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A NEW SPECIES OF *XENOCHELIFER* WITH COMMENTS ON THE GENUS (PSEUDOSCORPIONIDA, CHELIFERIDAE)

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ABSTRACT. A new species, *Xenochelifer derhami,* is described from Inyo County, California. It differs from *X. davidi* Chamberlin primarily in having three, rather than two, trichobothria on the movable chelal finger. The generic diagnosis is revised accordingly. It is shown that *Xenochelifer* Chamberlin is closely allied to *Hysterochelifer* Chamberlin.

In 1949, J.C. Chamberlin defined a new genus, *Xenochelifer,* based on the newly described species, *Xenochelifer davidi,* from southern California. No further material of *X. davidi* has been discovered, and no other related species has been recognized until now. I here describe a new species which certainly is congeneric with *X. davidi,* but which possesses some characters necessitating a slight revision of the generic diagnosis.

METHODS

The following abbreviations are used in the text. L = length; L/B = ratio, length/breadth; L/D = ratio, length/depth; T = tactile seta. Specimens are deposited in the California Academy of Sciences, San Francisco, California (CAS), the Florida State Collection of Arthropods, Gainesville, Florida (FSCA), and the Muséum National d'Histoire Naturelle, Paris (MNHN).

SYSTEMATICS

Xenochelifer Chamberlin 1949

Xenochelifer Chamberlin 1949:10; Muchmore 1990:524; Harvey 1991:533.

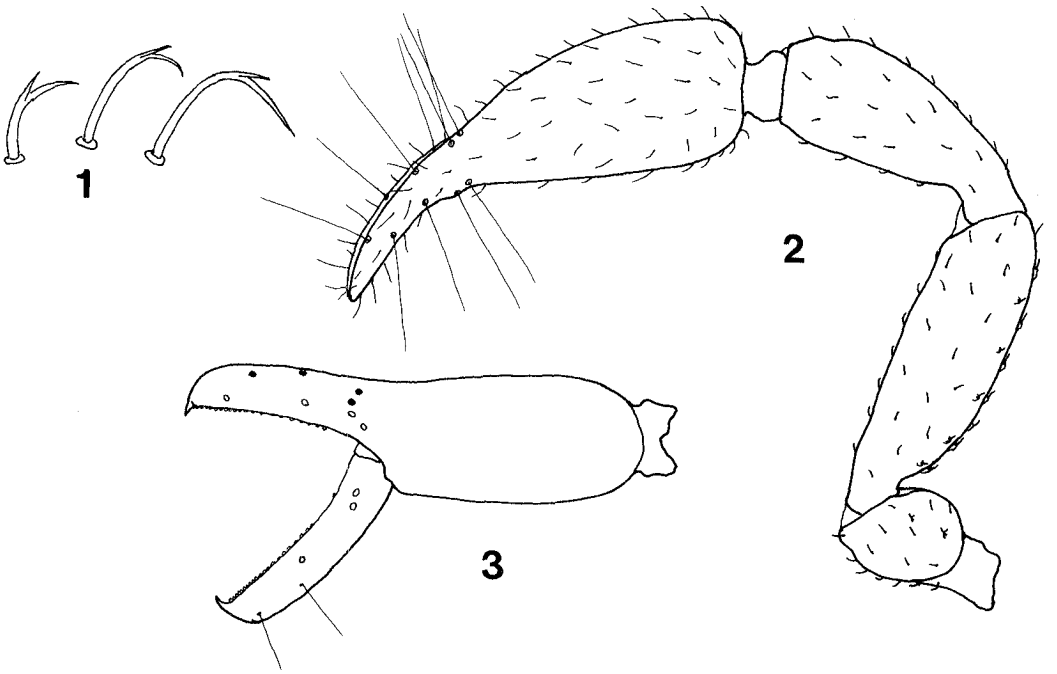
Type species. - *Xenochelifer davidi* Chamberlin 1949.

Type locality. - Big Rock Creek, Los Angeles County, California.

Diagnosis (revised).—The diagnosis presented by Chamberlin (1949:10–12) is quite detailed and covers most features of the genus, based on the single species, *Xenochelifer davidi.* With the recognition of a second species, the following revisions and additions can be made. The movable finger of the palpal chela is distinctly shorter than the hand and bears only two or three trichobothria — *st,* and sometimes *sb,* missing from the normal complement. An accessory seta may occasionally occur on the cheliceral hand, similar in size and shape to *bs* and *sbs.* Guard setae on anterior margin of sternite 3 of the male (posterior genital operculum) curved distally and with a strong lateral spine.

Comments.—Chamberlin (1949) did not compare the new genus *Xenochelifer* with any other cheliferids, except to point out that it differs from all of them in the reduced chaetotaxy of the chela. In the light of our present knowledge, it can be seen that *Xenochelifer* is closely related to *Hysterochelifer* Chamberlin (1932:19). Unfortunately, *Chelifer fuscipes* Banks 1909 from California, the type species of *Hysterochelifer,* is poorly known and the genus is not defined satisfactorily (see Hoff 1956:10). Benedict & Malcolm (1979) stated that a revision of the western [USA] species of *Hysterochelifer* was forthcoming, but that has not appeared, and still no adequate description of *Chelifer fuscipes* has been published.

Possibly the most reliable diagnosis of *Hysterochelifer* presently available is that of Hoff (1956:10), which is based on the three recognized American species. [Beier's most recent diagnosis (1963:283) was probably based on European species, which may or may not be congeneric with *H. fuscipes.*] *Xenochelifer* agrees with *Hysterochelifer* in all of the diagnostic characters mentioned by Hoff, except that it always has five or more (rather than four or five) setae on the cheliceral hand and has only two or three (rather than four) trichobothria on the movable chelal finger. In ad-



Figures 1–3.—***Xenochelifer derhami*** new species, holotype male. 1, Setae from anterior margin of sternite 3 (posterior genital operculum); 2, Right palp, dorsal view; 3, Left chela, lateral view; most setae omitted, only the two pseudotactile setae on movable finger shown; darkened trichobothrial areoles are underneath.

dition, the two genera are similar in the possession of curved, spinous setae on the anterior margin of sternite 3 (posterior genital operculum) in the male, and of two slender pseudotactile setae on the movable finger of the palpal chela. In Muchmore's (1990) key to the pseudoscorpions of North America north of Mexico, representatives of *Xenochelifer* would key out to *Hysterochelifer* except for the reduced number of trichobothria on the movable chelal finger. *Xenochelifer* also differs from *Hysterochelifer* in having more robust palps.

So many are the similarities between *Xenochelifer* and *Hysterochelifer* as presently defined that, despite the reduction in number of trichobothria and other less distinctive differences, the former might be considered a synonym of the latter. However, it seems best to maintain *Xenochelifer* as a separate genus until more is learned about *Hysterochelifer*.

Xenochelifer davidi Chamberlin

Xenochelifer davidi Chamberlin 1949:12–17, figs. 4A-E, 5A-P; Hoff 1958:33; Harvey 1991:533.

Material examined.—One male and one female paratypes (JC-552.04001, 2) from Big Rock Creek, Los Angeles County, California, under cottonwood bark, 25 April 1926 (J.C. Chamberlin), mounted on slides, in CAS; one female paratype (JC-492.01001) from "Sud California (Morr. 81) (5.914), L. Fage Collection", mounted on slide, in MNHN.

Comments.—Chamberlin's very detailed description of this species makes it unmistakable. However, no further material has become available (probably because of insufficient collecting in suitable habitats).

Xenochelifer derhami new species
Figs. 1–3

Type material.—Holotype male (WM63-55.02001), allotype female (WM635-5.02002), and one male, one female paratypes from Big Pine, Inyo County, California, 1220 m elevation, "ant association," June 1981 (D. Giuliani); one female paratype from same locality, August 1979 (D. Giuliani). All mounted on slides, in FSCA.

Diagnosis.—Similar in most respects to

Xenochelifer davidi Chamberlin, but a little larger (palpal femur L 0.85–0.96 versus 0.71–0.825), with more slender appendages (L/B of chela of male 3.35–3.5 versus 2.85–2.95), and with three rather than two trichobothria on movable finger of chela.

Description.—*Male:* Generally like *X. davidi,* with the following particular features. Carapace and palps reddish brown, other parts lighter. Carapace about as long as broad; surface heavily granulate, with a few low tubercles laterally; two shallow transverse furrows; a small crest at each posterolateral corner; two large corneate eyes; about 110 short setae, slightly clavate, terminally denticulate. Coxal area generally typical of Cheliferidae; coxa IV with a prominent lateral spur; coxal sacs present, without atria, a little larger than in *X. davidi.* Abdominal tergites 2–10 and sternites 4–10 divided; surfaces of tergites and sternites scaly; tergites 1–9 with lateral crests, large anteriorly, smaller posteriorly; pleural membranes longitudinally striate; most dorsal setae clavodentate, most ventral setae acuminate. Tergal chaetotaxy of holotype 16: 17: 17: 18: 20: 22: 21: 20: 20: 18: 16: 2; sternal chaetotaxy of holotype 80: [2–2]: (0)19(0): (1)15(1): 19: 19: 17: 15: 14: 14: 3T4T3: 2; paratypes similar. Setae on both tergites and sternites tend to be biseriate laterally, especially toward posterior end. Internal genitalia essentially as illustrated by Chamberlin for *X. davidi* (1949: fig. 5D). Guard setae on anterior margin of sternite 3 ([2–2] in holotype and [5–3] in paratype) strongly curved and with a distinct spine (Fig. 1); other setae on anterior sternites acuminate, including those of sternite 2. Chelicera 0.33 as long as carapace; hand with five setae, *bs* and *sbs* short, denticulate, *es* long, acuminate; flagellum of three setae, the distal one sparsely denticulate; serrula exterior of 17 blades; galea short, with 3–4 small, terminal rami. Palp (Fig. 2) more slender than that of *X. davidi*; L/B of trochanter 1.65, femur 3.25–3.3, patella 2.55–2.65, and chela (without pedicel) 3.35–3.5; L/D of hand (without pedicel) 2.15–2.25; movable finger L / hand L 0.88–0.92. Surfaces heavily granulate, except chelal fingers; most setae short, clavodentate; femur with scattered setiferous tubercles. Trichobothriotaxy as shown in Fig. 3; fixed finger with the usual eight trichobothria, movable finger with three; positioned as in *X. davidi,* but with the addition of *sb* on movable finger. Two pseudotactile setae on movable finger as described by Chamberlin for *X. davidi* (see 1949: fig. 4E). Fixed finger with 23 and movable finger with 22–24 cusped teeth, lower and slightly spaced proximally. Venedens well developed in both fingers, but venom ducts not apparent. Legs rather slender; surfaces granulate, femur + patella IV with few setiferous tubercles; claws not dentate; subterminal tarsal setae curved, usually with a small spine. Leg I: tarsus swollen distally, with prominent terminal spine and modified claws, very much like that of *X. davidi* (Chamberlin 1949: figs. 5L-N). Leg IV: L/D of femur + patella 3.0, tibia 3.75, and tarsus 3.8; moderately long tactile seta nearly at distal end of dorsal margin.

Female: Much like male but with the following particular features. One paratype is apparently teneral, and very light in color. Carapace heavily granulate, but with less distinct tubercles and without posterolateral crests. Abdominal tergites without lateral crests, otherwise similar to those of male. Coxal area unmodified. Tergal chaetotaxy of allotype 14: 17: 16: 18: 24: 25: 24: 23: 23: 20: 18: 2; sternal chaetotaxy of allotype 21: (0)11(0): (1)8(1): 19: 19: 16: 17: 17: 12: 2T4T3: 2; other females similar. Spermathecae much like those illustrated by Chamberlin (1949: fig. 5A). Chelicera as in male, but a little larger and with slightly longer galeal rami; allotype with an extra seta, like *bs* and *sbs,* on left chelicera. Palp a little shorter and less slender than that of male. L/B of trochanter 1.7–1.75, femur 3.05–3.15, patella 2.45–2.7, and chela (without pedicel) 3.1–3.25; L/D of hand (without pedicel) 2.15–2.2; movable finger L / hand L 0.77–0.80. Fixed finger with 24–27, movable finger with 25–30 teeth. Tarsus of leg I not modified. Subterminal tarsal setae curved and with very small denticulation or apparently acuminate.

Measurements (mm).—*Male:* Figures given first for holotype, followed in parentheses by those for paratype. Body L 2.93 (3.15). Carapace L 0.89 (0.93). Chelicera L 0.28 (0.30). Palp: trochanter 0.43 (0.45)/0.26 (0.27); femur 0.89 (0.96)/0.27 (0.295); patella 0.76 (0.83)/0.295 (0.31); chela (without pedicel) 1.21 (1.33)/0.36 (0.37); hand (without pedicel) 0.67 (0.725)/0.31 (0.325); pedicel L 0.09 (0.10); movable finger L 0.59 (0.665). Leg I: femur 0.30 (0.31)/0.20 (0.19); patella

0.39 (0.40)/0.165 (0.17); tibia 0.38 (0.38)/0.14 (0.15); tarsus 0.34 (0.35)/0.125 (0.13). Leg IV: femur + patella 0.76 (0.79)/0.29 (0.29); tibia 0.56 (0.60)/0.155 (0.155); tarsus 0.39 (0.41)/ 0.11 (0.11).

Female: Ranges for allotype and 2 paratypes. Body L 3.01–4.01. Carapace L 0.925–0.975. Chelicera L 0.295–0.33. Palp: trochanter 0.435/0.25–0.26; femur 0.85–0.95/0.28–0.30; patella 0.73–0.85/0.30–0.315; chela (without pedicel) 1.17–1.22/ 0.36–0.385; hand (without pedicel) 0.68–0.72/0.32–0.325; pedicel L 0.095–0.11; movable finger L 0.525–0.57. Leg I: femur 0.265–0.28/0.16–0.19; patella 0.37-0.42/0.16–0.18; tibia 0.33–0.36/ 0.105–0.13; tarsus 0.30–0.355/0.095–0.105. Leg IV: femur + patella 0.75–0.815/0.27; tibia 0.55–0.585/0.15–0.155; tarsus 0.39–0.42/ 0.11–0.12.

Etymology.—The species is named in honor of Derham Giuliani of Big Pine, Inyo County, California, who collected the type specimens and many other interesting and important pseudoscorpions.

Comments.—It is worth noting that in *Xenochelifer derhami* (and *X. davidi*) the guard setae on each side of the midline on the anterior edge of the posterior genital operculum (sternite 3) in the male are distinctly curved distally and bear a strong lateral spine, sometimes approaching a bifurcate condition. In this respect, they are like many other cheliferid genera, including *Hysterochelifer* (see Hoff 1950: 8, fig. 4). This condition seems to be at variance with the statement by Harvey (1992: 1396, character 112)—"The setae that border the posterior genital operculum of male Lechytiidae are bifurcate, in contrast to those of all other pseudoscorpions."

Chamberlin called special attention to "two slender pseudotactile setae, one subterminal, the other almost median" on the movable finger of the chela of *Xenochelifer davidi* (1949: 11, 15, fig. 4E), and speculated that these 'special' setae were present in correlation with the absence of trichobothria *st* and *sb*. The occurrence of such setae is widespread, if not universal, in the Cheliferoidea; and Vachon (1943) and Boissin (1964) have demonstrated their constancy during nymphal development in *Chelifer cancroides* (Linnaeus) and *Hysterochelifer meridianus* (L. Koch), respectively. I do not believe that the function of these setae has been discussed anywhere in the pseudoscorpion literature; but, as Chamberlin pointed out (1949: 12), "these setae are not 'true' tactile setae [trichobothria], as is clear from the nature of the areoles." While the real nature of these setae remains unknown, it is certain that they cannot be viewed as replacements for the missing trichobothria.

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