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A Revision of the Holarctic Spider Genus *Callilepis* (Araneae, Gnaphosidae)

NORMAN I. PLATNICK¹

ABSTRACT

The seven Nearctic and three Palaearctic species of *Callilepis* are diagnosed, described, and assigned to species groups. An attempt is made to reconstruct their phylogeny by a cladistic analysis of genitalic characters. Three new species (*chisos*, *mumai*, and *gertschi*) are described from the southwestern United States. Six specific names are newly synonymized: the American *munda* Chamberlin, *femoralis* Banks, and *altitudonis*

Chamberlin with *imbecilla* (Keyserling), *pluto* Banks, and *eremella* Chamberlin, respectively; the European *wiehlei* Bristowe with *concolor* Simon; and the Asian *flavitaris* (Simon) and *bipunctata* Yaginuma, both with *schuszteri* (Herman). The female of *gosoga* Chamberlin and Gertsch is described for the first time. *Callilepis grisea* Banks is transferred to *Eilicina*.

INTRODUCTION

The present paper, the second in a series on the spider family Gnaphosidae, is concerned with the Holarctic genus *Callilepis*. Although it consists of a small number of relatively homogeneous species, *Callilepis* has had a confused history. Over the last century some 35 species belonging to several other genera have been mistakenly placed in *Callilepis*. The confusion was compounded when Kaston (1948, p. 342) expressed unfounded doubts about the generic placement of one Nearctic species and Roewer (1954), presumably on the basis of Kaston's opinion, transferred all the American forms to *Pterotricha*, an unrelated genus of the Gnaphosinae.

In addition, misidentifications have plagued students in both Europe and America. When early in this century Nathan Banks of the Museum of Comparative Zoology and Eugène Simon of the Muséum National d'Histoire Naturelle exchanged specimens of the American *C. imbecilla* and the European *C. nocturna*, Banks actually sent a misidentified female of *C. pluto* and received in return a misidentified female of *C. concolor*. More importantly, because Chamberlin (1922) erred in his identification of *C. imbecilla* (Keyserling), the name of the most common and widespread American *Callilepis* must now be changed. Most of the literature records of *C. imbecilla* actually refer to *C. pluto* Banks.

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Callilepis may be easily recognized by the single translucent lamina on the cheliceral retromargin (fig. 3), the short, angular endites (fig. 4), and the flattened, transverse posterior median eyes (fig. 1). Scanning electron micrographs show that these eyes are covered with a series of ridges (fig. 2) and are therefore probably nonfunctional. Unlike *Gnaphosa*, the anterior spinnerets have only three spigots (fig. 5); the number of spigots may prove to be of value as a generic character in this family, even though they are visible only on extremely well-preserved specimens.

The species of *Callilepis* fall into two groups. In the *nocturna* group (*nocturna*, *pluto*, *imbecilla*, *chisos*, and *concolor*) the conductor of the palpus has its proximal prong greatly elongated (fig. 8), whereas in the *schuszeri* group (*schuszeri*, *mumai*, *eremella*, *gertschi*, and *gosoga*) the proximal prong is short or absent and the tip of the conductor is folded (fig. 39). Both species groups are Holarctic in distribution, although no species is found on both sides of the Atlantic. *Callilepis* are most commonly collected in dry areas, particularly rocky hillsides, quarries, and sandy roads and beaches.

Figure 7 shows the probable phylogeny of the known *Callilepis* as reconstructed by a cladistic analysis of genitalic characters, based on the premise that only shared, derived ("synapomorphic") characters, and not shared, primitive ones, can indicate monophyly. Darkened squares refer to the derived states of 18 genitalic characters listed in table 1; light squares refer to the corresponding primitive character states. In the absence of fossil *Callilepis* it is of course not possible to make absolute statements about what character states are derived. Three criteria have been used to make these decisions; all are open to theoretical objections. Within each pair, the morphologically more complex state has been presumed derived (characters 1, 2, 4, 8, 10, 12, and 15); the character state most similar to that of *Laronia* (the closest relative of *Callilepis*) has been presumed primitive (characters 6, 11, 13, and 17); and any character state restricted to a single species within the genus (characters 3, 5, 9, 14, 16, and 18) or species group (character 7) has been presumed derived.

Characters 6 and 17 are identical and indicate what is apparently a case of parallel evolution between the *nocturna* and *schuszeri* groups. A

narrow tegulum appears to have been independently derived from the wider form in each group. Thus, in contrast to Mayr's assertion (1974, p. 118) that cladistic analysis ignores parallelism, the search for synapomorphic characters in *Callilepis* brought to light a case of parallelism that would otherwise have been overlooked.

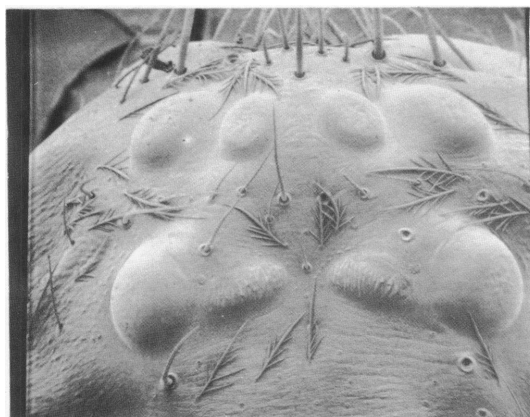
When identifying male *Callilepis* the palpus must be held in a strictly level position; this can be accomplished by resting it in sand. Even a slight deviation from the horizontal plane produces great differences in the appearance of the species-specific conductor. For example, when a specimen of *eremella* (figs. 53, 56) is positioned with the tip of the cymbium lower than it should be, the distal prong of the conductor is hidden and the proximal prong appears elongated; such a specimen was drawn by Levi and Levi (1951, fig. 19) as *altitudonis*, actually a synonym of *eremella*.

The format of the descriptions follows that of Platnick and Shadab (1975). A complete description of the typical leg spination is given for the genus and discrepancies from that pattern noted in the individual descriptions. As *Callilepis* are uncommon in collections a concerted effort was made to obtain material. Over a thousand mature specimens were examined; more than a third belonged to the common species *pluto*. Accordingly, complete data, including depositories, is provided for material of the uncommon species; only a list of records and a summary of ecological information are given for *pluto*.

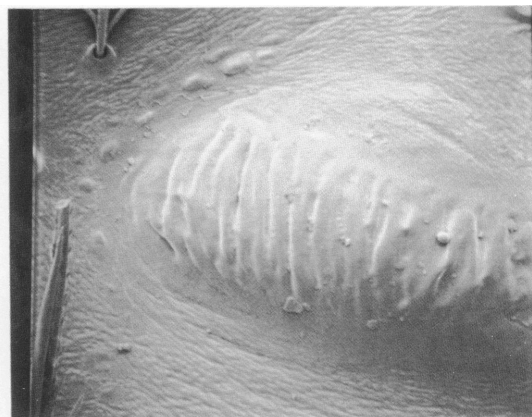
I thank Drs. Åke Holm (Uppsala Universitet), Konrad Thaler (Universität Innsbruck), and Takeo Yaginuma (Ohtemon-Gakuin University) for their donation of Palaearctic material, and Mr. Robert J. Koestler of the American Museum of Natural History for his continued assistance with the scanning electron microscope, a Cambridge Scientific Instruments Model S-4 purchased with the aid of a grant from the National Science Foundation. Specimens were obtained from the curators and collectors listed below, to each of whom I am deeply indebted.

Abbreviations

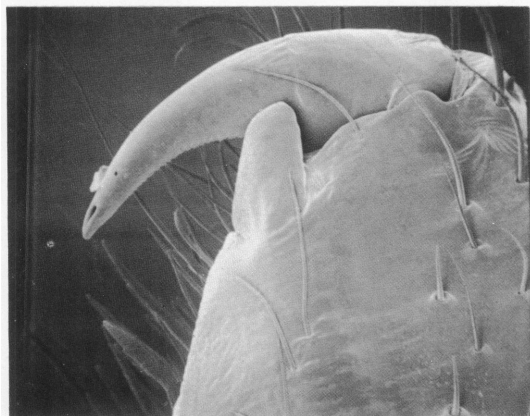
AMNH, the American Museum of Natural History
 ASEA, Arachnological Society of East Asia, Dr. T. Yaginuma



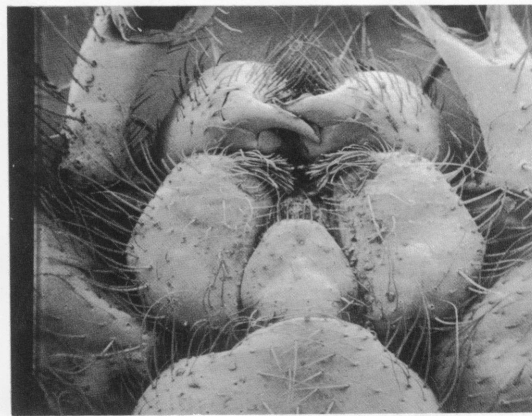
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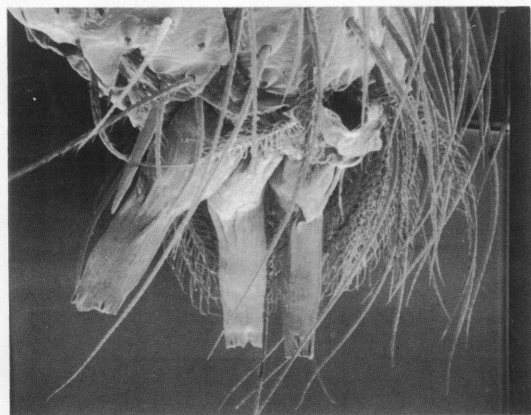
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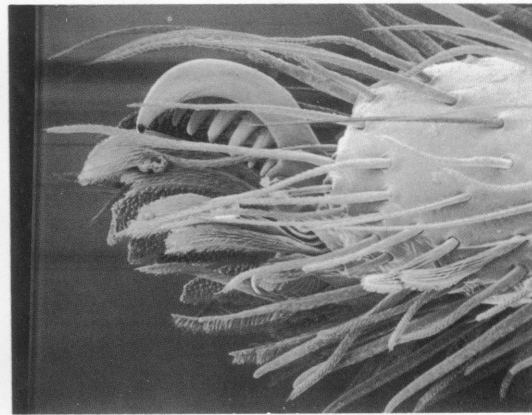
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5



6

FIGS. 1-6. Scanning electron micrographs, *Callilepis pluto* Banks. 1. Ocular area, dorsal view, 200 \times . 2. Posterior median eye, dorsal view, 1050 \times . 3. Chelicera, posterior view, 400 \times . 4. Mouthparts, ventral view, 80 \times . 5. Spigots of anterior spinneret, ventral view, 480 \times . 6. Tarsal claw and claw tuft, lateral view, 500 \times .

TABLE 1
Genitalic Characters Used in Figure 7

Character	Primitive State	Derived State
1. Proximal prong of conductor	Short	Long
2. Prolateral edge of conductor	Flat	Folded
3. Lateral margins of epigynum	Connected	Unconnected
4. Proximal prong of conductor	Curved	Straight
5. Margins of epigynum	Evenly curved	Angular
6. Tegulum	Wide	Narrow
7. Tip of spermathecae	Long	Short
8. Tip of conductor	Rounded	Pointed
9. Lateral margins of epigynum	Widest posteriorly	Widest medially
10. Tip of conductor	Straight	Bent
11. Embolus	Evenly curved	Angular
12. Tip of spermathecae	Untwisted	Twisted
13. Orientation of embolar base	Horizontal	Vertical
14. Epigynal atrium	Absent	Present
15. Folded tip of conductor	Narrow	Wide
16. Lateral margins of epigynum	Evenly curved	Sinuuous
17. Tegulum	Wide	Narrow
18. Spermathecal flange	Absent	Present

BMNH, British Museum (Natural History), Mr. F. R. Wanless

CAS, California Academy of Sciences, Dr. R. X. Schick

CBJK, personal collection, Dr. B. J. Kaston

CHKW, personal collection, Dr. H. K. Wallace

CJAB, personal collection, Dr. J. A. Beatty

CJEC, personal collection, Dr. J. E. Carico

CMHM, personal collection, Dr. M. H. Muma

CNC, Canadian National Collections, Dr. C. D. Dondale

CVDR, personal collection, Mr. V. D. Roth

CWBP, personal collection, Dr. W. B. Peck

FMNH, Field Museum of Natural History, Mr. M. Prokop

FSCA, Florida State Collection of Arthropods, Dr. H. V. Weems, Jr.

MCZ, Museum of Comparative Zoology, Dr. H. W. Levi

MNHN, Muséum National d'Histoire Naturelle, Dr. M. Hubert

MSU, Michigan State University, Dr. R. J. Sauer

NMS, Natur-Museum und Forschungs-Institut Senckenberg, Dr. M. Grasshoff

OSU, Ohio State University, Mr. A. Penniman and Mr. R. Restifo

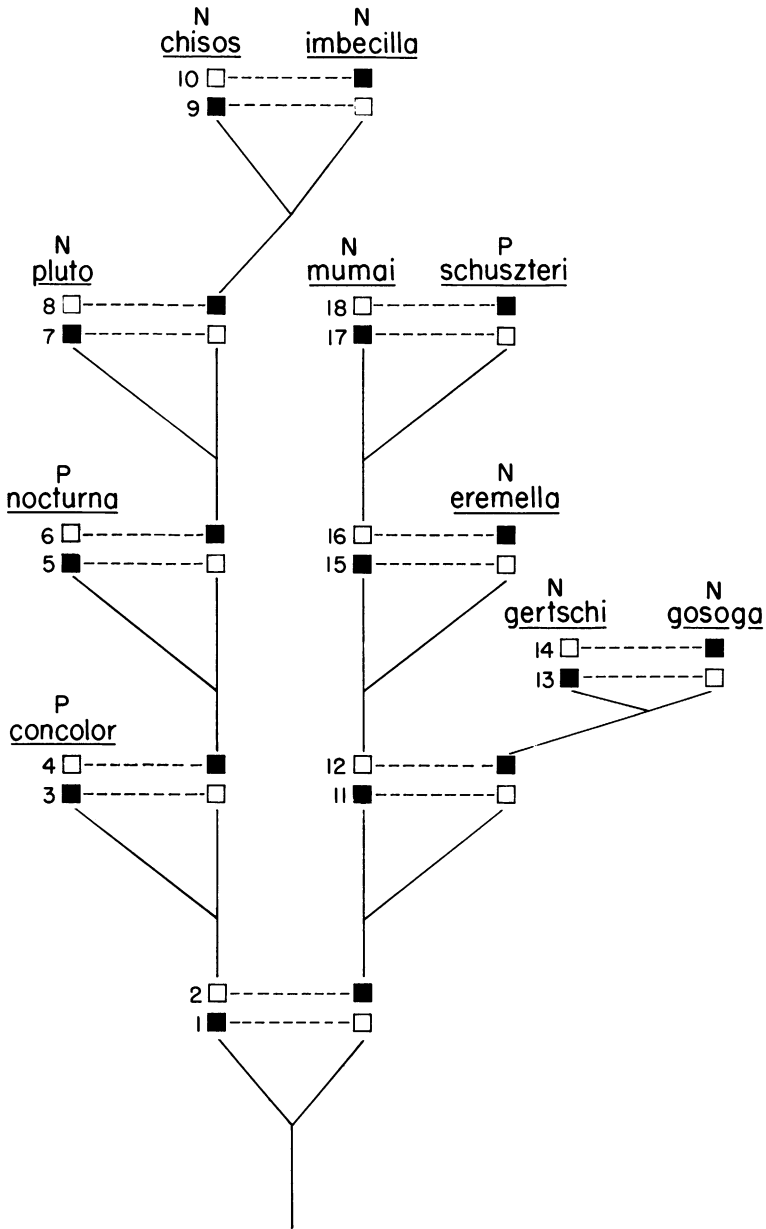


FIG. 7. Probable phylogeny of *Callilepis* species. Numbers refer to the characters listed in table 1. Dark squares denote derived character states, light squares primitive ones; N and P indicate Nearctic and Palearctic, respectively.

UCB, University of California at Berkeley, Mr. C. Griswold

UW, University of Washington, Dr. S. Rohwer and Mr. R. Crawford

ZMB, Zoologisches Museum an der Humboldt-Universität zu Berlin, Dr. M. Moritz

CALLILEPIS WESTRING

Callilepis Westring, 1874, p. 43 (type species by original designation *Filistata maculata* Wider [= *Callilepis nocturna*]). Roewer, 1954, p. 380. Bonnet, 1956, p. 929.

Pterotricha (misidentification): Roewer, 1954, p. 378 (in part, American species only).

Diagnosis. *Callilepis* may be easily recognized by the translucent lamina on the cheliceral retromargin (fig. 3). The only other genus with which *Callilepis* could be confused is *Laronia*, specimens of which have two or three laminae on the cheliceral retromargin. The angular endites (fig. 4) and flattened, transverse posterior median eyes (fig. 1) are also diagnostic of *Callilepis*.

Description. Total length 2.5-7.0 mm. Carapace an elongated oval, widest between coxae II and III, flattened, greatly narrowed anteriorly, light orange to dark brown, often with white scalelike setae. Cephalic area not elevated; thoracic groove longitudinal. From front, anterior eye row procurved, posterior row straight. PME transverse, flattened, with ridges (figs. 1, 2); other eyes circular. Lateral eyes larger than medians. Eyes of anterior row separated by their diameter or slightly less; those of posterior row separated by their radius or more. Median ocular quadrangle wider in back than in front and than long. Clypeus very high, two or more times the ALE diameter. Chelicerae each with translucent lamina on retromargin (fig. 3). Endites angular, convergent (fig. 4). Labium a short triangle. Sternum rounded, not extending between coxae IV. Leg formula 4123. Typical leg spination (only surfaces bearing spines listed): femora: I, II d1-1-1, p0-0-1; III d1-1-1, p0-1-1, r0-1-1; IV d1-1-1, p0-0-1, r0-0-1; patellae: III p0-1-0, r0-1-0; IV r0-1-0; tibiae: I v1-2-2; II p0-0-1, v1-2-2; III d1-0-0, p1-1-1, v1-2-2, r0-1-1; IV d1-0-0, p1-1-1, v1-2-2, r1-1-1; metatarsi: I, II v2-0-2; III p0-1-2, v2-2-2, r0-1-2; IV p1-2-2, v2-2-2, r1-2-2. Tarsi with two dentate claws and claw tufts (fig. 6). Metatarsal preening comb lacking. Patellae and tibiae with long trichobothria at tips. Trochanters not notched. Abdomen dark gray, longer than wide, with dark, shiny anterior scutum in males, sometimes with paramedian

white spots. Six spinnerets, anteriors widely separated with three long spigots (fig. 5). Palp with curving embolus and large conductor. Epigynum with long, curled spermathecae.

Misplaced Species. Examination of the types of the following four species indicates that they have been misplaced; none have the cheliceral laminae characteristic of *Callilepis*. *Callilepis grisea* Banks (1914) from Cuba belongs to *Eilicina*; the epigynum of the type specimen is similar to that of the type species of *Eilicina*, *E. cincta* (Banks), also from Cuba. As was indicated by Ubick and Roth (1973), *Callilepis insularis* Banks (1900) is a *Drassyllus*, *Pythonissa clara* Keyserling (1887) is a *Gnaphosa*, and *C. zionis* Chamberlin and Woodbury (1929) is a *Castianeira*.

Through the courtesy of Dr. A. J. Prins of the South African Museum, I have also been able to examine the types of *Callilepis auris* Tucker, *C. marginalis* Tucker, and *C. varius* Tucker, which were placed in *Pterotricha* by Roewer (1954); all certainly belong in the Gnaphosinae rather than to *Callilepis*, although their placement in *Pterotricha* is questionable.

Uncertain Name. *Callilepis cabriolata* Franiganillo (1926) from Spain (types probably in the Cuba Academy of Sciences, unavailable), probably a junior synonym of *concolor* but too poorly described to permit certain identification, is here considered a *nomen dubium*.

KEY TO SPECIES OF *CALLILEPIS*

1. Males 2
Females 11
2. Palpal conductor with long proximal prong directed proximally (figs. 8, 15, 22, 29, 36) 3
Palpal conductor without proximal prong (figs. 39, 46) or with short proximal prong directed retrolaterally (figs. 53, 60, 67) 7
3. Old World 4
New World 5
4. Proximal prong of palpal conductor with distal tubercle (fig. 36) *concolor*
Proximal prong of palpal conductor without distal tubercle (figs. 8, 11) *nocturna*
5. Tip of conductor abruptly bent distally (figs. 22, 25) *imbecilla*
Tip of conductor not abruptly bent (figs. 15, 29) 6
6. Embolus relatively short (figs. 15, 18);

- northern and eastern North America (map 1) *pluto*
 Embolus relatively long (figs. 29, 32); south-western United States (map 2) . . . *chisos*
7. Palpal conductor without proximal prong (figs. 39, 46) 8
 Palpal conductor with proximal prong (figs. 53, 60, 67) 9
8. Twisted tip of conductor narrow (figs. 39, 42); Old World *schuszteri*
 Twisted tip of conductor wide (figs. 46, 49); New World *mumai*
9. Proximal prong situated at tip of conductor (figs. 53, 56) *eremella*
 Proximal prong situated below tip of conductor (figs. 60, 67) 10
10. Embolus relatively long (fig. 60); proximal prong of conductor relatively short (fig. 63) *gertschi*
 Embolus relatively short (fig. 67); proximal prong of conductor relatively long (fig. 70) *gosoga*
11. Old World 12
 New World 14
12. Lateral margins of epigynum forming circles (fig. 37) *concolor*
 Lateral margins of epigynum not forming circles (figs. 9, 40) 13
13. Lateral margins of epigynum relatively long (figs. 9, 13) *nocturna*
 Lateral margins of epigynum relatively short (figs. 40, 44) *schuszteri*
14. Lateral margins of epigynum sinuous (figs. 54, 58) *eremella*
 Lateral margins of epigynum evenly curved (figs. 16, 23, 30, 47, 61, 68) 15
15. Epigynum with anterolateral atria (figs. 68, 72) *gosoga*
 Epigynum without anterolateral atria . . . 16
16. Spermathecae extending far beyond anterior epigynal rim (figs. 23, 30, 61) 17
 Spermathecae extending at most only slightly beyond anterior epigynal rim (figs. 16, 47) 19
17. Lateral margins of epigynum relatively long (figs. 23, 30) 18
 Lateral margins of epigynum relatively short (figs. 61, 65) *gertschi*
18. Spermathecae as in figures 24, 28; south-eastern United States (map 2) . . *imbecilla*
 Spermathecae as in figures 31, 35; south-western United States (map 2) . . . *chisos*
19. Lateral margins of epigynum relatively long (figs. 16, 20) *pluto*
 Lateral margins of epigynum relatively short (figs. 47, 51) *mumai*

Callilepis nocturna (Linnaeus)

Figures 8-14

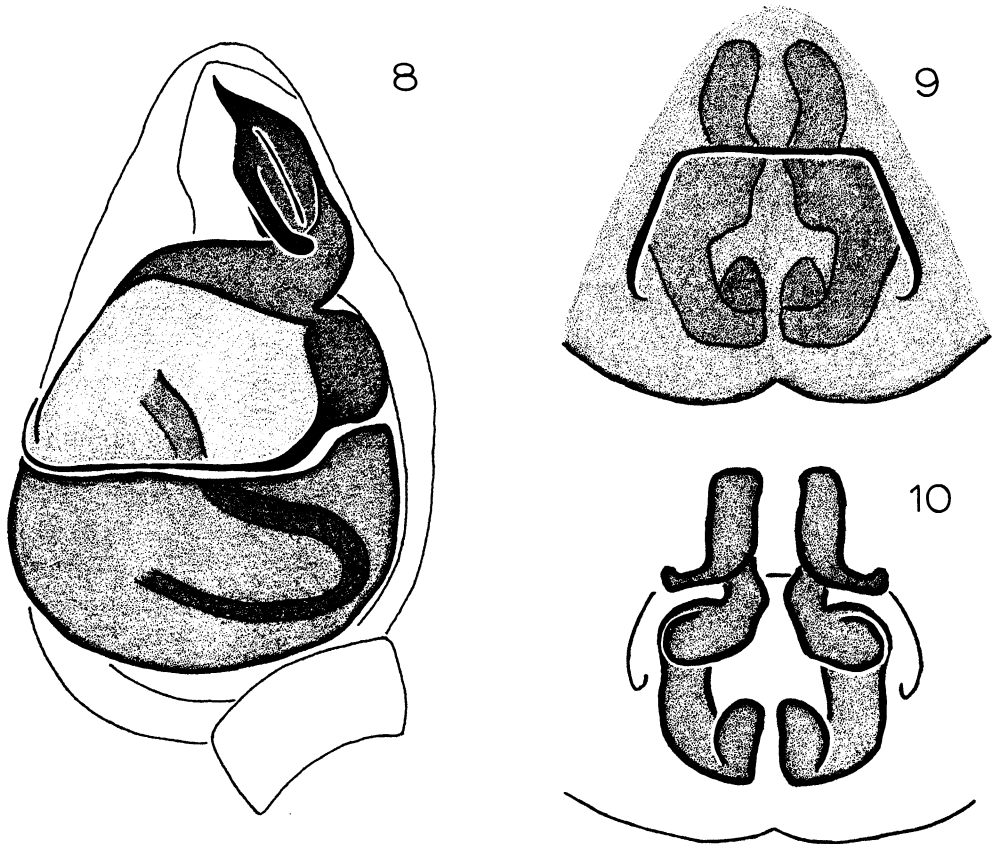
- Aranea nocturna* Linnaeus, 1758, p. 621 (types, presumably from northern Europe, lost).
- Drassus gnaphosus* Walckenaer, 1830, p. 159 (types from France, lost).
- Filistata maculata* Wider, 1834, p. 205, pl. 14, fig. 4 (female holotype from Oden Wald, Hesse or Baden-Württemberg, Germany, in NMS, examined).
- Pythonissa holobera* C. L. Koch, 1837, p. 16 (types from Germany, not in ZMB or BMNH, lost).
- Callilepis nocturna*: Kulczyński, 1882, p. 24.
 Miller, 1947, pl. 4, fig. 2. Roewer, 1954, p. 380. Bonnet, 1956, p. 932. Wiehle, 1967, figs. 55a, 56a, 58a, 59a. Murphy, 1971, p. 269, figs. 1-4. Locket, Millidge, and Merrett, 1974, p. 10, fig. 5.

Note. A bibliography (complete to 1940) of the numerous combinations these names have undergone can be found in Bonnet (1956). Only subsequent references that include illustrations and that are not cited in Roewer (1954) are listed above.

Diagnosis. *Callilepis nocturna* is closest to *pluto* but may be distinguished by the longer embolus (fig. 8) and the angular lateral margins of the epigynum (fig. 9).

Male. Total length 3.87 ± 0.42 mm. Carapace 1.68 ± 0.19 mm. long, 1.40 ± 0.13 mm. wide. Femur II 1.13 ± 0.10 mm. long (20 specimens examined). Eye sizes and interdistances (mm.): AME 0.03, ALE 0.04, PME 0.06, PLE 0.05; AME-AME 0.05, AME-ALE 0.04, PME-PME 0.06, PME-PLE 0.05, ALE-PLE 0.08. MOQ length 0.17 mm., front width 0.11 mm., back width 0.18 mm. Embolus relatively long (fig. 8); conductor sharply pointed (figs. 11, 12). Leg spination: femur III r0-0-1; tibiae: I p1-0-1; II d1-0-0, p1-0-1; III p2-1-1, v2-2-2; IV p2-1-1, v2-2-2, r2-1-1; metatarsi: III p1-1-2, r1-1-2; IV v1-2-2.

Female. Total length 4.86 ± 0.54 mm. Carapace 1.83 ± 0.10 mm. long, 1.51 ± 0.11 mm. wide. Femur II 1.19 ± 0.10 mm. long (69 specimens examined). Eye sizes and interdistances (mm.): AME 0.05, ALE 0.06, PME 0.08, PLE 0.07; AME-AME 0.07, AME-ALE 0.04, PME-PME 0.05, PME-PLE 0.05, ALE-PLE 0.10. MOQ length 0.21 mm., front width 0.17 mm., back



FIGS. 8-10. *Callilepis nocturna* (Linnaeus). 8. Palp, ventral view. 9. Epigynum, ventral view. 10. Vulva, dorsal view.

width 0.21 mm. Epigynum with angular lateral margins (figs. 9, 13); spermathecae with elongate tips (figs. 10, 14). Leg spination: femur III r0-0-1; tibiae: I, II p1-0-1; III p2-1-1, v2-2-2; IV p2-1-1, v2-2-2, r2-1-1; metatarsi: II p0-1-0; III p1-2-2, r1-1-2.

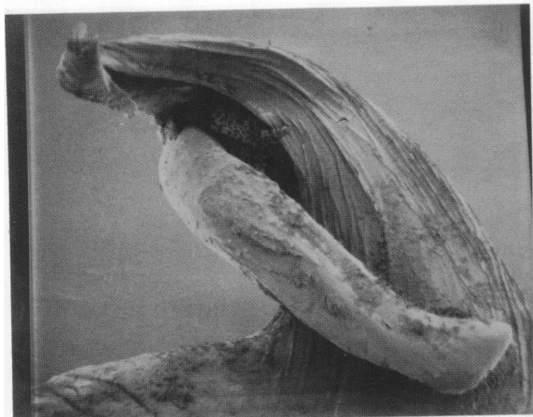
Material Examined. **Austria:** *Tirol:* Innsbruck, July 2, 1964 (K. Thaler, AMNH), 2♂, 2♀. **Finland:** *Uusimaa:* Pernå, June 22, 1947 (M. and L. Palmgren, AMNH), 2♀. **France:** *Basses Alpes:* Colmars (MNHN), 11♂, 35♀; *Corse:* Corsica (BMNH), 1♂, 3♀; *Seine:* Paris (J. H. Emerton, MCZ), 1♂, 1♀. **Germany:** *Bayern:* Frankische Jura (ZMB), 1♀; Main River (A. Zilch, NMS), 1♀; Seeshaupt (BMNH), 2♀; *Hessen:* Kelsterbach, June 17, 1951 (Schnellbacher, NMS), 1♀; Limburg (Zimmermann, ZMB), 1♀; Schwanheim, May 12, 1949 (Schnellbacher, NMS), 1♀; *North*

Rhine-Westphalia: Siebengebirge (NMS), 1♂, 1♀; *Rhineland-Palatinate:* Nassau (Zimmermann, ZMB), 1♀. **Norway:** *Aust-Agder:* Levang, July, 1955 (A. L. Washburn, AMNH), 2♀. **Spain:** Galicia (BMNH), 1♂, 1♀. **Sweden:** *Göteborg och Bohus:* Skaftö, June 12, 1936, under stones (Å. Holm, AMNH), 1♂, 3♀. **Switzerland:** *Basel:* Basel (AMNH), 1♂; *Valais:* Trient (BMNH), 4♀; Zermatt (BMNH), 3♀.

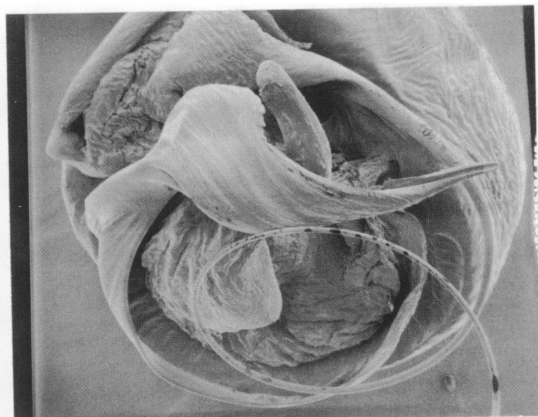
Distribution: Europe. There are unauthenticated literature records for England, Denmark, Holland, Italy, Poland, western Russia, Czechoslovakia, Hungary, Rumania, Bulgaria, and Turkey.

Callilepis pluto Banks
Figures 1-6, 15-21; Map 1

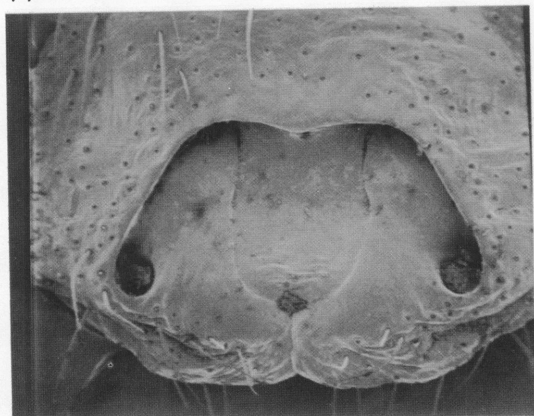
Drassus nocturnus (misidentification): Blackwall, 1846, p. 41.



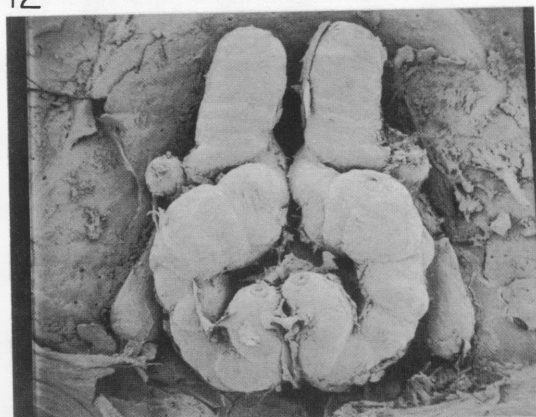
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14

FIGS. 11-14. Scanning electron micrographs, *Callilepis nocturna* (Linnaeus). 11. Conductor, ventral view, 500 \times . 12. Conductor of expanded palp, dorsal view, 200 \times . 13. Epigynum, ventral view, 200 \times . 14. Vulva, dorsal view, 160 \times .

Callilepis pluto Banks, 1896, p. 60 (female holotype from Olympia, Thurston County, Washington, in MCZ, examined).

Callilepis femoralis Banks, 1911, p. 441, pl. 35, fig. 11 (female holotype from Mt. Graybeard, Buncombe County, North Carolina, in MCZ, examined). NEW SYNONYMY.

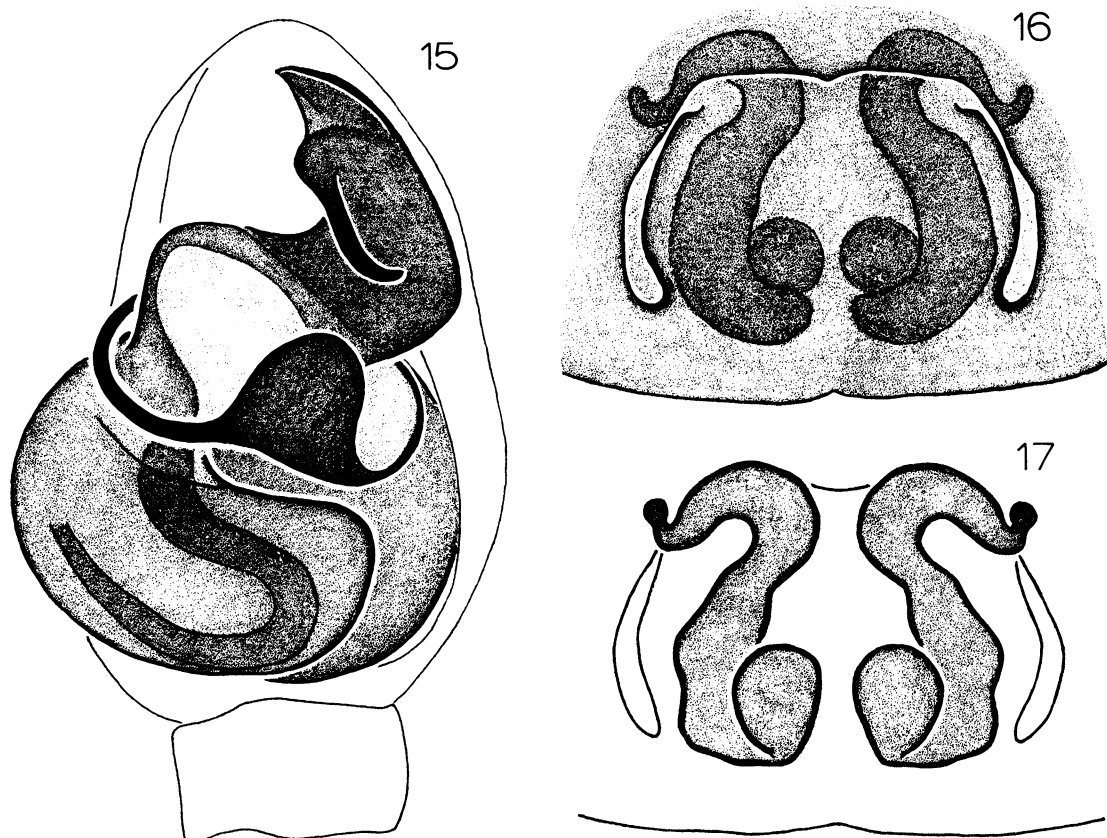
Callilepis imbecilla (misidentification): Chamberlin, 1922, p. 158. Bonnet, 1956, p. 931 (in part).

Pterotricha imbecilla (misidentification): Roewer, 1954, p. 378 (in part).

Diagnosis. *Callilepis pluto* is closest to *nocturna* but may be distinguished by the shorter embolus (fig. 15) and the rounded lateral margins of the epigynum (fig. 16).

Male. Total length 3.99 \pm 0.18 mm. Carapace 1.83 \pm 0.08 mm. long, 1.57 \pm 0.07 mm. wide. Femur II 1.22 \pm 0.06 mm. long (167 specimens examined). Eye sizes and interdistances (mm.): AME 0.05, ALE 0.09, PME 0.09, PLE 0.10; AME-AME 0.05, AME-ALE 0.03, PME-PME 0.05, PME-PLE 0.03, ALE-PLE 0.09. MOQ length 0.23 mm., front width 0.15 mm., back width 0.23 mm. Embolus short, evenly curved (fig. 15); conductor with proximally directed point (figs. 18, 19). Leg spination: femur IV p0-1-1; metatarsi I, II v0-1-2.

Female. Total length 5.51 \pm 0.71 mm. Carapace 2.03 \pm 0.11 mm. long, 1.71 \pm 0.18 mm. wide. Femur II 1.39 \pm 0.10 mm. long (224 specimens examined). Eye sizes and interdistances



FIGS. 15-17. *Callilepis pluto* Banks. 15. Palp, ventral view. 16. Epigynum, ventral view. 17. Vulva, dorsal view.

(mm.): AME 0.06, ALE 0.08, PME 0.06, PLE 0.09; AME-AME 0.06, AME-ALE 0.05, PME-PME 0.08, PME-PLE 0.06, ALE-PLE 0.12. MOQ length 0.24 mm., front width 0.18 mm., back width 0.20 mm. Epigynum with rounded lateral margins (figs. 16, 20); spermathecae with shortened tips (figs. 17, 21). Leg spination: femur IV p0-1-1; tibiae: I p0-1-1, v2-2-2; II p0-1-1; metatarsi: III d1-0-0, p1-1-2, r1-1-2; IV d1-0-0.

Records. **Canada:** *Alberta:* Medicine Hat; S Saskatchewan River, Highway 41; Waterton Lakes National Park. *British Columbia:* Cascade; Mt. Benson, Vancouver Island; Quadra Island, 2 mi. N Heriot Bay Village; Wellington. *Manitoba:* Roblayton; Spruce Woods Provincial Park. *Ontario:* Chatterton, 13 mi. N Belleville; Manitoulin Island. *Quebec:* Chelsea. *Saskatchewan:*

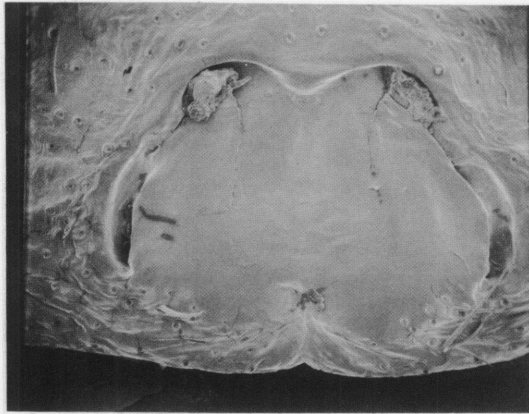
Antler; Saskatoon. **United States:** *Alabama:* Clay Co.: Cheaha State Park. DeKalb Co.: DeSoto State Park. *Colorado:* Archuleta Co.: Piedra River. Boulder Co.: Valmont Buttes. La Plata Co.: Thompson Park Campground. Larimer Co.: Fort Collins. Mesa Co.: Porter Camp. Rio Grande Co.: Highway Springs Campground. San Miguel Co.: 6 mi. N Placerville. *Connecticut:* Fairfield Co.: Norwalk. Hartford Co.: East Granby; Farmington; Plainville; Simsbury; Windsor. Litchfield Co.: Macedonia Brook; Riverton. Middlesex Co.: East Haddam; Killingworth. New Haven Co.: Bethany; Branford; Mount Carmel; New Haven; Whitneyville. Tolland Co.: Union. Windham Co.: South Windham. *Georgia:* Hall Co.: Gainesville. Pickens Co.: Jasper. *Idaho:* Lewis Co.: Kamiah. *Illinois:* Kankakee Co.: Pembroke. *Iowa:* Linn



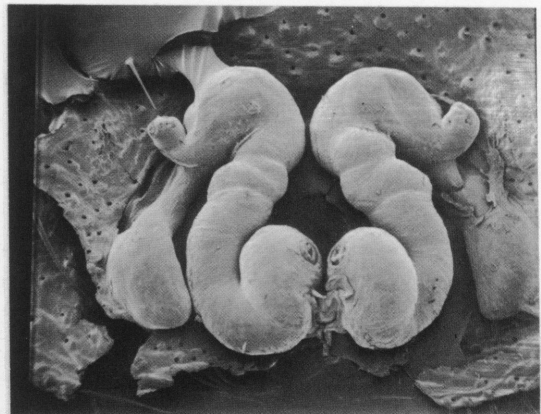
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FIGS. 18-21. Scanning electron micrographs, *Callilepis pluto* Banks. 18. Conductor, ventral view, 200 \times . 19. Conductor of expanded palp, dorsal view, 200 \times . 20. Epigynum, ventral view, 200 \times . 21. Vulva, dorsal view, 190 \times .

Co.: Cedar Rapids. Winneshiek Co.: Decorah. *Maine*: Hancock Co.: Acadia National Park. *Massachusetts*: Barnstable Co.: North Truro; South Chatham; Woods Hole. Middlesex Co.: Groton; Holliston; Pepperell; Townsend Harbor. Norfolk Co.: Milton; Sharon; Walpole. Worcester Co.: Fitchburg. *Michigan*: Barry Co.: Gun Lake. Calhoun Co.: Albion. Charlevoix Co.: Thumb Lake. Cheboygan Co.: Douglas Lake. Clinton Co.: Rose Lake Wildlife Experiment Station. Ingham Co.: East Lansing. Jackson Co. Kalamazoo Co.: Gull Lake Biological Station. Livingston Co.: E. S. George Reserve. Midland Co. Monroe Co. Shiawassee Co. Washtenaw Co.: Ann Arbor. *Minne-*

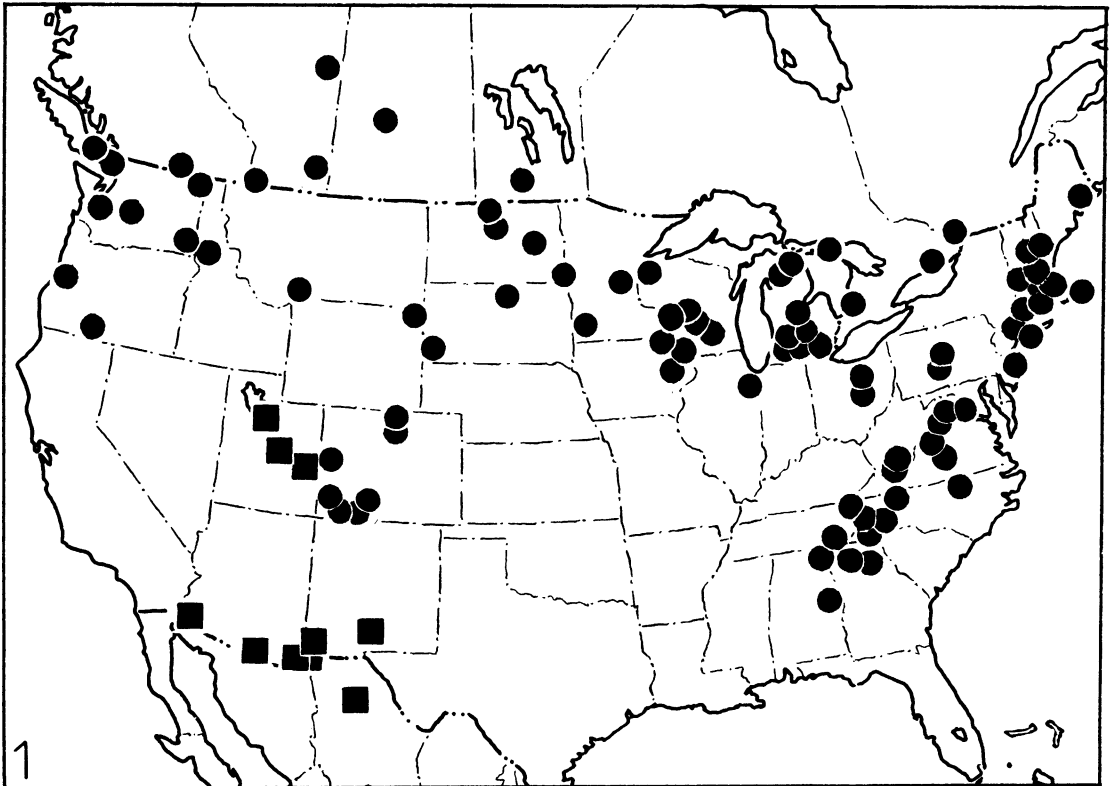
sota: Lyon Co.: Camden State Park. Sherburne Co.: Zimmerman. *Montana*: Park Co.: Gardiner. *New Hampshire*: Carroll Co.: Lake Winnepesaukee. Cheshire Co.: Monadnock Mountain. Grafton Co.: Franconia. Hillsboro Co.: Brookline. *New Jersey*: Bergen Co.: Ramsey. Ocean Co.: Island Beach State Park. *New York*: Nassau Co.: Sea Cliff. Orange Co.: Greenwood Lake. Rockland Co.: Torne Mountain. *North Carolina*: Ashe Co.: Creston. Buncombe Co.: Black Mountain; Mt. Graybeard. Durham Co.: Duke Forest. Haywood Co.: Canton. Jackson Co.: Balsam. Macon Co.: Highlands. Orange Co.: Chapel Hill; 9 mi. E Hillsboro. *North Dakota*: Bottineau Co.

Foster Co.: McHenry. McHenry Co. Richland Co. Ohio: Fairfield Co.: Sugar Grove. Knox Co.: Gambier. Oregon: Klamath Co.: W Crater Lake. Lane Co.: Glenada. Pennsylvania: Centre Co. Huntingdon Co.: Mapleton. South Dakota: Custer Co.: Black Hills; Blue Bell; 3 mi. S Custer; Custer State Park; Stockade Lake. Walworth Co.: Mobridge. Tennessee: Clayborne Co.: Cumberland Gap. Hamilton Co.: Chattanooga. Sevier Co.: Gatlinburg. Vermont: Windham Co.: Westminster West. Virginia: Campbell Co.: Lynchburg. Fairfax Co.: Falls Church. Giles Co.: Mountain Lake. Page Co.: Luray. Rockbridge Co.: Lexington. Warren Co.: Shenandoah National Park. Washington: Kittitas Co.: Ellensburg; Robinson Cyn; Taneum Cyn; Thorp. Pend Oreille Co.: Cedar Lake. San Juan Co.: Friday Harbor; Henry Island; Mt. Constitution, Orcas Island. Thurston Co.: Olympia. Whitman Co.: Pullman. West Virginia: Mercer Co.: Bluefield. Summers

Co.: Bluestone Dam. Wisconsin: Adams Co.: Roche Cri Roadside Park. Buffalo Co.: Alma. Burnett Co.: Siren. Columbia Co.: Black Hawk Lookout. Dane Co.: Madison. Grant Co.: Wyalusing. Wood Co.: Wisconsin Rapids. Wyoming: Crook Co.: Devil's Tower National Monument.

Distribution. British Columbia and Oregon east to Maine and Alabama (map 1). There are large collections of this species in AMNH, CNC, and MCZ and smaller samples in CBJK, CJEC, CHKW, CJAB, CWBP, MNHN, MSU, NMS, OSU, and UW.

Natural History. Mature males have been collected from late April through early September; mature females from early May through early September. Specimens have been taken under rocks and boards, in a crevice of a sea cliff, on sand beaches, in pitfall traps in high sandy dry soil, gravel pits, forests, and sand blowouts, associated with pine, fir, spruce, oak, poplar, aspen,



MAP 1. United States, showing distributions of *Callilepis pluto* (circles) and *C. mumai* (squares).

cottonwood, willow, raspberry, rose, and viburnum, and at elevations between 2000 and 8650 feet.

Synonymy. No genitalic differences were detected that would separate the type of *femoralis* from the remaining specimens of *pluto*.

Callilepis imbecilla (Keyserling)

Figures 22-28; Map 2

Pythonissa imbecilla Keyserling, 1887, p. 427, fig. 5 (female holotype from Bee Spring, Edmonson County, Kentucky, in MCZ, examined).

Callilepis imbecilla: Banks, 1895, p. 78 (misidentification). Bonnet, 1956, p. 931 (in part).

Callilepis munda Chamberlin, 1936, p. 16, figs. 22-24 (male holotype and female allotype from Hope, Hempstead County, Arkansas, in AMNH, examined). Bonnet, 1956, p. 932. NEW SYNONYMY.

Pterotricha munda: Roewer, 1954, p. 378.

Pterotricha imbecilla: Roewer, 1954, p. 378 (in part).

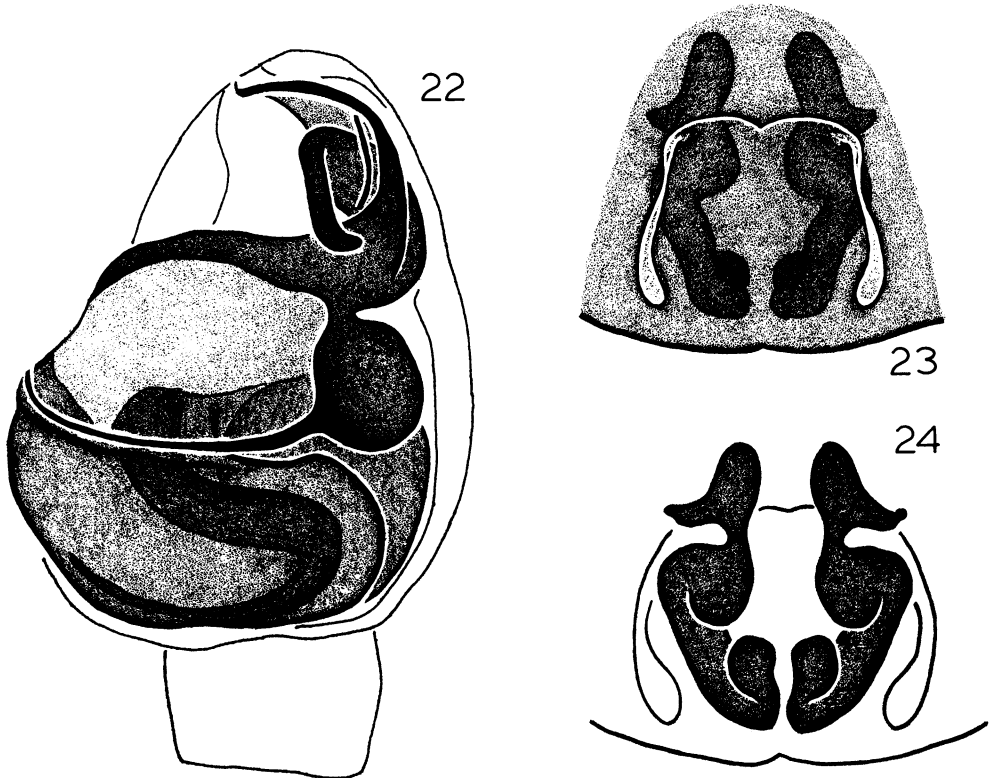
Diagnosis. *Callilepis imbecilla* is closest to *chisos* but may be distinguished by the abruptly bent tip of the conductor (fig. 22) and the narrow epigynum (fig. 23).

Male. Total length 3.30 ± 0.31 mm. Carapace 1.56 ± 0.12 mm. long, 1.32 ± 0.11 mm. wide. Femur II 1.00 ± 0.10 mm. long (143 specimens examined). Eye sizes and interdistances (mm.): AME 0.04, ALE 0.07, PME 0.05, PLE 0.09; AME-AME 0.05, AME-ALE 0.02, PME-PME 0.05, PME-PLE 0.03, ALE-PLE 0.08. MO length 0.20 mm., front width 0.14 mm., back width 0.18 mm. Embolus very long (fig. 22); conductor with abruptly bent tip (figs. 25, 26). Leg spination: tibia III p0-1-1; metatarsi I, II v0-1-2.

Female. Total length 4.69 ± 0.91 mm. Carapace 1.79 ± 0.18 mm. long, 1.45 ± 0.16 mm. wide. Femur II 1.18 ± 0.14 mm. long (100 specimens examined). Eye sizes and interdistances (mm.): AME 0.04, ALE 0.08, PME 0.04, PLE 0.08; AME-AME 0.06, AME-ALE 0.03, PME-PME 0.05, PME-PLE 0.07, ALE-PLE 0.09. MO length 0.17 mm., front width 0.14 mm., back width 0.18 mm. Epigynum relatively narrow (figs. 23, 27); spermathecae with gradually narrowed lateral processes (figs. 24, 28). Leg spina-

tion: tibia I p0-1-0; metatarsi: I, II v0-1-2; III d1-0-0.

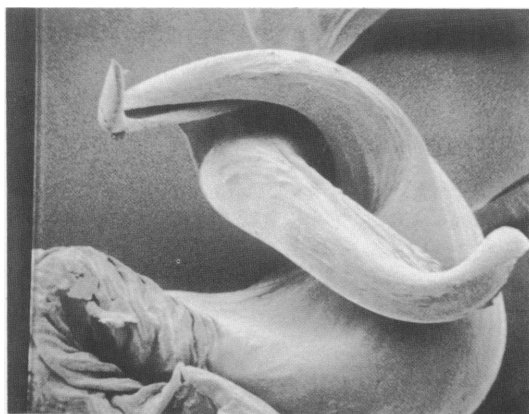
Material Examined. United States: Arkansas: Bradley Co.: May 17, 1964, pine-oak woods (Leslie, CWBP), 1♀; June 15, 1963 (CWBP), 1♀. Carroll Co.: Berryville (C. Wilton, MCZ), 1♀. Hempstead Co.: Hope, May 22-23 (AMNH), 2♂, 1♀. Mississippi Co.: June 9-July 20, 1966 (CWBP), 4♂, 1♀. Washington Co.: Cove Creek, June 24, 1961, hillside (O. and M. Hite, CWBP), 2♀; June 1-July 6, 1962, pitfall in leaf litter (O. and M. Hite, CWBP), 4♂, 1♀. *Florida:* Alachua Co.: May 28, 1949 (H. K. Wallace, CHKW), 1♂; Gainesville, June 18, 1938 (W. J. Gertsch, AMNH), 1♂, 1♀; Newnan's Lake, Mar. 28, 1957 (W. J. Gertsch, R. Forster, AMNH), 1♂, 2♀; Rattlesnake Branch, May 20, 1937 (H. K. Wallace, AMNH), 1♀. Charlotte Co.: Punta Gorda (N. Banks, MCZ), 2♂, 1♀; Jan. 1-16, 1946 (S. Rounds, AMNH), 1♂. Dade Co.: 1925 (W. M. Barrows, AMNH), 1♂. De Soto Co.: Arcadia, Mar. 30, 1938 (W. J. Gertsch, AMNH), 1♀. Escambia Co.: Pensacola, Jan. 21, 1925 (OSU), 4♂, 3♀. Hernando Co.: Mar. 23, 1947 (H. K. Wallace, AMNH), 1♀. Indian River Co.: Sebastian, 1922 (G. Nelson, MCZ), 1♂, 1♀. Lee Co.: Fort Myers, Feb., 1935 (W. M. Barrows, AMNH), 2♂, 2♀; Feb., 1930 (W. M. Barrows, OSU), 1♂, 2♀; Fort Myers Beach, Mar. 17, 1954 (W. Ivie, AMNH), 1♀. Marion Co.: June 12, 1938 (T. H. Hubbell, AMNH), 1♂. Martin Co.: Jonathan Dickinson State Park, June 15, 1962 (J. A. Beatty, CJAB), 2♀. Monroe Co.: Big Pine Key, June 17, 1962 (J. A. Beatty, CJAB), 2♀; Tavernier, Nov. 30, 1961 (W. J. Gertsch, AMNH), 1♂. Nassau Co.: Fort Clinch State Park, June 10, 1962 (J. A. Beatty, CJAB), 1♀. Orange Co.: Winter Park, Apr., 1934 (C. H. Paige, MCZ), 1♀. Polk Co.: Lake Alfred, Apr. 14, 1970, pitfall, citrus (M. H. Muma, H. L. Green, FSCA), 3♂; Waverly, Sept. 2, 1969, pitfall, sand-pine (M. H. Muma, FSCA), 3♂; Winter Haven, Apr. 19-May 18, 1967-1968, pitfall under oak tree (M. H. Muma, H. L. Green, FSCA), 3♂; April 14-Sept. 27, 1967-1970, pitfall, sand-pine (M. H. Muma, H. L. Green, K. Stone, FSCA), 55♂; May 26-Sept. 27, 1967-1970, pitfall, sand-pine (M. H. Muma, H. L. Green, K. Stone, FSCA), 5♀. Sarasota Co.: Long Boat Key, Sarasota, Aug. 14, 1910 (MCZ), 1♀. *Georgia:* Charlton Co.: Billy's Island, Okefenokee Swamp,



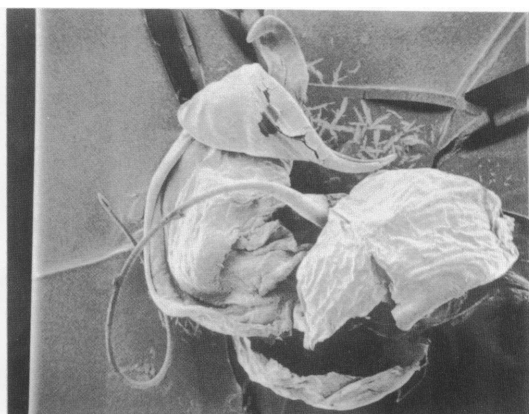
FIGS. 22-24. *Callilepis imbecilla* (Keyserling). 22. Palp, ventral view. 23. Epigynum, ventral view. 24. Vulva, dorsal view.

June, 1912 (AMNH), 1♂ 1♀. *Illinois*: Jackson Co.: Carbondale, Aug. 23, 1967, under board (J. M. Nelson, CJAB), 1♀. Kankakee Co.: Pembroke, May 12, 1936 (D. C. Lowrie, AMNH), 1♀. Piatt Co.: July 4, 1943 (C. J. Goodnight, AMNH), 1♀. Pope Co.: Lusk Creek, June 3-10, 1968, pitfall, wooded hillside (J. M. Nelson, CJAB), 1♂. Union Co.: Pine Hills, July 4, 1966 (A. D. Parsons, CJAB), 1♀. *Indiana*: Porter Co.: Dune Acres, May 15, 1935, under boards on beach (D. C. Lowrie, FMNH), 1♀. Tippecanoe Co.: Lafayette, 1958-1959, oak-hickory climax forest (E. Gasdorf, AMNH), 2♀. *Kentucky*: Edmonson Co.: Bee Spring (MCZ), 1♀. *Mississippi*: Wilkinson Co.: Centreville, Jan.-July, 1944 (A. F. Archer, AMNH), 1♀. *Ohio*: Hocking Co.: Cantwell Cliffs, June 5, 1938 (OSU), 1♂, 1♀; June 3, 1939 (OSU), 1♂, 1♀; Rockbridge (W. Ivie, AMNH), 1♀;

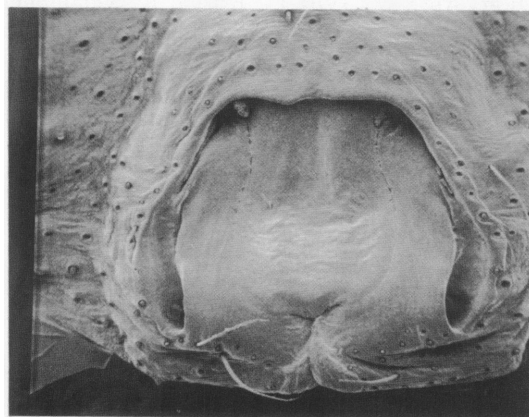
June 8, 1922 (OSU), 16♂, 15♀. *Oklahoma*: Bryan Co.: Durant, June 15, 1965 (K. W. Haller, AMNH), 1♂. Comanche Co.: Wichita Mountains Refuge Area, June 11, 1928 (W. M. Newport, MCZ), 1♂. *Tennessee*: Henderson Co.: Natchez Trace State Park, June 8, 1971 (R. L. Fischer, B. Wildie, MSU), 1♀. *Texas*: Aransas Co.: Goose Island State Park, Mar. 7, 1959 (A. Brady, MCZ), 1♂. Bell Co.: Temple, July 22, 1936 (L. I. Davis, AMNH), 1♂. Brooks Co.: Falfurrias, May 8, 1970 (AMNH), 2♀. Cameron Co.: May 1-2, 1936 (L. I. Davis, AMNH), 1♀. Fayette Co.: Engle, May 11, 1951 (O. Bryant, CAS), 1♂. Hidalgo Co.: July 2, 1934 (S. Mulaik, AMNH), 1♀; McCook, Apr. 18, 1936 (D. and S. Mulaik, AMNH), 1♀; Pharr, Apr. 5, 1936 (J. Rutherford, AMNH), 1♂. Kleberg Co.: Riviera, April 14, 1963 (W. J. Gertsch, W. Ivie, MNHN), 5♀. Nueces Co.: Driscoll, Apr. 14,



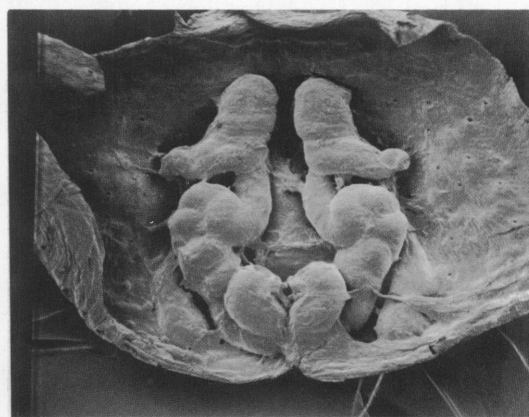
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FIGS. 25-28. Scanning electron micrographs, *Callilepis imbecilla* (Keyserling). 25. Conductor, ventral view, 350X. 26. Conductor of expanded palp, dorsal view, 150X. 27. Epigynum, ventral view, 150X. 28. Vulva, dorsal view, 155X.

1963 (W. J. Gertsch, W. Ivie, AMNH), 1♀. San Patricio Co.: Sinton, Apr. 5-Aug. 20, 1959-1960 (H. E. Laughlin, AMNH), 21♂; Apr. 25-Sept. 4, 1959-1960 (H. E. Laughlin, AMNH), 30♀. Sutton Co.: Sonora, May 3, 1926 (F. C. Bishoff, AMNH), 1♂. Travis Co.: Austin (R. V. Chamberlin, MCZ), 2♂; May 27, 1946 (J. Lyman, CWBP), 1♂. Williamson Co.: Georgetown, May 3, 1969 (AMNH), 1♀.

Distribution. Southeastern United States from Texas to Florida, north to Illinois and Ohio (map 2). This species apparently replaces *pluto* in the

Mississippi River valley and the extreme southern United States.

Synonymy. No genitalic differences were detected in the types of *munda* that would justify their specific status.

***Callilepis chisos*, new species**
Figures 29-35; Map 2

Types. Male holotype from Basin, Chisos Mountains, Big Bend National Park, Brewster County, Texas (May 28, 1952; M. Cazier, W.

Gertsch, R. Schrammel) and female paratype from the same locality (September 28, 1950; W. J. Gertsch), deposited in AMNH.

Etymology. The specific name is a noun in apposition taken from the type locality.

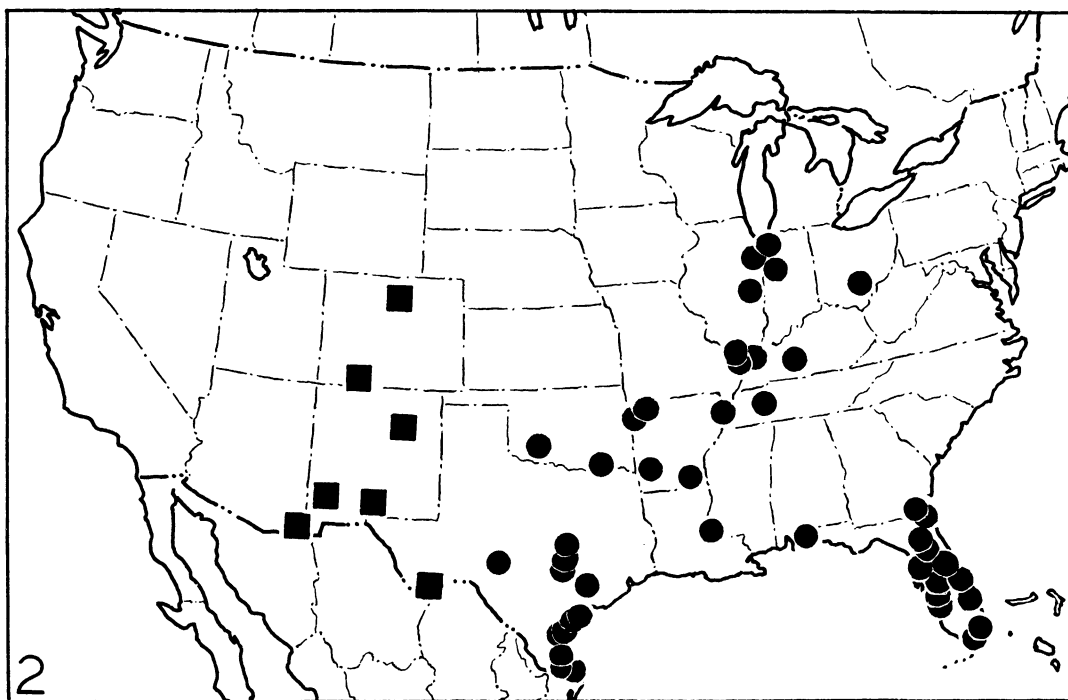
Diagnosis. *Callilepis chisos* is closest to *imbecilla* but may be distinguished by the unbent tip of the conductor (fig. 29) and the wide epigynum (fig. 30).

Male. Total length 3.24-4.54 mm. Carapace 1.44-1.91 mm. long, 1.26-1.62 mm. wide. Femur II 1.03-1.19 mm. long (six specimens). Eye sizes and interdistances (mm.): AME 0.05, ALE 0.08, PME 0.05, PLE 0.08; AME-AME 0.05, AME-ALE 0.16, PME-PME 0.05, PME-PLE 0.05, ALE-PLE 0.12. MOQ length 0.15 mm., front width 0.16 mm., back width 0.14 mm. Embolus relatively short (fig. 29); conductor sharply pointed (figs. 32, 33). Leg spination: femur III r0-0-1; patella III p0-0-0; tibiae: I, II v2-2-2; IV r0-1-1; metatarsus I v2-1-2.

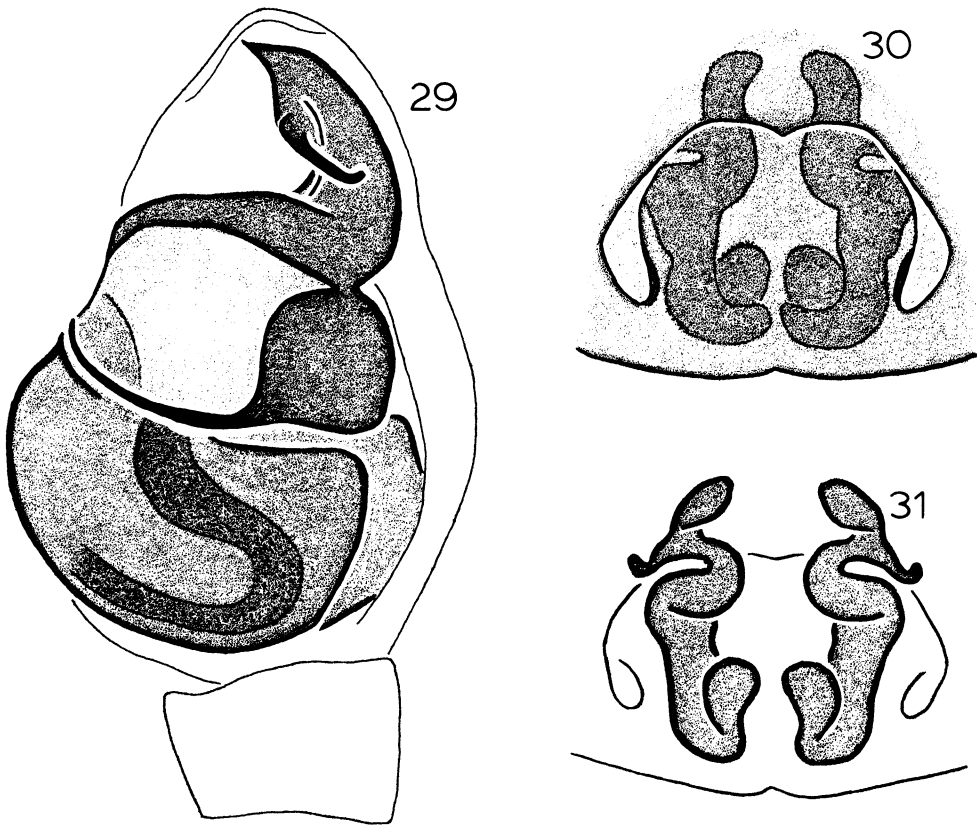
Female. Total length 3.78-5.51 mm. Carapace

1.62-2.06 mm. long, 1.37-1.73 mm. wide. Femur II 1.19-1.44 mm. long (six specimens). Eye sizes and interdistances (mm.): AME 0.06, ALE 0.11, PME 0.08, PLE 0.11; AME-AME 0.06, AME-ALE 0.04, PME-PME 0.06, PME-PLE 0.05, ALE-PLE 0.08. MOQ length 0.24 mm., front width 0.18 mm., back width 0.22 mm. Epigynum widened at middle (figs. 30, 34); spermathecae with abruptly narrowed lateral processes (figs. 31, 35). Leg spination: tibiae: I p1-0-0, v2-2-2; II p1-0-1, v2-2-2; metatarsi: II v2-1-2; III p1-2-2, r2-1-2; IV r2-2-2.

Material Examined. **United States:** *Arizona:* Cochise Co.: South Fork, July 13, 1963 (V. Roth, CVDR), 1♀; Southwestern Research Station, Apr. 22, 1961 (J. Rozen, R. Schrammel, AMNH), 1♀. *Colorado:* Archuleta Co.: Piedra River, July 8, 1969, river bottom, pines, willows, elevation 7600 feet (H., L., and F. Levi, MCZ), 1♀. Boulder Co.: Flagstaff Mountain, May 25, 1934 (H. I. Gibb, AMNH), 1♂. *New Mexico:* Grant Co.: Burro Mountains, Apr. 18-May 15,



MAP 2. United States, showing distributions of *Callilepis imbecilla* (circles) and *C. chisos* (squares).



FIGS. 29-31. *Callilepis chisos*, new species. 29. Palp, ventral view. 30. Epigynum, ventral view. 31. Vulva, dorsal view.

1972-1973, pinyon, juniper, nolina (M. H. Muma, CMHM), 4♂. Otero Co.: Camp Mary White, Aug. 9-12, 1935 (S. Mulaik, AMNH), 1♀. San Miguel Co.: Pecos (N. Banks, MCZ), 1♀. Texas: (types only).

Distribution. Eastern Arizona, New Mexico, Colorado, and western Texas (map 2). This species apparently replaces *pluto* and *imbecilla* in the southwestern United States.

Callilepis concolor Simon

Figures 36-38

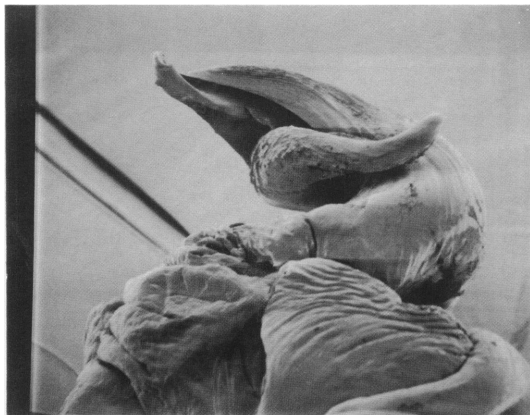
Callilepis nocturna concolor Simon, 1914, pp. 187, 222 (three female syntypes from Digne, Basses Alpes, France, in MNHN, examined). Roewer, 1954, p. 381. Bonnet, 1956, p. 934. *Callilepis wiehlei* Bristowe, 1935, p. 780, figs.

7-12 (male and female syntypes from Rhodes, Greece, in Bristowe's private collection, destroyed). Roewer, 1954, p. 380. Bonnet, 1956, p. 934. NEW SYNONYMY.

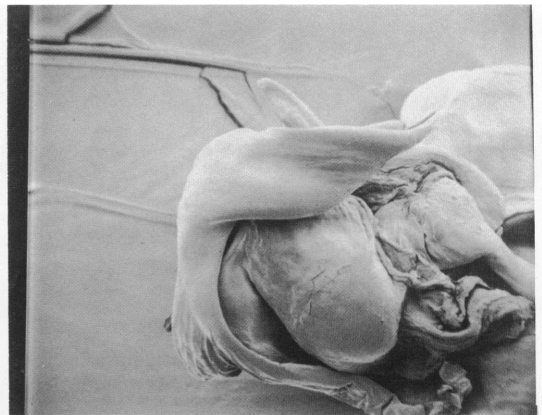
Callilepis concolor: Machado, 1941, p. 19, figs. 15-17.

Diagnosis. *Callilepis concolor* is a distinctive species easily recognized by the extremely long embolus (fig. 36) and the circular lateral margins of the epigynum (fig. 37).

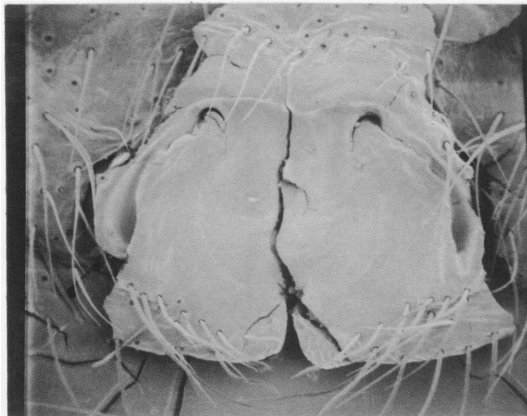
Male. Total length 4.10, 4.21 mm. Carapace 1.78, 1.82 mm. long, 1.55, 1.62 mm. wide. Femur II 1.26, 1.33 mm. long (two specimens). Eye sizes and interdistances (mm.): AME 0.05, ALE 0.07, PME 0.06, PLE 0.08; AME-AME 0.08, AME-ALE 0.03, PME-PME 0.03, PME-PLE 0.04, ALE-PLE 0.11. MOQ length 0.21 mm.,



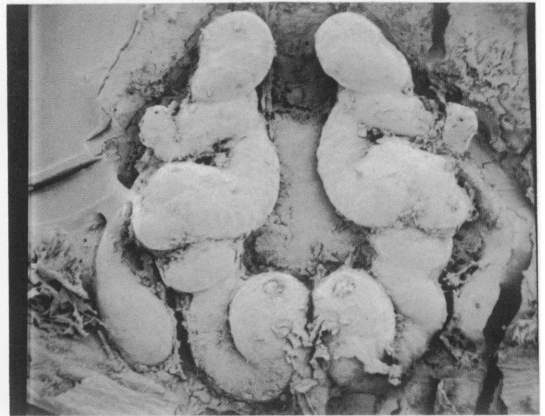
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FIGS. 32-35. Scanning electron micrographs, *Callilepis chisos*, new species. 32. Conductor, ventral view, 265 \times . 33. Conductor of expanded palp, dorsal view, 220 \times . 34. Epigynum, ventral view, 140 \times . 35. Vulva, dorsal view, 190 \times .

front width 0.18 mm., back width 0.15 mm. Embolus extremely long, conductor with distal tubercle on proximal prong (fig. 36). Leg spination: patella IV p0-1-0; tibiae: I p0-1-1; II p1-1-1; III d2-0-0, r1-1-1; IV d2-0-0, v2-1-2, r2-1-1; metatarsi: II p0-1-0; III p1-2-2, r1-1-2.

Female. Total length 4.39-5.65 mm. Carapace 1.89-1.98 mm. long, 1.58-1.69 mm. wide. Femur II 1.22-1.40 mm. long (five specimens). Eye sizes and interdistances (mm.): AME 0.05, ALE 0.08, PME 0.08, PLE 0.08; AME-AME 0.08, AME-ALE 0.03, PME-PME 0.04, PME-PLE 0.07, ALE-PLE 0.09. MOQ length 0.22 mm., front width 0.18 mm., back width 0.19 mm.

Lateral margins of epigynum circular (fig. 37); spermathecae with elongate, twisted tips (fig. 38). Leg spination: femur IV p0-1-1; patella IV p0-1-0; tibiae: I p1-0-1, v2-2-2; II p1-2-1; III d2-0-0, p2-1-1, v2-2-2, r1-1-1; IV d2-0-0, p3-1-1, v2-2-2, r2-1-1; metatarsi: II p0-1-1; III p1-1-2, r1-1-2; IV r2-2-2.

Material Examined. **France:** no specific locality (MCZ), 1 f ; *Basses Alpes:* Colmars (MNHN), 2 m , 1 f .

Distribution. Southern Europe. Known or reported from France, Portugal, and Rhodes.

Synonymy. Although the types of *wiehlei* were destroyed in World War II, Bristowe's illus-

trations leave little doubt that his specimens from the island of Rhodes were indeed *Callilepis concolor*. In view of the known distribution of *schuszteri* across the entire Palaearctic region, the large geographical gap between the known localities of *concolor* is not disconcerting.

Callilepis schuszteri (Herman)

Figures 39-45

Gnaphosa schuszteri Herman, 1879, pp. 199, 365, fig. 172 (male and female syntypes from Orșova, Banat, Rumania, depository unknown; presumed destroyed).

Pythonissa flavitarsis Simon, 1880, p. 120, fig. 25 (female holotype from Peking, Peiching Shih, China, in MNHN, examined). NEW SYNONYMY.

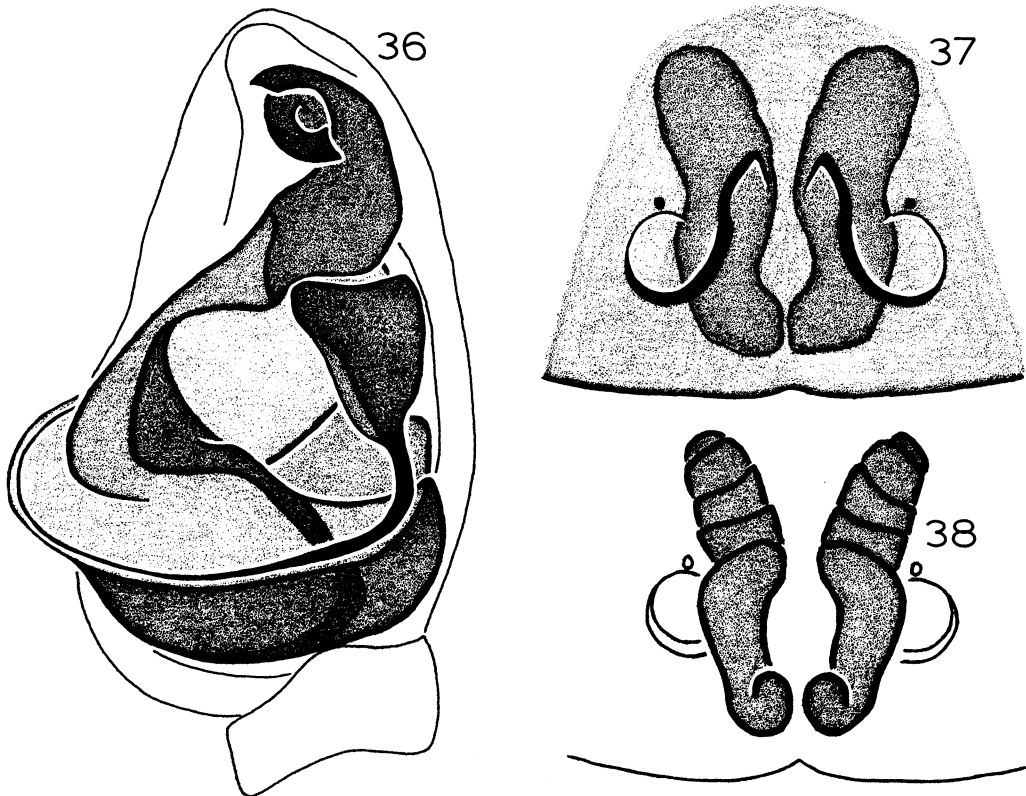
Callilepis flavitarsis: Simon, 1893, p. 382. Roewer, 1954, p. 380. Bonnet, 1956, p. 931.

Callilepis schuszteri: Chyzer and Kulczyński, 1897, p. 191, pl. 7, fig. 31. Miller, 1947, p. 61, pl. 4, fig. 1. Roewer, 1954, p. 380. Bonnet, 1956, p. 934. Wiehle, 1967, p. 14, figs. 55b, 56b, 57a, 57b, 58b, 59b.

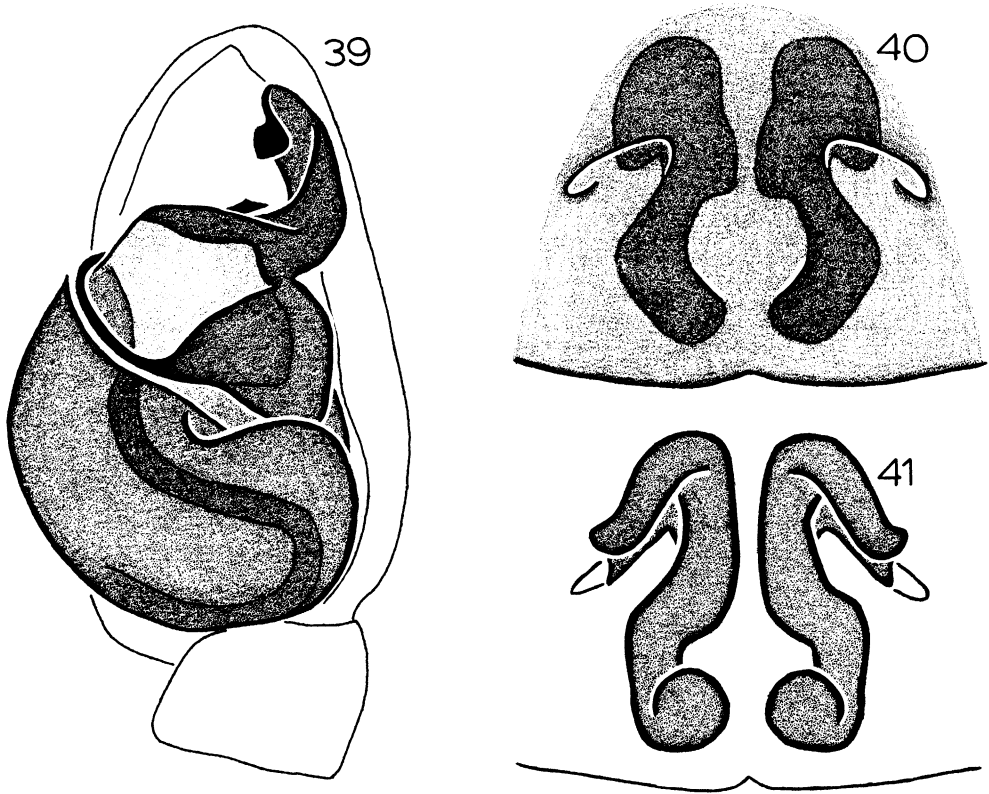
Callilepis bipunctata Yaginuma, 1960, p. 175G, pl. 56, fig. 333, text-fig. 101-0 (female holotype from Dōjō, Hyogo, Japan and male paratype from Shodoshima Island, Kagawa, Japan, in ASEA, examined). NEW SYNONYMY.

Diagnosis. *Callilepis schuszteri* is closest to *mumai* but may be distinguished by the narrow folded tip of the conductor (fig. 39) and the short lateral margins of the epigynum (fig. 40).

Male. Total length 3.77 ± 0.34 mm. Carapace 1.71 ± 0.13 mm. long, 1.43 ± 0.11 mm. wide. Femur II 1.19 ± 0.06 mm. long (26 specimens examined). Eye sizes and interdistances (mm.): AME 0.05, ALE 0.07, PME 0.07, PLE 0.08;



FIGS. 36-38. *Callilepis concolor* Simon. 36. Palp, ventral view. 37. Epigynum, ventral view. 38. Vulva, dorsal view.



FIGS. 39-41. *Callilepis schuszeri* (Herman). 39. Palp, ventral view. 40. Epigynum, ventral view. 41. Vulva, dorsal view.

AME-AME 0.07, AME-ALE 0.04, PME-PME 0.05, PME-PLE 0.05, ALE-PLE 0.11. MOQ length 0.20 mm., front width 0.17 mm., back width 0.20 mm. Embolus with ventrally visible tip (fig. 39); conductor with narrow folded tip (figs. 42, 43). Leg spination: femur III r0-0-1; tibiae: I p1-0-0; II p1-0-1; metatarsus III p0-1-1.

Female. Total length 5.37 ± 0.72 mm. Carapace 1.99 ± 0.19 mm. long, 1.67 ± 0.16 mm. wide. Femur II 1.41 ± 0.14 mm. long (20 specimens examined). Eye sizes and interdistances (mm.): AME 0.05, ALE 0.08, PME 0.08, PLE 0.08; AME-AME 0.08, AME-ALE 0.03, PME-PME 0.07, PME-PLE 0.07, ALE-PLE 0.14. MOQ length 0.24 mm., front width 0.18 mm., back width 0.23 mm. Epigynum with short lateral margins (figs. 40, 44); spermathecae with long lateral processes (figs. 41, 45). Leg spination:

femur IV p0-1-1; tibiae: I p1-0-1; II p1-0-1, v2-2-2; metatarsi: III p1-2-2, r2-1-2; IV r2-2-2.

Material Examined. **Austria**: Lower Austria: Dürnstein (NMS), 4♂; **Tirol**: Innsbruck, June 7-Aug. 4, 1964 (K. Thaler, AMNH), 4♂, 2♀. **Finland**: *Uusimaa*: Pernå, June 23, 1942 (P. Palmgren, AMNH), 1♂. **France**: *Basses Alpes*: Colmars (MNHN), 3♂, 4♀. **Germany**: *Baden-Württemberg*: Rotenfels (F. Dahl, ZMB), 1♂; Tübingen (NMS), 4♂, 3♀; *Bayern*: Seeshaupt (BMNH), 1♀; *North Rhine-Westphalia*: Siebengebirge (BMNH), 1♀. **Italy**: *Campania*: Ravello, near Amalfi, May 29-June 3, 1962, under stones, chestnut-oak forest (H. and L. Levi, MCZ), 6♂, 1♀; *Lucania*: 26 km. E Potenza, June 5, 1962, oak forest, elevation 3450 feet (H. and L. Levi, MCZ), 1♂. **Japan**: *Hyogo*: Dōjō, Apr., 1958 (T. Nishida, AMNH), 1♀; *Nagano*: June 10, 1971 (Y.



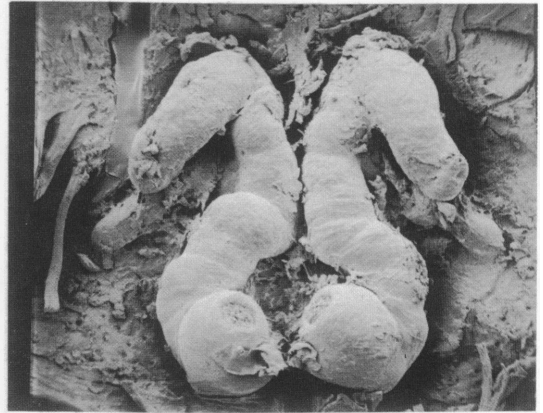
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45

FIGS. 42-45. Scanning electron micrographs, *Callilepis schuszteri* (Herman). 42. Conductor, ventral view, 500 \times . 43. Conductor of expanded palp, dorsal view, 280 \times . 44. Epigynum, ventral view, 190 \times . 45. Vulva, dorsal view, 205 \times .

Chikuni, AMNH), 1 σ ; *Okayama*: Mt. Hiruzen, July 7, 1968 (Y. Nishikawa, ASEA), 1 σ . **Switzerland**: *Basel*: Basel (AMNH), 1 σ .

Distribution. Palaearctic region from France to Japan.

Synonymy. No genitalic differences were detected in the Asian specimens that would separate them from the European representatives of *schuszteri*.

Callilepis mumai, new species

Figures 46-52; Map 1

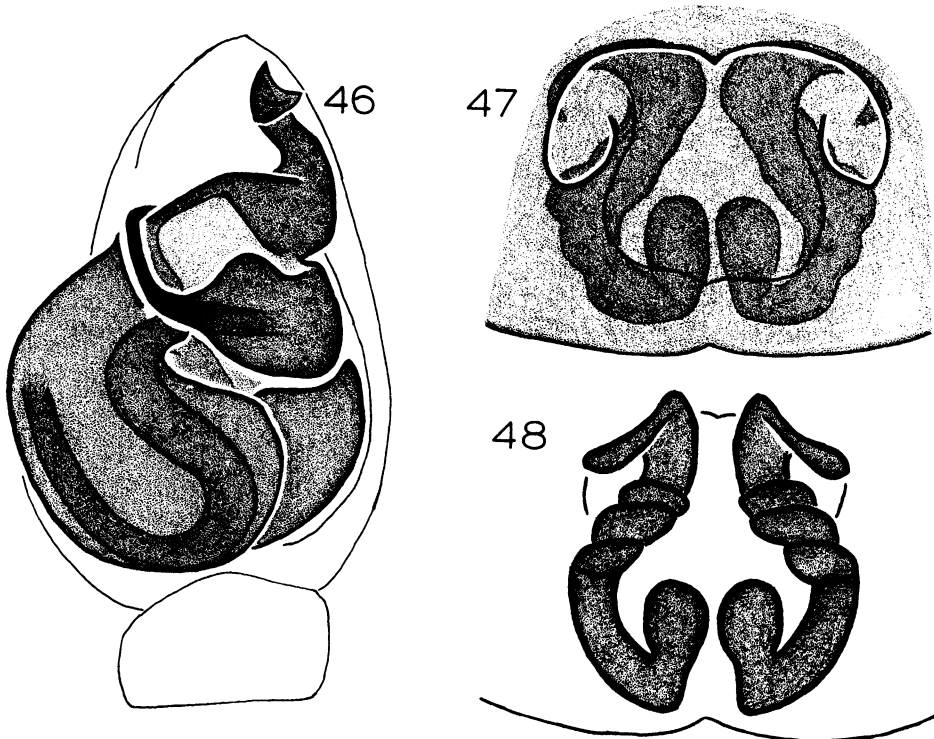
Types. Male holotype and female paratype from pitfall trap in *Coldenia* (Boraginaceae) and

sand verbena (Verbenaceae) at White Sands National Monument, Otero County, New Mexico (July 3, 1972; M. H. Muma), deposited in AMNH.

Etymology. The specific name is a patronym in honor of Dr. Martin H. Muma, who collected the type specimens as well as many other *Callilepis* from the southwestern United States.

Diagnosis. *Callilepis mumai* is closest to *schuszteri* but may be distinguished by the wide folded tip of the conductor (fig. 46) and the relatively long lateral margins of the epigynum (fig. 47).

Male. Total length 2.93 \pm 0.25 mm. Carapace 1.29 \pm 0.11 mm. long, 1.04 \pm 0.12 mm. wide.



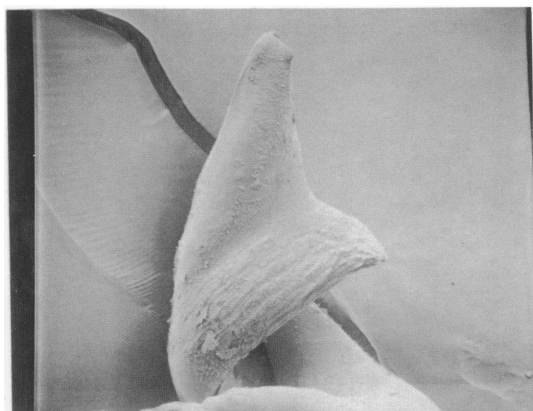
FIGS. 46-48. *Callilepis mumai*, new species. 46. Palp, ventral view. 47. Epigynum, ventral view. 48. Vulva, dorsal view.

Femur II 0.87 ± 0.06 mm. long (48 specimens examined). Eye sizes and interdistances (mm.): AME 0.04, ALE 0.06, PME 0.06, PLE 0.07; AME-AME 0.06, AME-ALE 0.02, PME-PME 0.03, PME-PLE 0.03, ALE-PLE 0.09. MOQ length 0.19 mm., front width 0.14 mm., back width 0.15 mm. Embolus short, angular (fig. 46); conductor with wide folded tip (figs. 49, 50). Leg spination: femur III p0-0-1, r0-1-1; patellae: III p0-0-0, r0-0-0; IV r0-0-0; tibiae: II v1-1-2; III d0-0-0, p0-1-1, v0-2-2; IV d0-0-0, p1-0-1; metatarsi: III d0-1-0; IV p0-1-2, v1-2-2.

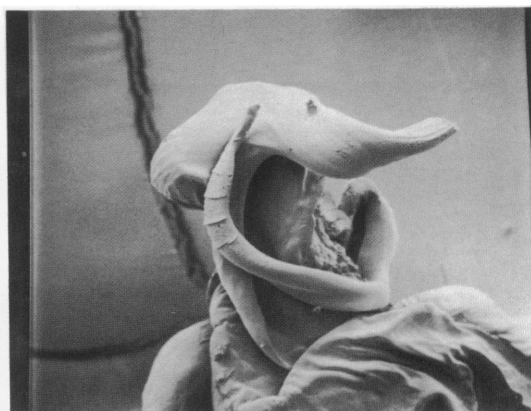
Female. Total length 3.85 ± 0.89 mm. Carapace 1.47 ± 0.12 mm. long, 1.18 ± 0.11 mm. wide. Femur II 0.97 ± 0.10 mm. long (22 specimens examined). Eye sizes and interdistances (mm.): AME 0.04, ALE 0.08, PME 0.07, PLE 0.09; AME-AME 0.07, AME-ALE 0.03, PME-PME 0.05, PME-PLE 0.03, ALE-PLE 0.07. MOQ length 0.21 mm., front width 0.15 mm., back width 0.19 mm. Epigynum with recurved lateral

margins (figs. 47, 51); spermathecae short, extending no further than anterior epigynal rim (figs. 48, 52). Leg spination: femur III r0-0-1; patella IV r0-0-0; tibiae: I p1-0-1, v2-2-2; II p1-0-1; IV d0-0-0, v0-2-2; metatarsi: I, II v0-2-2; III p1-1-2, v2-1-2, r1-1-2; IV d1-0-0, p1-1-2, v2-1-2.

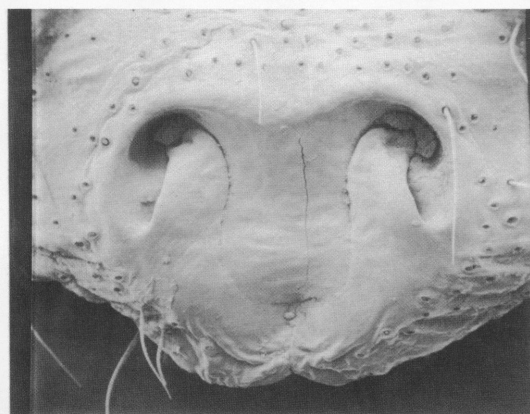
Material Examined. **Mexico**: *Chihuahua*: Primavera, July 1, 1947 (W. J. Gertsch, AMNH), 1♀. **United States**: *Arizona*: Cochise Co.: 1.5 mi. N Portal, April 16, 1961, under stones and ground trash (M. Cazier, W. J. Gertsch, AMNH), 1♂; Pima Co.: Baboquivari Mountains, July 18-29, 1951, elevation 3500 feet (W. S. Creighton, AMNH), 1♀; Yuma Co.: Gila Valley, July 23, 1958, in poplar duff (V. Roth, AMNH), 2♂. *New Mexico*: Grant Co.: Burro Mountains, May 31, 1973, pinyon, juniper, nolina (M. H. Muma, CMHM), 1♂; Hidalgo Co.: Granite Gap, June 11, 1965 (V. Roth, AMNH), 1♂; 8 mi. N Rodeo (V. Roth, F. Beer, AMNH, CVDR), 2♀; Otero Co.:



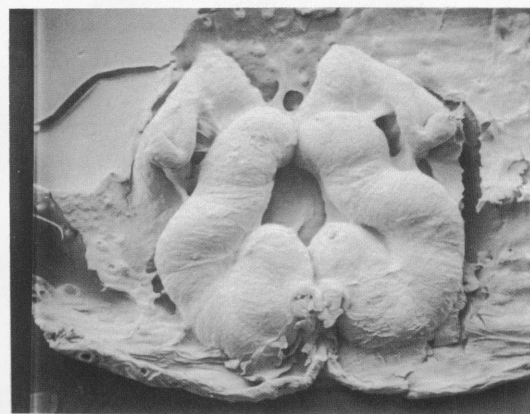
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51



52

FIGS. 49-52. Scanning electron micrographs, *Callilepis mumai*, new species. 49. Conductor, ventral view, 635X. 50. Conductor of expanded palp, dorsal view, 320X. 51. Epigynum, ventral view, 265X. 52. Vulva, dorsal view, 265X.

Alamogordo, Aug. 1, 1972, pitfall trap, burro-brush, saltbush (M. H. Muma, AMNH), 1♂; White Sands National Monument, June 14-July 3, 1972, pitfall trap, *Coldenia*, sand verbena (M. H. Muma, AMNH), 39♂, 5♀. Utah: Emery Co.: Ferron, June 23, 1934 (W. Ivie, H. A. Rasmussen, AMNH), 11♀; Grand Co.: Arches National Monument, July 1, 1966, elevation 3000 feet (D. E. Bixler, AMNH), 1♂; 5 mi. NE Moab, June 18, 1934 (W. Ivie, H. A. Rasmussen, AMNH), 1♀; Salt Lake Co.: Dry Canyon, May, 1933 (AMNH), 1♂.

Distribution. Southwestern United States and northwestern Mexico from Utah south to Chihuahua (map 1).

Callilepis eremella Chamberlin

Figures 53-59; Map 4

Callilepis eremellus Chamberlin, in Chamberlin and Gertsch, 1928, p. 177 (male holotype from Cainesville, Wayne County, Utah, in AMNH, examined). Chamberlin and Gertsch, 1940, fig. 15.

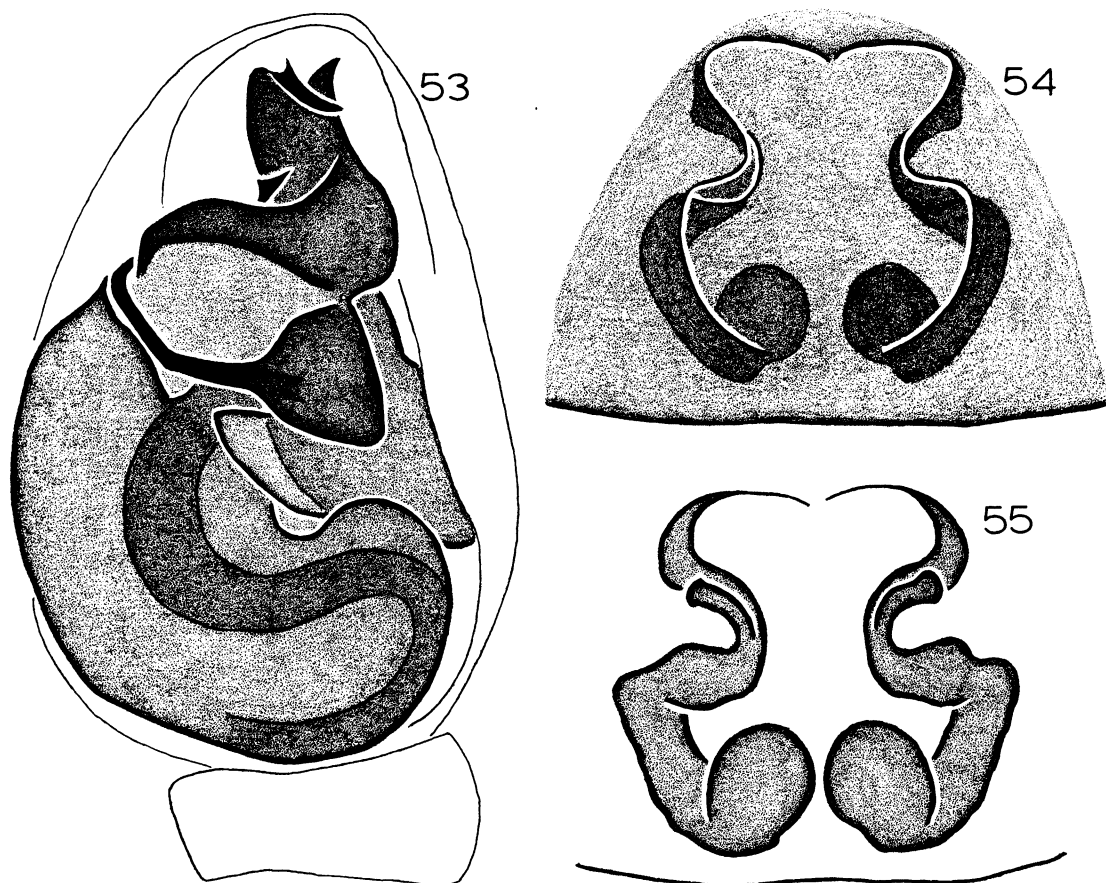
Callilepis altitudonis Chamberlin, 1936, p. 14, fig. 25 (female holotype from Estes Park, Larimer County, Colorado, in AMNH, examined). Levi and Levi, 1951, p. 226, fig. 19. NEW SYNONYMY.

Pterotricha altitudonis: Roewer, 1954, p. 378.

Pterotricha eremella: Roewer, 1954, p. 378.

Callilepis altitudinis: Bonnet, 1956, p. 930.

Callilepis eremella: Bonnet, 1956, p. 931.



FIGS. 53-55. *Callilepis eremella* Chamberlin. 53. Palp, ventral view. 54. Epigynum, ventral view. 55. Vulva, dorsal view.

Diagnosis. *Callilepis eremella* is a distinctive species easily recognized by the bifid tip of the conductor (fig. 53) and the sinuous lateral margins of the epigynum (fig. 54).

Male. Total length 3.34 ± 0.23 mm. Carapace 1.51 ± 0.10 mm. long, 1.24 ± 0.09 mm. wide. Femur II 1.03 ± 0.10 mm. long (34 specimens examined). Eye sizes and interdistances (mm.): AME 0.04, ALE 0.06, PME 0.05, PLE 0.05; AME-AME 0.08, AME-ALE 0.02, PME-PME 0.04, PME-PLE 0.05, ALE-PLE 0.08. MOQ length 0.16 mm., front width 0.15 mm., back width 0.14 mm. Embolus with sharply pointed tip (fig. 53); conductor with bifid tip (figs. 56, 57). Leg spination: femur III r0-0-1; patella III p0-0-0; tibiae: I p0-1-0; II p0-1-1; IV v2-2-2; metatarsi I, II v0-1-2.

Female. Total length 5.29 ± 0.79 mm. Carapace 1.76 ± 0.15 mm. long, 1.44 ± 0.15 mm. wide. Femur II 1.19 ± 0.09 mm. long (67 specimens examined). Eye sizes and interdistances (mm.): AME 0.06, ALE 0.09, PME 0.09, PLE 0.09; AME-AME 0.06, AME-ALE 0.03, PME-PME 0.04, PME-PLE 0.04, ALE-PLE 0.06. MOQ length 0.23 mm., front width 0.18 mm., back width 0.22 mm. Epigynum with sinuous lateral margins (figs. 54, 58); spermathecae greatly narrowed anteriorly (figs. 55, 59). Leg spination: femur III r0-0-1; tibiae: I p0-1-0; II p0-1-1; metatarsi: I v0-2-2; II v0-3-2; III v2-1-2, r1-1-2.

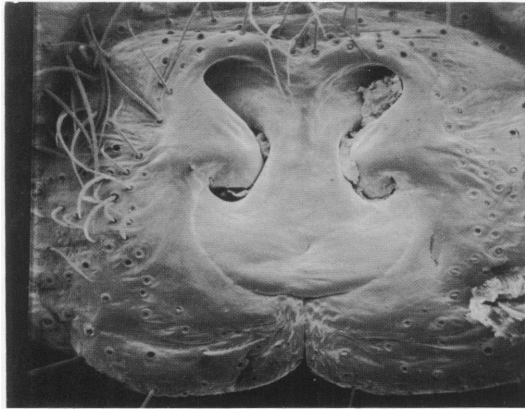
Material Examined. Mexico: Baja California Norte: La Jolla Canyon, 16 mi. E San José, May 3, 1961 (W. J. Gertsch, V. Roth, AMNH), 1♂, 1♀. United States: Arizona: no specific locality (N.



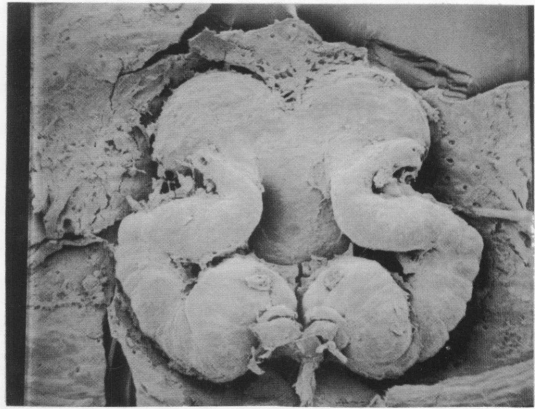
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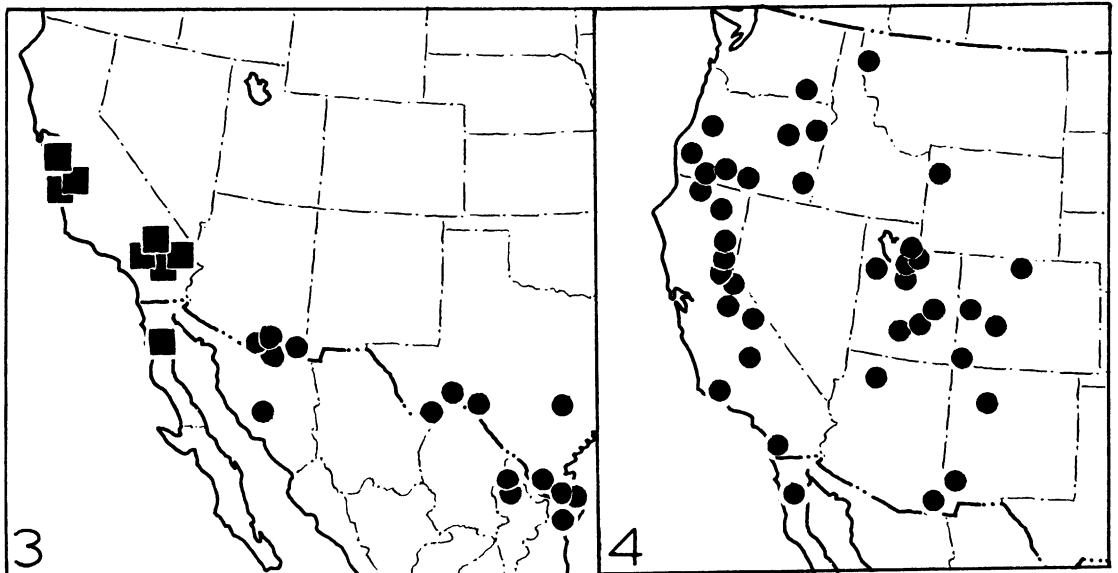
FIGS. 56-59. Scanning electron micrographs, *Callilepis eremella* Chamberlin. 56. Conductor, ventral view, 675X. 57. Conductor of expanded palp, dorsal view, 265X. 58. Epigynum, ventral view, 190X. 59. Vulva, dorsal view, 190X.

Banks, MCZ), 1♀; Cochise Co.: Carr Canyon, Huachuca Mountains, June 3, 1952, elevation 8000 feet (W. J. Gertsch, M. Cazier, R. Schrammel, AMNH), 1♀; Coconino Co.: Grand Canyon, Apr. 30, 1936 (S. C. Bishop, AMNH), 1♂. *California*: Alpine Co.: Luther Pass, July 7, 1958 (W. J. Gertsch, V. Roth, AMNH), 1♀; El Dorado Co.: Meyers, July 7, 1952, elevation 6337 feet (W. J. Gertsch, AMNH), 1♂, 1♀; Mariposa Co.: Big Trees, Yosemite National Park, July 15, 1952 (W. J. Gertsch, M. Cazier, R. Schrammel, AMNH), 1♂; July, 1935 (AMNH), 3♀; Mono Co.: Laws, June 27, 1941 (W. M. Pearce, AMNH), 1♀; Sonora Pass, July 10, 1957, elevation 9000-10,000 feet (J. W. MacSwain,

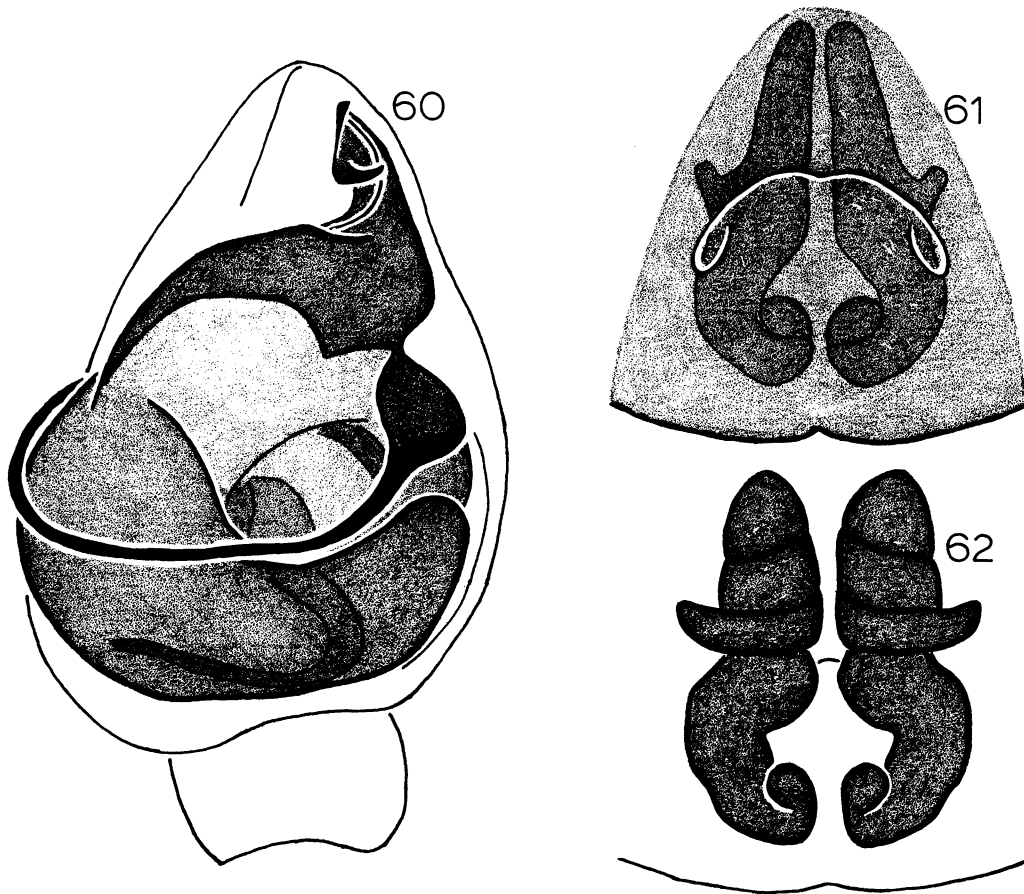
UCB), 1♀; Placer Co.: Emigrant Gap, July 9, 1952 (W. J. Gertsch, AMNH), 4♀; Lake Tahoe, July 11, 1952 (W. J. Gertsch, AMNH), 2♀; Plumas Co.: Chester, June 28, 1940 (W. M. Pearce, AMNH), 1♀; Lake Alamanor, July 7, 1952 (W. J. Gertsch, AMNH), 1♂; San Diego Co.: Mt. Palomar State Park, July 13, 1958 (W. J. and J. W. Gertsch, AMNH), 1♀; Shasta Co.: Reflection Lake, Aug. 3, 1958, elevation 5890 feet (C. P. Alexander, AMNH), 1♀; Siskiyou Co.: Mount Shasta (AMNH), 4♂, 1♀; Tulare Co.: Sierra Nevada Mountains, Sequoia National Park, June, 1955 (P. Wolf, AMNH), 1♀; Ventura Co.: Pine Mountain, July 3, 1958 (W. J. Gertsch, V. Roth, AMNH), 1♀. *Colorado*: Gunnison Co.: Almont,

June 18, 1957, rocks and sagebrush, elevation 8000 feet (H. and L. Levi, MCZ), 1♂; Larimer Co.: Estes Park, July 5, 1913, elevation 7500 feet (F. E. Lutz, AMNH), 1♀; Mesa Co.: 25 mi. N Loma, June 24, 1935 (D. Cotam, AMNH), 2♂; Montezuma Co.: Mesa Verde National Park, June 14, 1936 (AMNH), 1♀. *Montana*: Sanders Co.: Thompson Falls, July 10-23, 1950 (B. Malkin, AMNH), 1♀. *New Mexico*: Grant Co.: Burro Mountains, May 15-June 29, 1972-1973, pinyon, juniper, nolina (M. H. Muma, CMHM), 3♂, 4♀; Sandoval Co.: Sandia Mountains (C. C. Hoff, AMNH), 1♀. *Oregon*: Baker Co.: Sagebrush Draw, June 16-24, 1957, elevation 3500 feet (C. Freitag, AMNH), 1♀; Douglas Co.: Crater Peak, Crater Lake National Park, July 16, 1951, elevation 7265 feet (D. Lowrie, AMNH), 1♀; Garfield Park Trail, June 23, 1951 (D. Lowrie, AMNH), 1♂; Ranger Dorm, June 25, 1951 (D. Lowrie, AMNH), 1♂; Grant Co.: Seneca, June 23, 1952 (B. Malkin, AMNH), 1♀; Jackson Co.: Ashland Peak, June 20, 1952 (B. Malkin, I. M. Newell, AMNH), 2♀; Klamath Co.: Crater Lake National Park, July 18, 1968, under boards (A. Moreton, MCZ), 1♀; Parker Mountain, June 21, 1952, elevation 4300 feet (B. Malkin, AMNH), 1♂; Lake Co.: Albert Lake, June 23, 1952 (B.

Malkin, AMNH), 2♀; Linn Co.: Lambs Creek, July 23, 1949 (V. Roth, F. Beer, AMNH), 1♀; Malheur Co.: Harper, June 22, 1947 (B. Malkin, AMNH), 1♀. *Utah*: Emery Co.: Gunnison Butte, June 21, 1935 (D. Cotam, AMNH), 4♀; Garfield Co.: Blue Spruce Camp, July 2, 1963, elevation 8000 feet (F. Rindge, AMNH), 1♀; Morgan Co.: Morgan, May 15, 1934 (V. Tippetts, AMNH), 1♂; White Canyon, May 16, 1930 (J. A. Rowe, AMNH), 1♀; Salt Lake Co.: Big Cottonwood Canyon, June 24, 1958 (W. J. Gertsch, AMNH), 1♀; City Creek Canyon, May 15, 1936 (W. J. Mellar, AMNH), 1♂; June 19, 1928 (W. J. Gertsch, AMNH), 1♀; Dry Canyon, May, 1945 (W. Ivie, AMNH), 1♂; Fort Douglas, May 26, 1934 (W. Ivie, AMNH), 4♀; Salt Lake City (AMNH), 1♀; Summit Co.: Cobble Rest Camp, June 19, 1941 (W. Ivie, AMNH), 1♀; East Canyon, June 12-14, 1942-1943 (W. Ivie, AMNH), 4♂, 2♀; Hughes Canyon, June 29, 1935 (AMNH), 1♀; Tooele Co.: Grantsville, May 22, 1954 (M. Cazier, AMNH), 2♀; Utah Co.: Granite Flats, June 14, 1941 (W. Ivie, AMNH), 3♂, 1♀; Wayne Co.: Cainesville, Apr. 21, 1928 (A. M. Woodbury, AMNH), 1♂. *Washington*: Walla Walla Co.: Touchet, June, 1937 (Kincaid, CWBP), 1♀. *Wyoming*: Teton Co.: Blacktail Butte, July 18,



MAPS 3, 4. 3. Southwestern United States, showing distributions of *Callilepis gertschi* (circles) and *C. gosoga* (squares). 4. Western United States, showing distribution of *Callilepis eremella*.



FIGS. 60-62. *Callilepis gertschi*, new species. 60. Palp, ventral view. 61. Epigynum, ventral view. 62. Vulva, dorsal view.

1950, under rock (D. Lowrie, AMNH), 1♀; Grand Teton National Park, July 24, 1950, woods (H. Levi, MCZ), 1♂; 20 mi. S Jackson, June 24, 1938 (W. Ivie, AMNH), 1♀.

Distribution. Western United States and northern Baja California (map 4).

Synonymy. Repeated simultaneous collection of both sexes indicates that *altitudonis* is merely the female of *eremella*.

***Callilepis gertschi*, new species**

Figures 60-66; Map 3

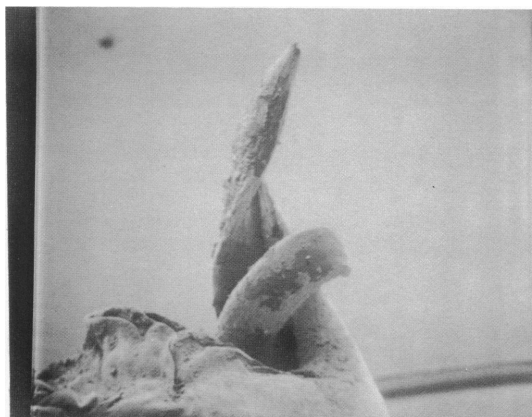
Types. Male holotype from Sabino Canyon, Santa Catalina Mountains, Pima County, Arizona (July 26, 1949; W. J. Gertsch) and female para-

type from Molina Basin, Santa Catalina Mountains, Pima County, Arizona (July 24, 1965; W. J. Gertsch, R. Hastings), deposited in AMNH.

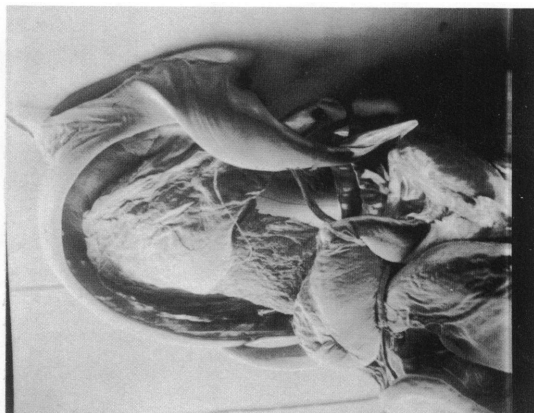
Etymology. The specific name is a patronym in honor of Dr. Willis J. Gertsch, who collected the type specimens and many other *Callilepis*.

Diagnosis. *Callilepis gertschi* is closest to *gosa* but may be distinguished by the longer embolus (fig. 60) and the lack of anterolateral epigynal atria (fig. 61).

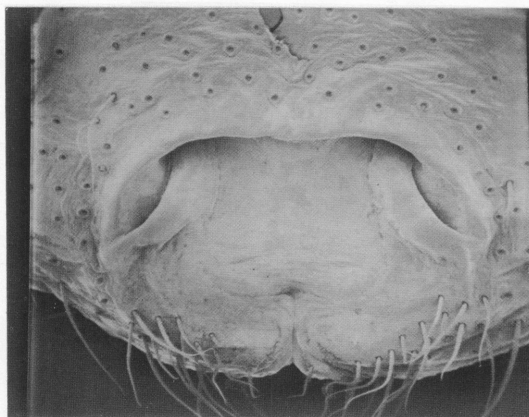
Male. Total length 2.64-3.70 mm. Carapace 1.22-1.69 mm. long, 1.08-1.40 mm. wide. Femur II 0.83-1.12 mm. long (nine specimens). Eye sizes and interdistances (mm.): AME 0.05, ALE 0.08, PME 0.06, PLE 0.09; AME-AME 0.05, AME-ALE 0.02, PME-PME 0.06, PME-PLE 0.04,



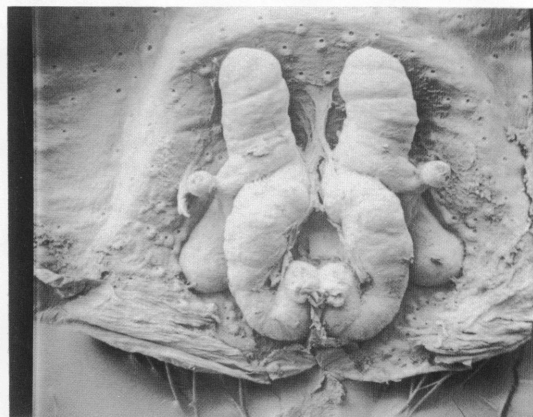
63



64



65



66

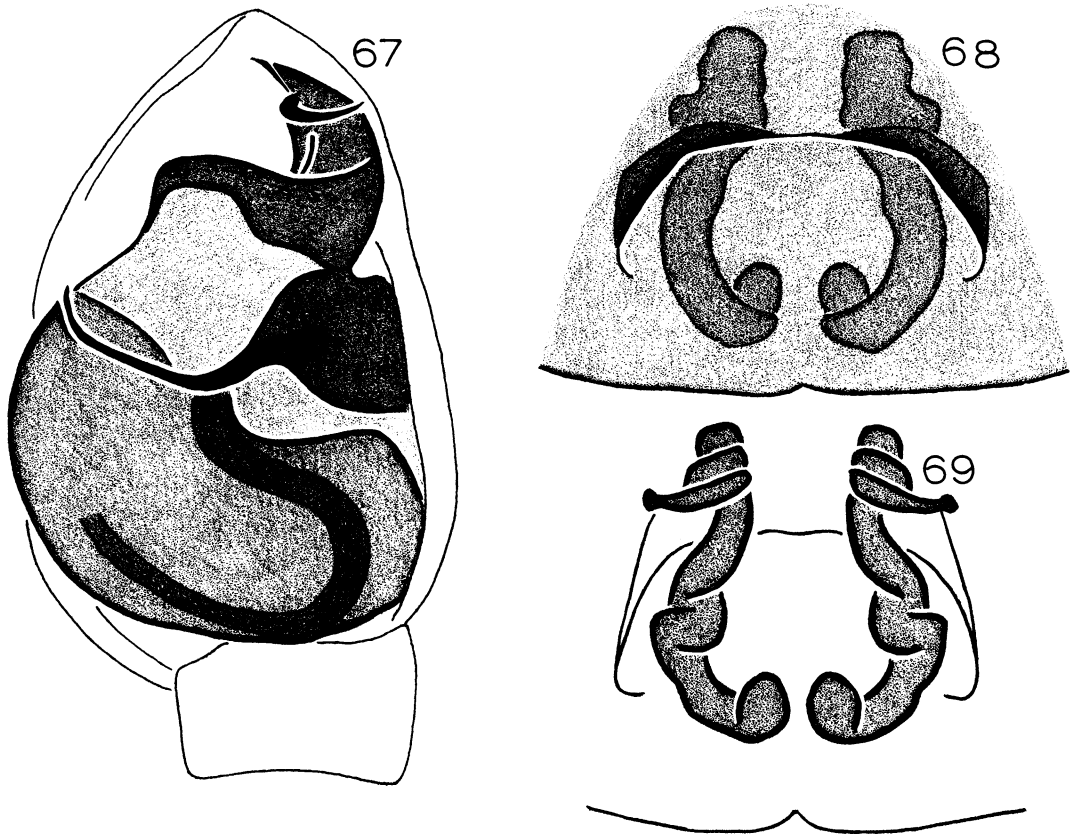
FIGS. 63-66. Scanning electron micrographs, *Callilepis gertschi*, new species. 63. Conductor, ventral view, 470X. 64. Conductor of expanded palp, dorsal view, 210X. 65. Epigynum, ventral view, 210X. 66. Vulva, dorsal view, 150X.

ALE-PLE 0.07. MOQ length 0.18 mm., front width 0.14 mm., back width 0.18 mm. Embolus long (fig. 60), conductor with short proximal prong (figs. 63, 64). Leg spination: patella III p0-0-0; tibiae: I v0-1-1; II v1-1-2; metatarsi I, II v0-1-2.

Female. Total length 3.83 ± 0.65 mm. Carapace 1.44 ± 0.09 mm. long, 1.24 ± 0.08 mm. wide. Femur II 1.00 ± 0.11 mm. long (62 specimens examined). Eye sizes and interdistances (mm.): AME 0.05, ALE 0.08, PME 0.06, PLE 0.09; AME-AME 0.08, AME-ALE 0.03, PME-PME 0.06, PME-PLE 0.04, ALE-PLE 0.11. MOQ length 0.23 mm., front width 0.18 mm., back

width 0.18 mm. Epigynum with short lateral margins, without anterolateral atria (figs. 61, 65); spermathecae with long, twisted tips (figs. 62, 66). Leg spination: femur III p0-0-1, r0-0-1; tibiae: I p0-1-0; II p0-0-0, v1-1-2; metatarsi I, II v0-2-2.

Material Examined. **Mexico:** *Nuevo León:* Candela, Sept. 28, 1968 (AMNH), 1♀; 28 mi. N Monterrey, July 7, 1936 (L. I. Davis, AMNH), 1♀. *Sonora:* Álamos, Aug. 23, 1965 (W. J. Gertsch, R. Hastings, AMNH), 1♀. *Tamaulipas:* Arroyo Chorreras, Mar. 28, 1937 (A. M. and L. I. Davis, AMNH), 1♀. **United States:** *Arizona:* Cochise Co.: Texas Canyon, Apr., 1938 (Bogart,

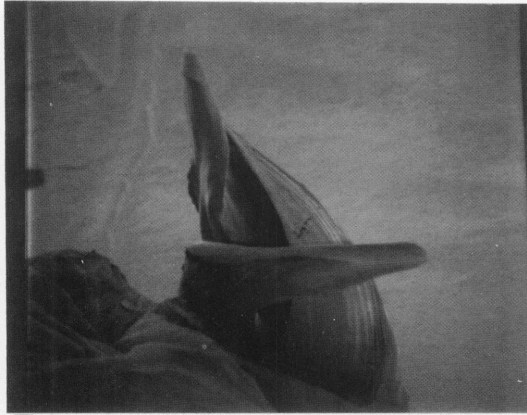


FIGS. 67-69. *Callilepis gosoga* Chamberlin and Gertsch. 67. Palp, ventral view. 68. Epigynum, ventral view. 69. Vulva, dorsal view.

AMNH), 1♀. Pima Co.: Baboquivari Mountains: Brown Canyon, June 8, 1952 (W. J. Gertsch, AMNH), 3♀; Santa Catalina Mountains: Bear Canyon, Apr. 16, 1936 (S. C. Bishop, AMNH), 1♀; Lower Madera Canyon, Aug. 2, 1963, under rock (J. A. Beatty, CJAB), 3♀; Lower Molina Basin, Aug. 8, 1962, oak-grassland, elevation 4300 feet (J. A. Beatty, CJAB), 3♀. Santa Cruz Co.: 21 mi. NW Nogales, July 20, 1944, grass, oak woodland (AMNH), 1♀; Oro Blanco Mountains, July, 1937 (P. Steckler, AMNH), 2♀; Santa Rita Mountains: Madera Canyon, May 2, 1941, elevation 4600 feet (H. Ellsworth, AMNH), 1♂; July 16, 1940 (W. J. Gertsch, R. Hook, AMNH), 1♀; July 27, 1949 (W. J. and J. W. Gertsch, AMNH), 2♀. Texas: Brewster Co.: Altudo (R. V. Chamberlin, MCZ), 22♀; Chisos Mountains, July, 1935 (L. I. Davis, AMNH), 1♀; 60 mi. SE Marathon

(W. W. Milstead, AMNH), 1♂, 2♀. Cameron Co.: Green Island Bird Refuge, Apr. 11, 1935 (R. C. Erwin, AMNH), 1♀. Comal Co.: New Braunfels, Apr. 12, 1936, sweeping (S. Jones, MCZ), 1♀. Hidalgo Co.: Edinburg, Jan. 10, 1938 (S. Mulaik, AMNH), 1♂; June 2, 1935 (S. Mulaik, AMNH), 2♂; Sept. 3, 1934 (S. Mulaik, AMNH), 1♀; Rio Grande Valley State Park, June 18-30, 1962-1963 (J. A. Beatty, CJAB), 2♀. Starr Co.: Falcon State Park, Mar. 20, 1972 (T. A. Bowling, R. L. Fischer, MSU), 1♀; Rio Grande City, Apr. 29, 1939 (S. Mulaik, AMNH), 1♀; July, 1934 (S. Mulaik, AMNH), 1♀. Terrell Co.: Stockton Plateau (W. W. Milstead, AMNH), 2♂. Val Verde Co.: Comstock, May 26, 1952 (W. J. Gertsch, M. Cazier, R. Schrammel, AMNH), 1♀. Zapata Co.: June 4, 1938 (S. Mulaik, AMNH), 1♀.

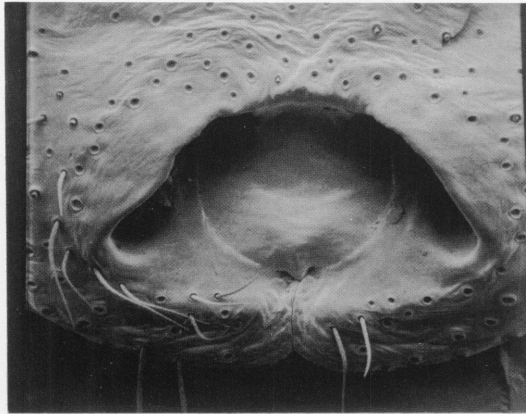
Distribution. Southwestern United States and



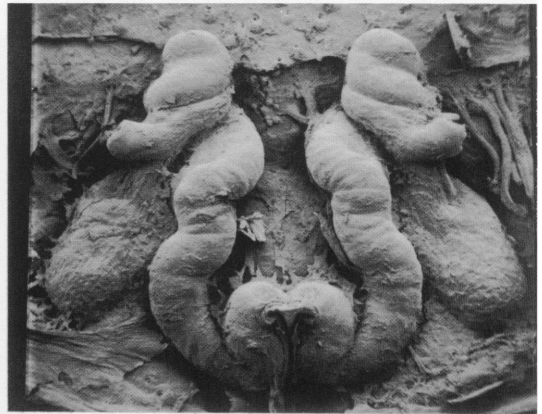
70



71



72



73

FIGS. 70-73. Scanning electron micrographs, *Callilepis gosoga* Chamberlin and Gertsch. 70. Conductor, ventral view, 560X. 71. Conductor of expanded palp, dorsal view, 290X. 72. Epigynum, ventral view, 240X. 73. Vulva, dorsal view, 240X.

northern Mexico from Arizona east to Tamaulipas (map 3).

Callilepis gosoga Chamberlin and Gertsch
Figures 67-73; Map 3

Callilepis gosoga Chamberlin and Gertsch, 1940, p. 10, figs. 13, 14 (male holotype from desert near Acton, Los Angeles County, California, in AMNH, examined).

Pterotricha gosoga: Roewer, 1954, p. 378.

Diagnosis. *Callilepis gosoga* is closest to *gertschi* but may be distinguished by the shorter embolus (fig. 67) and the anterolateral epigynal atria (fig. 68).

Male. Total length 3.27 ± 0.59 mm. Carapace 1.54 ± 0.25 mm. long, 1.28 ± 0.22 mm. wide. Femur II 1.08 ± 0.15 mm. long (13 specimens examined). Eye sizes and interdistances (mm.): AME 0.05, ALE 0.08, PME 0.07, PLE 0.07; AME-AME 0.06, AME-ALE 0.02, PME-PME 0.05, PME-PLE 0.02, ALE-PLE 0.07. MOQ length 0.19 mm., front width 0.16 mm., back width 0.19 mm. Embolus short (fig. 67); conductor with relatively long proximal prong (figs. 70, 71). Leg spination: femur III r0-0-1; patella III p0-0-0; tibia I v2-2-2; metatarsus I v1-0-2.

Female. Total length 3.71-5.33 mm. Carapace 1.52-1.78 mm. long, 1.22-1.44 mm. wide. Femur II 1.08-1.28 mm. long (six specimens). Eye sizes

and interdistances (mm.): AME 0.06, ALE 0.10, PME 0.08, PLE 0.08; AME-AME 0.05, AME-ALE 0.03, PME-PME 0.04, PME-PLE 0.07, ALE-PLE 0.09. MOQ length 0.22 mm., front width 0.18 mm., back width 0.20 mm. Epigynum with anterolateral atria (figs. 68, 72); spermathecae with long lateral processes (figs. 69, 73). Leg spination: tibiae: I p0-1-0, v2-2-2; II p0-1-1; III v2-2-2; metatarsi: I v2-1-2; III p1-2-2, r1-1-2; IV r2-2-2.

Material Examined. Mexico: *Baja California Norte*: La Jolla Canyon, 16 mi. E San José, May 3, 1961 (W. J. Gertsch, V. Roth, AMNH), 1♀; Meling Ranch, 5 mi. E San José, May 1, 1961 (W. J. Gertsch, V. Roth, AMNH), 2♂. **United States: California**: Fresno Co.: Mercy Hot Springs, May 10, 1954 (O. Bryant, CAS), 1♀. Kern Co.: Democrat Hot Spring, June 9, 1941 (W. M. Pearce, AMNH), 1♂. Los Angeles Co.: desert near Acton, July 5, 1931 (W. Ivie, AMNH), 1♂; Pearblossom to Valyermo, Apr. 19, 1960 (W. J. Gertsch, W. Ivie, R. Schrammel, AMNH), 1♂. Monterey Co.: Hastings Natural History Reserve (Linsdale, AMNH), 1♂. Riverside Co.: Winchester, May 7-Aug. 22, 1967-1968, pitfall trap (W. Icenogle, AMNH), 3♂, 2♀; Apr. 15, 1974, in building (W. Icenogle, AMNH), 1♂; Sept. 7, 1970, in building (W. Icenogle, AMNH), 1♀. San Bernardino Co.: 10 mi. S Kelso, Apr. 15, 1961 (V. Roth, AMNH), 1♂; Yucca Valley, Apr. 15, 1961 (V. Roth, AMNH), 1♂. Santa Clara Co.: 28 mi. S Livermore, May 30, 1971, elevation 2350 feet (H. B. Leech, CAS), 1♂.

Distribution. California and northern Baja California (map 3).

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