Mar. 19, 1945 (M. Correa, AMNH), 1♀; 6 mi W San José del Cabo, Jan. 7, 1982, thorn forest (D. Ubick, CDU), 3♀; Sierra Laguna, 17 air mi ENE Todos Santos, Dec. 12–18, 1979, elev. 6000 ft (C. E. Griswold, CAS), 1♀; Sierra San Lazaro, Sept. (G. Eisen, F. Vaslit, MCZ), 1♂ (syntype).

DISTRIBUTION: Known only from central and southern Baja California Sur (map 1).

*Orthonops icenoglei*, new species

Figures 3, 33–35

TYPES: Male holotype and female allotype taken under rocks at an elevation of 3600 ft on a south facing slope in Deep Canyon, 0.5 mi S junction of Highway 74 and Pinyon Crest turnoff, Santa Rosa Mountains, Riverside County, California (Mar. 18, 1978; S. Johnson and W. Icenogle), deposited in AMNH.

ETYMOLOGY: The specific name is a patronym in honor of one of the collectors.

DIAGNOSIS: This species resembles *O. ovalis* and *O. lapanus* but can easily be recognized by the large invaginated triangle formed between the bulb and the base of the embolus

(figs. 33, 34) in males and by the greatly widened median receptaculum (fig. 35) of females.

MALE: Total length 3.38. Carapace 1.53 long, 1.09 wide. Anterior femora enlarged, femur I 1.15 long, 0.38 high. Embolus long, spiral, separated from bulb by large triangle (figs. 33, 34).

FEMALE: Total length 5.04. Carapace 1.88 long, 1.24 wide. Anterior femora enlarged, femur I 1.28 long, 0.49 high. Median receptaculum wide, occupying most of width of genital area (fig. 35).

OTHER MATERIAL EXAMINED: UNITED STATES: **Arizona:** *Maricopa Co.:* Mesa, June 1940 (W. J. Gertsch, AMNH), 1♀; Verde River, 30 mi N Mesa, Mar. 14, 1930 (J. C. Chamberlin, AMNH), 1♀. *Pima Co.:* Ajo Mountains, Mar. 16, 1968, elev. 1800 ft, under rocks (D. E. Bixler, DEB), 2♀; Brown Canyon, Baboquivari Mountains, Apr. 22, 1961 (W. J. Gertsch, AMNH), 1♀; Santa Catalina Mountains, Apr. 1937 (M. D. Porter, MCZ), 1♀; Upper Sabino Canyon, near Tucson, Mar. 24, 1960, under rocks, dry hillside (W. J. Gertsch, W. Ivie, D. Schrammel, AMNH), 1♀. *Yuma Co.:* Martinez Lake, Apr. 3, 1960, feeding on filistatid spider (V. D. Roth,

AMNH), 1♀; Mittry Lake, Mar. 3, 1957 (V. D. Roth, AMNH), 2♀; Palm Canyon, Feb. 5, 1960 (Muse, Tuttle, VDR), 1♂; canyon N Palm Canyon, Kofa Mountains, Mar. 6, 1960 (V. D. Roth, VDR), 2♀. **California: Imperial Co.:** 17 mi N Ogilby, Jan. 13, 1977 (V. D. Roth, Schroepfer, VDR), 1♂; near Picacho State Park, Jan. 14, 1977 (V. D. Roth, Schroepfer, AMNH), 1♂. **Riverside Co.:** Andreas Canyon, 4 mi S Palm Springs, Mar. 26, 1960 (W. J. Gertsch, W. Ivie, D. Schrammel, AMNH), 1♀; Coyote Creek, P. L. Boyd Desert Research Center, 3.5 mi S Palm Desert, Feb. 13, 1963 (E. Schlinger, UCR), 1♀; Deep Canyon, Santa Rosa Mountains, 0.5 mi S junction Highway 74 and Pinyon Crest turnoff, elev. 3600 ft, under rocks on south facing slope, Apr. 19, 1975 (W. Icenogle, UCR), 1♀, Feb. 26, 1978 (W. Icenogle, VDR), 1♂, Jan. 25, 1980 (W. Icenogle, WRI), 1♂, Mar. 9, 1980 (W. Icenogle, AMNH), 1♀; Squaw Tank, Joshua Tree National Monument, Mar. 20, 1965 (E. L. Sleeper, S. L. Jenkins, JLO), 1♂, 1♀; Pinyon Wells, Joshua Tree National Monument, May 30–June 14, 1965–1967 (E. L. Sleeper, S. L. Jenkins, JLO), 2♀; 10.7 mi S Squaw Tank, Joshua Tree National Monument, Mar. 28, 1965 (E. L. Sleeper, S. L. Jenkins, JLO), 1♂. **San Bernardino Co.:** 5 mi N Yucca Valley, Apr. 19, 1960 (W. J. Gertsch, W. Ivie, D. Schrammel, AMNH), 1♀. **MEXICO: Sonora:** 10 mi W Sonoyta, Mar. 19–20, 1980, elev. 1200 ft (C. E. Griswold, CAS), 1♀.

**DISTRIBUTION:** Southeastern California, southern Arizona, and northern Sonora (map 1).

*Orthonops lapanus*  
Gertsch and Mulaik  
Figures 36–38

*Orthonops gertschi*: Gertsch, 1935: 31, figs. 33, 34 (in part, Texas records only).—Comstock, 1940: 305, fig. 288 (male only).

*Orthonops lapanus* Gertsch and Mulaik, 1940: 324, fig. 16 (male holotype and female allotype from 3 mi E Rio Grande City, Starr Co., Texas, in AMNH, examined).

**DIAGNOSIS:** This species resembles *O. ovalis* and *O. icenoglei*, but can be distinguished by the shorter embolus of males (figs. 36, 37) and the shorter median receptaculum (fig. 38) of females.

**MALE:** Total length 4.19. Carapace 2.07 long, 1.58 wide. Anterior femora enlarged, femur I 1.43 long, 0.64 high. Embolus almost spiral, separated from bulb by low triangle (figs. 36, 37).

**FEMALE:** Total length 6.05. Carapace 2.37 long, 1.79 wide. Anterior femora enlarged, femur I 1.63 long, 0.66 high. Median receptaculum relatively short, squat (fig. 38).

**MATERIAL EXAMINED: UNITED STATES: New Mexico: Eddy Co.:** Porcupine Cave, Carlsbad Caverns National Park, Feb. 15, 1975 (W. C. Welbourn, AMNH), 1♂. **Texas: Brewster Co.:** The Basin, Chisos Mountains, Big Bend National Park, Sept. 28, 1950 (W. J. Gertsch, AMNH), 2♂, 2♀, May 28, 1952 (W. J. Gertsch, M. Cazier, D. Schrammel, AMNH), 1♀, Sept. 6, 1952 (B. Malkin, AMNH), 1♀, Aug. 25, 1967, elev. 6000 ft (W. J. Gertsch, R. Hastings, AMNH, CAS), 2♂, 3♀; Headquarters Building, Panther Junction, Big Bend National Park, May 24–25, 1967 (E. Sabath, MCZ), 1♀. **Hidalgo Co.:** Edinburg, Jan. 11, 1950 (AMNH), 1♀; NW Edinburg, Sept. 3, 1934 (S. Mulaik, AMNH), 1♀; 30 mi W Edinburg, Nov. 24, 1934 (J. Rutherford, AMNH, MCZ), 1♂, 1♀; McCook, Jan. 29, 1939 (S. Mulaik, AMNH), 1♀. **Kerr Co.:** Raven Ranch, June 1941 (S., D. Mulaik, AMNH), 1♂. **Starr Co.:** 3 mi E Rio Grande City, Jan. 21, 1939 (S. Mulaik, AMNH), 2♂, 2♀ (including types); 5 mi E Rio Grande City, Oct. 26, 1935 (C. Rutherford, AMNH), 1♀, Oct. 27, 1935 (S. Mulaik, AMNH), 1♀. **Travis Co.:** Dobie Shelter, Aug. 19, 1984 (W. Elliott, C. Sexton, AMNH), 1♂. **Webb Co.:** La Mesa Ranch, Dec. 28, 1955 (L. J. Bottimer, AMNH), 1♀. **MEXICO: Nuevo León:** E Cadereyta, Jan. 2, 1950 (S., D. Mulaik, AMNH), 1♂, 3♀; 9 mi W Monterrey, on road to Santillo, Jan. 3, 1950 (S., D. Mulaik, AMNH), 1♀; 10 mi N Monterrey, Dec. 25, 1947 (S. Mulaik, AMNH), 1♀. **Tamaulipas:** 17 mi S Victoria, Dec. 28, 1947 (AMNH), 1♀.

**DISTRIBUTION:** Southeastern New Mexico, southern Texas, and northeastern Mexico (map 1).

*Orthonops zebra*, new species  
Figures 1–2, 39–41

**TYPES:** Male holotype and female allotype taken under rocks at an elevation of 1500 ft

on a hillside at Double Butte, Winchester, Riverside Co., California (Mar. 24, 1974; W. Icenogle), deposited in AMNH.

**ETYMOLOGY:** The specific name is a noun in apposition referring to the striped abdomen.

**DIAGNOSIS:** Most specimens (including at least larger juveniles) can be easily distinguished from all other *Orthonops* by the striped abdomen (figs. 1, 2), but a few specimens lack the dark pigment on the abdomen as well as around the eyes. Males have an almost straight embolus that occupies less than half the height of the bulb and is scarcely separated from the bulb at its base (figs. 39, 40); females have a low, arched median receptaculum accompanied laterally by large, triangular, sclerotized bulges (fig. 41).

**MALE:** Total length 3.46. Carapace 1.59 long, 1.19 wide. Anterior femora enlarged, femur I 1.28 long, 0.42 high. Embolus almost straight, low, occupying less than half of bulb height, only slightly separated from bulb at base (figs. 39, 40).

**FEMALE:** Total length 4.59. Carapace 2.01 long, 1.45 wide. Anterior femora enlarged, femur I 1.50 long, 0.47 high. Median receptaculum low, arched, accompanied laterally by large, triangular, sclerotized bulges (fig. 41).

**OTHER MATERIAL EXAMINED:** UNITED STATES: **California:** *Orange Co.:* 10 mi E San Juan Capistrano on Highway 74, Apr. 1978 (AMNH), 1♂. *Riverside Co.:* Double Butte, Winchester, Aug. 21–Apr. 27, 1967–1993, elev. 1500 ft, on hillside, under rocks, in split in large rock, in eucalyptus litter (W. Icenogle, WRI, AMNH), 13♂, Dec. 2–May 6, 1967–1995, same habitat, under eucalyptus log, on building (W. Icenogle, WRI, AMNH), 19♀; Fisherman's Camp trail, ca. 18 km W Murrieta, Mar. 23, 1984, under rock (G. Lowe, CGL), 1♀; 3 mi S town center of Murrieta, near De Luz Road, Santa Ana Mountains, Apr. 28, 1977, elev. 1300 ft, under rock (W. Icenogle, WRI), 1♀; San Jacinto Mountains, 1.5 mi NW Soboba Springs, Mar. 24, 1995, elev. 1600 ft, in pile of rocks and moist dirt at base of steep, barren south facing canyon side (W. R. Icenogle, WRI), 2♂, 2♀.

**NATURAL HISTORY:** Most of the specimens have been taken near the base of the east peak of Double Butte (about 1 mi NW of the central intersection in the town of Winchester).

The soil has to be distinctly moist for specimens to be found; they occur under large, more or less flattened rocks scattered near extensive mica-schist outcrops on the south facing hillside. The vegetation is coastal sage scrub, with short and scattered bushes (California buckwheat, brittlebush, and California sagebrush). For half the year, the habitat is quite dry and hot; no permanent water source is nearby. Egg sacs of this species are spun of pink, paperlike silk and resemble those of gnaphosids, being lenticular structures that are apparently well camouflaged by a covering of dirt and debris. Half-grown, yellowish juveniles have been taken at the same time as the orange adults, suggesting that the species has a two-year life cycle (W. Icenogle, in litt.). Most males have been collected in March, which is apparently the peak breeding season for this species. Captive females have laid eggs in April and May (one female laid three egg sacs). Specimens have occasionally been found in close association. At Winchester, three males, two females, and one juvenile were found under a single rectangular rock measuring 1.5 × 2.5 ft; at Soboba Springs, two females were collected only an inch apart (one was in a thin, cocoonlike web).

**DISTRIBUTION:** Known only from Orange and western Riverside counties, California (map 1).

### *Orthonops iviei*, new species

Figures 5, 42–44

**TYPES:** Male holotype and female allotype from Andreas Canyon, Palm Springs, Riverside Co., California (Mar. 26, 1960; W. J. Gertsch, W. Ivie, D. Schrammel), deposited in AMNH.

**ETYMOLOGY:** The specific name is a patronym in honor of one of the collectors.

**DIAGNOSIS:** This species is easily recognized by the low anterior femora (fig. 5), the arched embolus (figs. 42, 43) of males, and the narrow median receptaculum accompanied by a pair of low, sclerotized lateral bulges (fig. 44) in females.

**MALE:** Total length 4.25. Carapace 1.49 long, 1.17 wide. Anterior femora not enlarged, femur I 1.24 long, 0.38 high. Embolus

relatively short, arched, greatly narrowed at apex of arch (figs. 42, 43).

**FEMALE:** Total length 4.62. Carapace 1.88 long, 1.47 wide. Anterior femora not enlarged, femur I 1.62 long, 0.45 high. Median receptaculum narrow, accompanied laterally by low, sclerotized bulges (fig. 44).

**OTHER MATERIAL EXAMINED:** UNITED STATES: **California:** *Fresno Co.:* Smith Mountain, 4 mi E Reedley, Feb. 1, 1994, under serpentine rocks (W. H. Tyson, CDF), 1♀. *Riverside Co.:* Andreas Canyon, 4 mi S Palm Springs, Mar. 26, 1960 (V. Roth, AMNH), 1♂, 1♀, same date (W. J. Gertsch, W. Ivie, D. Schrammel, AMNH), 1♂. *San Diego Co.:* Angelina Spring, Grapevine Canyon, Anza-Borrego Desert State Park, Apr. 20, 1982, under rock (W. Icenogle, WRI), 1♀; Sandstone Canyon, Anza-Borrego Desert State Park, Apr. 16, 1981, under rock (D. Ubick, CDU), 1♀; San Felipe Creek, Anza-Borrego Desert State Park, Apr. 9, 1979, elev. 2000 ft, under rock in riparian association (D. Ubick, CDU), 1♀.

**DISTRIBUTION:** Apparently widespread from the California central valley (Fresno Co. site) south to the Anza-Borrego Desert State Park (San Diego Co.), seemingly at lower elevations than *O. giulianii* (map 1).

*Orthonops giulianii*, new species

Figures 45–47

**TYPES:** Male holotype and female allotype taken in a pitfall trap at an elevation of 5000 ft at a site 4 mi N, 4 mi E Big Pine, White Mountains, Inyo Co., California (Apr. 25–July 22, 1982; D. Giuliani), deposited in CAS.

**ETYMOLOGY:** The specific name is a patronym in honor of the collector.

**DIAGNOSIS:** This distinctive species is easily recognized by the distally curled embolus (figs. 45, 46) of males and the anteromedially extended median receptaculum (fig. 47) of females.

**MALE:** Total length 3.87. Carapace 1.78 long, 1.28 wide. Anterior femora enlarged, femur I 1.46 long, 0.47 high. Embolus relatively long, distally curling toward retrolateral side (figs. 45, 46).

**FEMALE:** Total length 5.33. Carapace 2.27 long, 1.62 wide. Anterior femora expanded,

femur I 1.79 long, 0.66 high. Median receptaculum with distinctive anteromedian extension (fig. 47).

**OTHER MATERIAL EXAMINED:** UNITED STATES: **California:** *Inyo Co.:* 1 mi W Big Pine, Sierra Nevada Mountains, Apr. 16–Oct. 6, 1985, elev. 4100 ft, pitfall trap (D. Giuliani, CAS), 1♂; 2 mi N, 2.25 mi E Big Pine, White Mountains, Apr. 25–July 2, 1982, elev. 4000 ft, pitfall trap (D. Giuliani, CAS), 1♂, 3♀; 2.5 mi S, 2.5 mi W Big Pine, Sierra Nevada Mountains, Apr. 16–Oct. 6, 1982–1985, elev. 5100 ft, pitfall traps (D. Giuliani, CAS), 1♂, 4♀; 3 mi E Big Pine on Salina Valley Road, June 11, 1967, elev. 5000 ft (W. J. Gertsch, R. Hastings, AMNH), 1♀; 3 mi S, 4 mi W Big Pine, Sierra Nevada Range, Apr. 25–Aug. 2, 1982, elev. 6300 ft, pitfall trap (D. Giuliani, CAS, AMNH), 2♂; 4 mi N, 4 mi E Big Pine, White Mountains, Apr. 25–July 22, 1982, elev. 5000 ft, pitfall trap (D. Giuliani, CAS), 2♀; 5.5 mi N, 5.5 mi E Big Pine, White Mountains, Oct. 1, 1985–June 28, 1986, elev. 6100 ft, pitfall trap (D. Giuliani, CAS), 2♂; Daylight Pass, Death Valley National Monument, Mar.–Oct. 1982, elev. 4300 ft, pitfall trap (D. Giuliani, CAS), 1♂; Deep Springs Valley, Apr.–Oct., 1982, elev. 5200 ft, pitfall trap (D. Giuliani, CAS), 1♂, 1♀; Saline Valley, Apr. 11, 1959, elev. 4740 ft (B. Banta, CAS), 1♂; Willow Spring Canyon, Inyo Mountains, 1.5 mi N, 6.5 mi E Independence, Dec. 1984–1986, elev. 4600 ft (D. Giuliani, CAS), 2♂, 1♀. *Kern Co.:* Lonetree Canyon, 6.8 mi S junction Randsburg Road and Highway 14, June 15, 1970, pitfall trap (M. Wasbauer, F. G. Andrews, AMNH), 1♀. *Mono Co.:* Coldwater Canyon, White Mountains, Apr. 2–Oct. 22, 1982, elev. 5100 ft, pitfall trap (D. Giuliani, CAS), 2♂. *San Bernardino Co.:* Cave Spring, Apr. 9, 1939 (A. E. Michelbacher, AMNH), 1♂.

**DISTRIBUTION:** Known only from Mono, Inyo, Kern, and San Bernardino counties, California, seemingly at elevations of 4000–6300 ft (map 1).

*Orthonops gertschi* Chamberlin

Figures 6–23, 48–50

*Orthonops gertschi* Chamberlin, 1928: 235 (female holotype from Straight Wash, Emery Co., Utah, in AMNH, examined).

**DIAGNOSIS:** This distinctive species is easily recognized by the scoop-shaped embolus (figs. 48, 49) of males and the small, triangular median receptaculum (fig. 50) of females.

**MALE:** Total length 3.01. Carapace 1.32 long, 0.92 wide. Anterior femora slightly enlarged, femur I 1.05 long, 0.36 high. Distal surface of embolus distinctly scoop-shaped (figs. 48, 49).

**FEMALE:** Total length 5.38. Carapace 1.88 long, 1.33 wide. Anterior femora enlarged, femur I 1.41 long, 0.47 high. Median receptaculum small, triangular, with short anterior margin (fig. 50).

**MATERIAL EXAMINED: UNITED STATES:**  
**Arizona:** *Mohave Co.:* 1 mi SE Bullhead City, pitfall trap, Dec. 22–26, 1980 (B. Phelps, CDFA), 1♀; Goldroad, Mar. 15, 1976, under rocks (O. F. Francke, AMNH), 1♂, 1♀; Virgin River, 3 mi N, 7 mi E Littlefield, Mar.–Oct. 1982, pitfall trap (D. Giuliani, CAS), 1♂. **California:** *San Bernardino Co.:* Mitchell Cav-

erns (Providence Mountains, ca. 25 mi NW Essex, 10 mi E Flynn), Dec. 31–Aug. 27, 1978–1982, elev. 4400 ft, epigeal pitfall traps (R. L. Aalbu, CAS), 3♂, 1♀. **Nevada:** *Clark Co.:* Lee Canyon, Spring Range, Mar.–Oct. 1982, pitfall traps, elev. 4000, 6000 ft (D. Giuliani, CAS), 5♂, 5♀. *Nye Co.:* Mercury, Mar. 5–Dec. 29, 1960–1962 (AMNH, MCZ), 16♂, 1♀. Mar. 24–Sept. 29, 1960–1962 (AMNH, MCZ), 19♀; Yucca Flats, 40 mi N Mercury, June 30, 1962 (H. W. Campbell, CAS), 1♀. **Utah:** *Emery Co.:* Straight Wash, San Rafael Desert, Apr. 20, 1928 (W. J. Gertsch, AMNH), 1♀ (holotype). *Grand Co.:* 5 mi up river from Moab, May 13, 1933 (W. Ivie, AMNH), 1♀.

**NATURAL HISTORY:** Information on the plant associations and habitats of the Mercury, Nevada, specimens can be found in Allred et al. (1963).

**DISTRIBUTION:** Eastern California across Nevada and northern Arizona to eastern Utah (map 1).

## REFERENCES

- Allred, D. M., D. E. Beck, and C. D. Jorgensen  
1963. Biotic communities of the Nevada test site. Brigham Young Univ. Sci. Bull., Biol. Ser. 2(2): 52 pp.
- Banks, N.  
1898. Arachnida from Baja California and other parts of Mexico. Proc. California Acad. Sci. (ser. 3, Zool.) 1: 205–308.
- Brignoli, P. M.  
1977. Ragni del Brasile III. Note su *Bruchnops melloi* Biraben e sulla posizione sistematica dei Caponiidae (Arachnida, Araneae). Rev. Suisse Zool. 84: 609–616.
- Chamberlin, R. V.  
1924. The spider fauna of the shores and islands of the Gulf of California. Proc. California Acad. Sci. (ser. 4) 28: 561–694.  
1928. A two-eyed spider from Utah. Psyche 35: 235–236.
- Comstock, J. H.  
1940. The Spider Book, revised and edited by W. J. Gertsch. New York: Doubleday, xi + 729 pp.
- Gertsch, W. J.  
1935. Spiders from the southwestern United States, with descriptions of new species. Am. Mus. Novitates 792: 31 pp.
- Gertsch, W. J., and S. Mulaik  
1940. The spiders of Texas. I. Bull. Am. Mus. Nat. Hist. 77: 307–340.
- Platnick, N. I.  
1993. A new genus of the spider family Caponiidae (Araneae, Haplogynae) from California. Am. Mus. Novitates 3063: 8 pp.
- Platnick, N. I., J. A. Coddington, R. R. Forster, and C. E. Griswold  
1991. Spinneret morphology and the phylogeny of haplogyne spiders (Araneae, Araneomorphae). Am. Mus. Novitates 3016: 73 pp.
- Ryckman, R. E., and R. D. Lee  
1956. Spiders and phalangids associated with mammals (*Citellus* and *Neotoma*) in southwestern United States and northern Mexico. Ann. Entomol. Soc. Am. 49: 406–409.



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