

**ON FOUR SPECIES OF PSEUDOSCORPIONS FROM
CALIFORNIA DESCRIBED BY E. SIMON IN 1878
(PSEUDOSCORPIONIDA: NEOBISIIDAE, CHERNETIDAE,
CHELIFERIDAE)**

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ABSTRACT.—The four species are redescribed in modern terms and their identities are established, based on study of the types and other available material. *Obisium theveneti* is newly assigned to the genus *Globocreagris* Čurčić; *Obisium macilentum* is placed in *Fissilicreagris* Čurčić; *Chelifer* (*Chelanops*) *acuminatus* is confirmed in *Lustrochernes* Beier, following tentative placement in that genus by Beier (1932b); and *Chelifer scabriculus* is left in *Parachelifer* Chamberlin, as established by Chamberlin (1932).

In a paper entitled “Descriptions de quelques Cheliferidae de Californie”, E. Simon (1878) reported on several pseudoscorpions collected by his former colleague, J. Thevenet, in Mariposa, California. He commented briefly on *Chelifer cancroides* Linné, which he said was common in Mariposa, and described four new species: *Chelifer scabriculus*, *Chelifer* (*Chelanops*) *acuminatus*, *Obisium theveneti*, and *Obisium macilentum*. The descriptions were sketchy (by today’s standards) and were not accompanied by measurements or illustrations. Beier (1932 a, b) apparently reexamined the specimens and presented brief descriptions, including a few measurements and an illustration of the palp of each species, except *C. acuminatus*. Chamberlin (1952) redescribed *Chelifer scabriculus* on the basis of non-type material, without study of the type. No other serious taxonomic studies of these species have been undertaken. Complete redescriptions are warranted at this time so that some features not previously reported (particularly of the genitalia) can be understood and the species can be clearly recognized and compared with other described specimens and taxa.

METHODS

Types of the four species were borrowed from the Muséum National d’Histoire Naturelle in Paris (MNHN). Except for *O. theveneti*, which was already mounted on slides, the specimens were dissected, cleared, and mounted in Canada balsam on microscope slides. They were studied carefully under the compound microscope and measurements were made with an ocular mi-

crometer. Illustrations were prepared by direct projection of the image onto paper. Other material has come from the Florida State Collection of Arthropods (FSCA) and the collection of the University of California, Davis (UCDC). Abbreviated synonymies are given; complete synonymies can be found in Harvey (1991). Terminology follows Chamberlin (1931) with the exception of some palp and leg segments (see Harvey 1992).

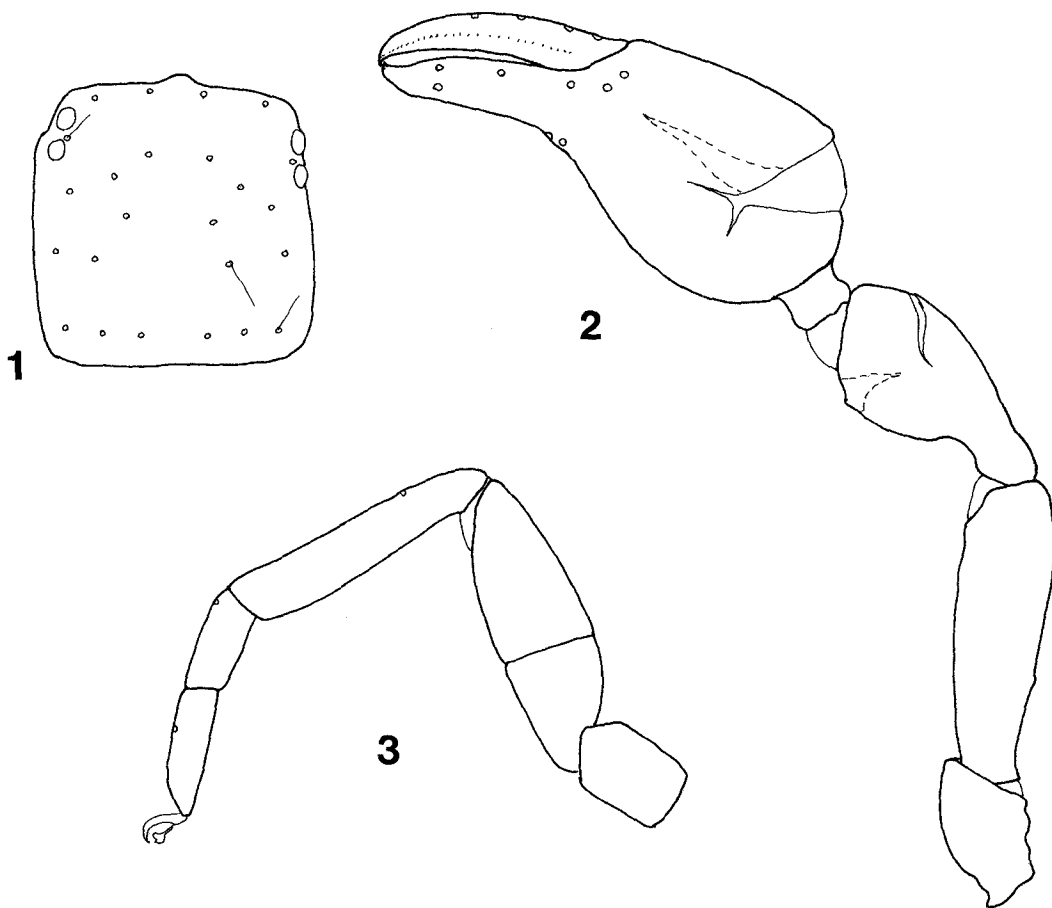
SYSTEMATIC SECTION

Family Neobisiidae Chamberlin
Genus *Globocreagris* Čurčić

Globocreagris Čurčić 1984:160.

With the recognition of a second species in *Globocreagris*, some changes in the diagnosis of the genus as given by Čurčić (1984:160, 165–166) are needed.

It is clear that the numbers of setae on various parts of the body are more varied than is indicated by Čurčić; for example, setae on the cheliceral hand vary 6–8 and those on the apex of the palpal coxa vary 4–6. On sternites 6, 7 and 8 there are usually two setae near the middle which are larger than the other setae and are distinctly displaced anteriorly (see Chamberlin 1952:265). Whether this arrangement can be called “biseriate” is a matter of definition, but it is similar to that in *Cryptocreagris* Čurčić (1984; 1989; 1993) and only differs from the latter in the distances the median setae are displaced. In any event, the arrangement of setae on the ster-



Figures 1–3.—*Globocreagris theveneti* (Simon), holotype female. 1, carapace; 2, right palp, dorsal view (setae omitted); 3, left leg IV (setae omitted).

nites is certainly not “uniseriate” as characterized by Čurčić (1984:160, 165). The galea is not just “quadrispinose”, but is regularly bifid-bifid, that is, with two equal branches, each in turn having two equal (smaller) branches (see Chamberlin 1952: fig. 11). As seen in larger numbers of specimens, the positions of the trichobothria on the palpal chela are not as regular as Čurčić specified (1984:160); in particular, the distances “*t* to *st*” and “*b* to *sb*” are usually *not* equal, but may vary significantly in either direction.

A definitive diagnosis of *Globocreagris* cannot be prepared until other species of this and related genera are described and compared. However, it appears now that the main diagnostic features are: genitalia of male with large distinct, globular lateral sacs and without dorsal sacs; posterior genital operculum (sternite 3) of male without a V-shaped cleft at the middle of the anterior mar-

gin; setae on apex of palpal coxa numbering 4–6; appendages, especially the palps, robust.

Globocreagris theveneti (Simon)
new combination
(Figs. 1–3)

Obisium Theveneti Simon 1878:156–157.

Ideobisium theveneti [sic] (Simon): Banks 1895:1; 1911: 639–640, fig. 210A.

Microcreagris theveneti (Simon): Beier 1932a:147, fig. 179; Hoff 1958:10.

(for more complete synonymy, see Harvey 1991:345).

Type data.—Holotype female, dissected and mounted on three slides, numbered 723, 724, 725; labelled “*Microcreagris* (M.) *Theveneti* Simon, type, Amerique Nord, Californie, Mariposa, col. Mus. 2385” [USA: *California*: Mariposa County, Mariposa]. Deposited in MNHN;

examined. Slide no. 723 bears the body (cephalothorax and abdomen separate), 1 chelicera, and 6 legs; no. 724 bears 1 leg I, 1 leg IV, and 1 chelicera; and no. 725 bears both palps, chelae broken.

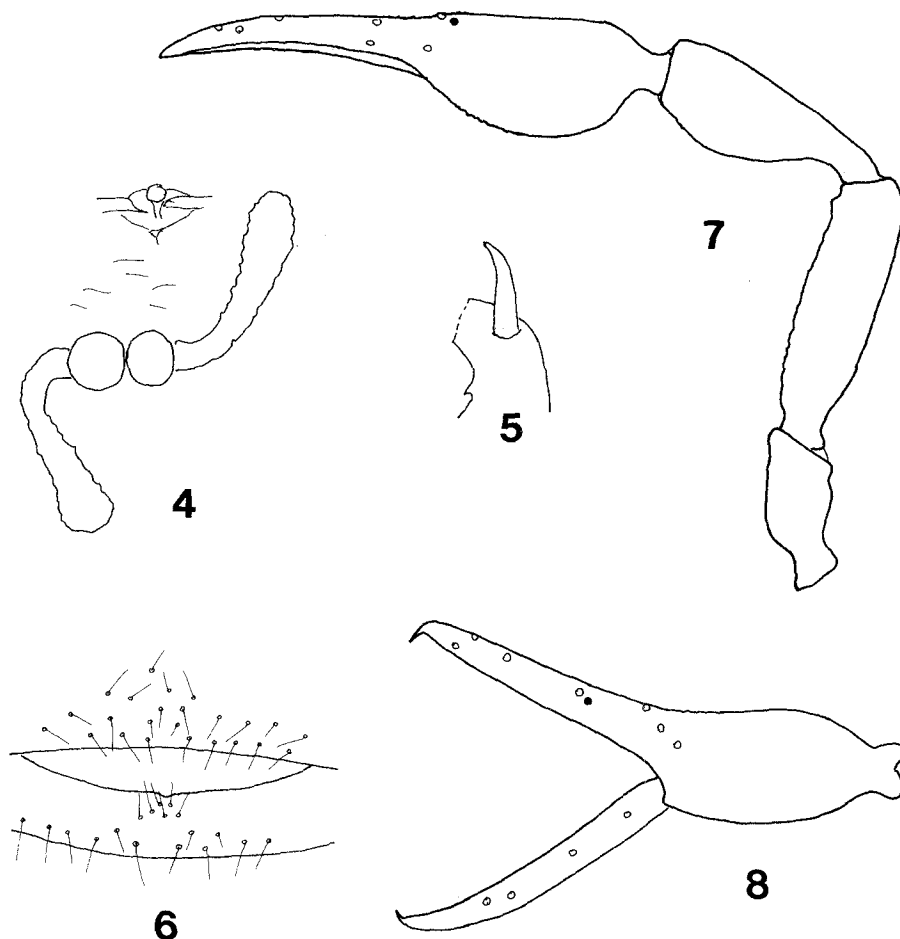
Redescription.—Beier (1932a) gave a short description and an illustration of the right palp of *Microcreagris theveneti* (possibly based on the type specimen). His data differ a bit from those given here.

Palps medium brown, other parts lighter. Carapace (Fig. 1) a little longer than broad; epistome distinct, rounded; surface smooth; no transverse furrow visible (surface dirty); 4 large eyes; about 24 setae, 4 at anterior and 6 at posterior margin. Coxal area typical; apex of palpal coxa with 4 and 5 long setae, right and left respectively. Abdominal tergites and sternites entire; surfaces smooth; pleural membranes granulate. Tergal setae difficult to count because of breakage, but apparently about 12 on middle segments. Sternal chaetotaxy 5:(6)11(6):(5)11(6):14:2/14:2/15:1/15:?:T1T2T1T:2; sternites 6–8 definitely biseriate. Internal genitalia not visible. Chelicera 2/3 as long as carapace; right hand with 7 setae, left hand with 6; flagellum of 8 setae, all denticulate; galea twice bifid in distal half; 12–15 small teeth on each finger. Palp (Fig. 2) somewhat robust; femur 1.05× and chela 1.65× as long as carapace. Trochanter 1.8×, femur 3.45×, patella 2.1×, and chela (without pedicel) 2.7× longer than broad; hand (without pedicel) 1.5× longer than deep; movable finger 0.95× as long as hand. Surfaces all smooth except few small granules on trochanter and chelal hand. Trichobothria as shown in Fig. 2. Fixed finger with about 58 contiguous teeth, a few distal ones cusped, the others rounded; movable finger with about 55 similar teeth. Legs rather slender; leg IV with femur + patella 3.2× and tibia 5.3× longer than deep. A tactile seta on tibia and each tarsus of leg IV. Subterminal tarsal setae forked at distal third; arolia entire, shorter than claws. *Measurements (mm)*: Body length 3.70. Carapace length 1.29. Chelicera length 0.87. Palpal trochanter 0.67/0.39; femur 1.35/0.40; patella 1.10/0.525; chela (without pedicel) about 2.15/0.80; hand (without pedicel) about 1.20/0.80; pedicel length 0.18; movable finger length 1.11. Leg I: femur 0.66/0.235; patella 0.45/0.21. Leg IV: femur + patella 1.32/0.41; tibia 1.24/0.235; basitarsus 0.45/0.18; telotarsus 0.58/0.16.

Variation.—At hand is a small collection of *G.*

theveneti from Napa County, California; of these, four males and four females have been mounted and studied. They are in much better condition than the holotype and provide additional information about the species. Males and females much alike except for genital structures. On the carapace, the epistome is more prominent in males than in females; setae at the posterior margin may vary 5–7. Usually five long setae on apex of palpal coxa, but occasionally four or six. Tergal chaetotaxy of one specimen 6:12:13:12:12:13:15:14:11:11:T1T4T1T:2, others similar. Sternal chaetotaxy of one male 36:[2-2]:(7)15/16(7): (6)14(6):19:2/18:2/17:2/15:18:19:1T4T1:2, other males similar; anterior sternites of one female 6:(7)14(7):(7)12(7):–; distribution of setae on genital opercula of male and female essentially as shown for *G. nigrescens* by Čurčić (1984: figs. 13, 16); on sternites 6–8 two larger setae near middle of row are definitely discal in position, and on 9 and 10 two larger setae are only a little displaced anteriorly. Internal genitalia of male much like those shown for *G. nigrescens* by Chamberlin (1952: figs. 1A, 1B), lateral genital sacs heavy-walled and much expanded; internal genital structures of female not seen clearly. Hand of chelicera with 6–8 setae; galea of both sexes twice bifid in distal half, that of male only a little smaller than that of female. Palps somewhat varied in size and proportions: trochanter 1.65–1.85×, femur 2.9–3.4×, patella 1.9–2.3×, and chela (without pedicel) 2.65–2.9× longer than broad; hand (without pedicel) 1.5–1.7× longer than deep; movable finger 0.95–0.99 as long as hand. Fixed finger of chela with 62–72 teeth and movable finger with 63–75. Legs slender, rather varied in proportions: leg IV (Fig. 3) with femur + patella 3.15–3.65× and tibia 5.3–6.0× as long as deep. *Measurements (mm)*: (Ranges for four males and four females.) Body length 4.08–6.09. Carapace length 1.22–1.50. Chelicera length 0.79–0.96. Palpal trochanter 0.64–0.815/0.37–0.445; femur 1.26–1.48/0.38–0.51; patella 1.05–1.24/0.51–0.635; chela (without pedicel) 1.93–2.41/0.725–0.90; hand (without pedicel) 1.12–1.31/0.665–0.865; pedicel length 0.15–0.21; movable finger length 1.04–1.30. Leg IV femur + patella 1.19–1.43/0.325–0.42; tibia 1.04–1.26/0.18–0.235.

Diagnosis.—Compared with *Globocreagris nigrescens* (Chamberlin), the only other species in the genus, *G. theveneti* is much larger (palpal femur length 1.26–1.47 vs. 1.09–1.12 mm) and



Figures 4–8.—*Fissilicreagris macilenta* (Simon). 4, internal genitalia (parts displaced relative to one another) of holotype male; 5, galea of holotype male. 6–8, male from Santa Clara County, California: 6, anterior and posterior genital opercula of male from Santa Clara County, Calif.; 7, right palp, dorsal view of male from Santa Clara County, Calif.; 8, left chela, lateral view (setae omitted; darkened trichobothrial areoles are underneath) of male from Santa Clara County, Calif.

the legs are more slender (leg IV femur + patella $3.15\text{--}3.65\times$ vs. $2.7\times$ as long as deep).

Remarks.—The assignment of *Obisium Theveneti* Simon to *Globocreagris* seems secure, in spite of the fact that the unique type is a female. The holotype is certainly conspecific with the specimens from Napa County, the males of which, in turn, are certainly congeneric with *Microcreagris nigrescens* Chamberlin, the type species of *Globocreagris*. As a matter of fact, Chamberlin (1952:268) recognized that his new species, *M. nigrescens*, is “close to *M. theveneti* (Simon)”.

Material examined.—Holotype (see above). USA: California: Napa County, White’s Cave entrance, 3.2

km N of St. Helena, antifreeze pitfall trap, 18 November 1987 to 20 March 1988, R. Aalbu, 4 ♂, 4 ♀ (FSCA).

Genus *Fissilicreagris* Čurčić

Fissilicreagris Čurčić 1984:154.

As for *Globocreagris* (above), it is not yet possible to give a definitive diagnosis of this genus. According to Čurčić (1984), the type species of *Fissilicreagris* is *Microcreagris chamberlini* Beier; however, as mentioned below, no detailed description of that species exists (the specimens described by Čurčić are not types and may or may not belong to *chamberlini*). Further study

of the species in *Fissilicreagris* and related genera is needed. Nevertheless, it appears now that the main diagnostic features are: internal genitalia of male with long, more or less cylindrical, lateral sacs and with two small, globular dorsal sacs; posterior genital operculum (sternite 3) of male with a small but distinct V-shaped groove at middle of anterior margin; setae on apex of palpal coxa numbering 3 or 4; appendages long and slender.

Fissilicreagris macilenta (Simon)
new combination
(Figs. 4–8)

Obisium macilentum Simon 1878:157–158.

Microcreagris macilenta (Simon): Beier 1932a:154, fig. 186; Roewer 1937:252; Hoff 1958:10; Harvey 1991:343 (in part).

Microcreagris duncani Chamberlin 1930:33, fig. 3B; Chamberlin 1931: figs. 1A, C, D, F, H, I, J, M, Q, 17J.

Not *Obisium macilentum* (Simon): Banks 1895:12; Banks 1904:364; Coolidge 1908:113; Banks 1911:639, fig. 210G; Moles 1914:195; Moles & Moore 1921:9. (misidentifications: see Remarks below).

Not *Microcreagris macilentum* (Simon): Chamberlin 1930:31 (misidentification for *M. chamberlini* Beier 1931:301).

Type data.—Holotype male, labelled “*Obisium macilentum* E. Sim., Calif. Mariposa. 2386” [USA: California: Mariposa County, Mariposa]. Deposited in MNHN; examined. Left chelicera and both palps missing.

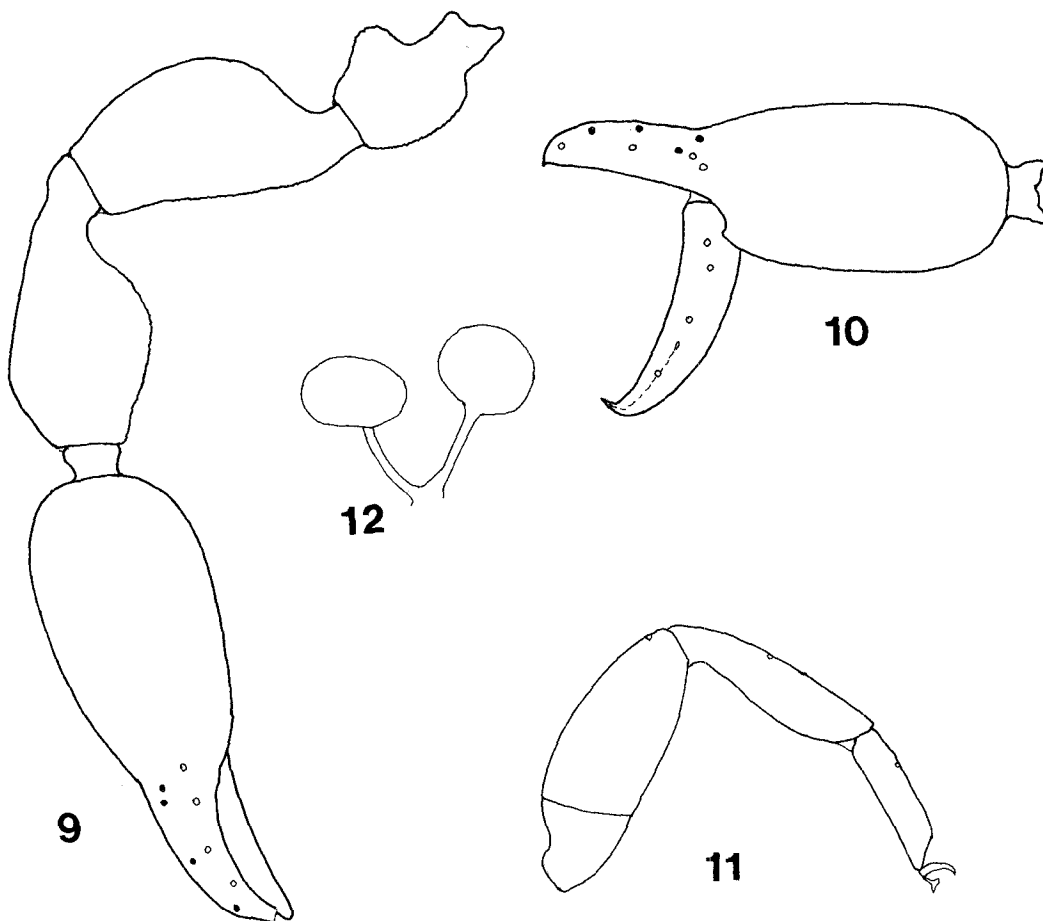
Redescription.—The type collection presently consists of a single damaged specimen, missing notably the left chelicera and both palps. In 1932, however, Beier gave a description and illustration of *Microcreagris macilenta* which indicates the availability at that time of more than one complete specimen. The present whereabouts of such other specimens is unknown, and the individual at hand must be considered the holotype. The following description is based on the holotype and the descriptions by Simon (1878:157) and Beier (1932a:154).

Carapace and palps reddish brown, other parts lighter, yellowish brown. Carapace about as long as broad; epistome very low, triangular; surface smooth; no transverse furrow evident; 4 small, faint eyespots; setae not discernible on type, but Beier reported 4–6, 24. Coxal area typical; Beier reported 4 setae on the apex of the palpal coxa (maxilla). Abdominal tergites and sternites smooth; pleural membranes longitudinally granulostriate. Beier reported tergites with about 12

and sternites with about 16 marginal setae, the latter without clearly differentiated discal setae. Internal genitalia somewhat dislocated by preparation, but 2 delicate, globular (dorsal) sacs and 2 long wrinkled lateral sacs are evident (Fig. 4), similar to those of *Microcreagris phyllisae* Chamberlin (1930) as illustrated in the redescription by Chamberlin (1962: figs. 12F, G, I). Chelicera 0.65 as long as carapace; hand with 6 setae; flagellar setae not countable; spinneret a short stylet with 1 or 2 terminal denticulations (Fig. 5).

Palp (after Beier 1932a:154, fig. 186): slender; trochanter $2.5\times$, femur $3.7\text{--}4.4\times$ [4.5 calculated], patella (tibia) $2.8\text{--}3.2\times$, and chela (with pedicel) $3.8\text{--}4.3\times$ longer than broad; hand (with pedicel) about $2.0\times$ longer than deep; movable finger about $1.3\times$ longer than hand. Surfaces of femur medially and hand at base of fingers heavily granulate, patella finely granulate. Trichobothria shown as typical for *Microcreagris*. Fixed finger with 55–63 and movable finger with 57–64 teeth. Legs rather slender; leg IV with femur + patella $3.0\times$ and tibia $5.25\times$ longer than deep. Tactile seta on tibia and both tarsi. *Measurements (mm)*: (Combination of my measurements of the holotype and those given by Beier, 1932a). Body length 2.0–2.5. Carapace length 0.60. Chelicera length 0.39. Palpal trochanter 0.41/0.15; femur 0.72/0.16; patella 0.66/0.22; chela (with pedicel) about 1.1–1.2/.28 [calculated]; hand (with pedicel) 0.56/0.28; finger length 0.72. Leg I: femur 0.31/0.11; patella 0.20/0.10. Leg IV: femur + patella 0.48/0.16; tibia 0.445/0.085; basitarsus 0.17/0.075; telotarsus 0.265/0.065.

Variation.—At hand are a male and a female from Santa Clara County, California, (about 200 km WSW of Mariposa, the type locality) which are similar to the type of *Obisium macilentum* and are in better condition. Additional information has been gleaned from them. The male is about the same size as the holotype, the female somewhat larger. Setae on carapace total 24 (4–6), as reported by Beier (1932a). There are 3 setae on the apex of the palpal coxa, rather than 4 as reported by Beier. Tergal chaetotaxy of the male 8:12:11:11:12:12:12:12:9:T2T:2, the female similar. Sternal chaetotaxy of the male 23:[4–3]:(4)7/9(4):(4)10(4):13:14:14:15:14:12:T1T1T1T:2; anterior sternites of female 8:(5)11(5):(4)11(4):–, others similar to male; setal arrangement essentially uniseriate, but 2 setae near the middle of sternites 6–9 slightly larger and displaced a little cephalad. At the middle of the anterior margin of the posterior genital operculum (sternite



Figures 9–12.—*Lustrochernes acuminatus* (Simon). 9, lectotype male, right palp, dorsal view; 10, lectotype male, left chela, lateral view (setae omitted; darkened trichobothrial areoles are underneath); 11, lectotype male, left leg IV (setae omitted); 12, spermathecae of female from Shasta County, Calif.

3) of the male is a small but distinct cleft (Fig. 6), as described for the genus *Fissilicreagris* by Čurčić (1984: fig. 3). Internal genitalia of male similar to those of *Microcreagris phyllisae* Chamberlin, as shown by Chamberlin (1962: fig. 12F), but the pair of dorsal sacs are very thin-walled. Cheliceral hand with 6 setae; flagellum of 7 or 8 finely denticulate setae, the proximal one short; spinneret of male a short stylet with terminal denticulations, that of female longer and terminally twice bifid. Palp (Fig. 7) much as shown and reported by Beier: (data given first for male, then for female): trochanter 2.55, 2.45, femur 4.15, 4.3, patella 2.85, 2.75, and chela (with pedicel) 4.45, $4.0 \times$ longer than broad; hand (with pedicel) 2.25, $2.0 \times$ longer than deep; movable finger 1.21, $1.13 \times$ as long as hand. Trichobothria as shown in Fig. 8; on movable finger *st* a little

closer to *t* than to *sb*; on fixed finger *ib* closer to level of *esb* than to *isb*. Fixed finger with 52–55 marginal teeth, most cusped; movable finger with 52–57 teeth, the distal 7–8 small, cusped, the others larger, rounded. Leg IV with femur + patella $2.9\text{--}3.3 \times$ and tibia $4.5\text{--}5.2 \times$ longer than deep. *Measurements (mm)*: Body length 2.0–2.85. Carapace length 0.56–0.60. Chelicera length 0.325–0.38. Palpal trochanter 0.33–0.38/0.13–0.155; femur 0.58–0.70/0.14–0.16; patella 0.50–0.59/0.18–0.215; chela (without pedicel) 0.97–1.07/0.235–0.29; hand (without pedicel) 0.42–0.495/0.22–0.29; pedicel 0.08–0.09; movable finger length 0.605–0.66. Leg I: femur 0.265–0.295/0.095–0.105; patella 0.19–0.21/0.085–0.105. Leg IV: femur + patella 0.465–0.555/0.15–0.16; tibia 0.40–0.47/0.08–0.09; basitarsus 0.16–0.18/0.07; telotarsus 0.245–0.265/0.06.

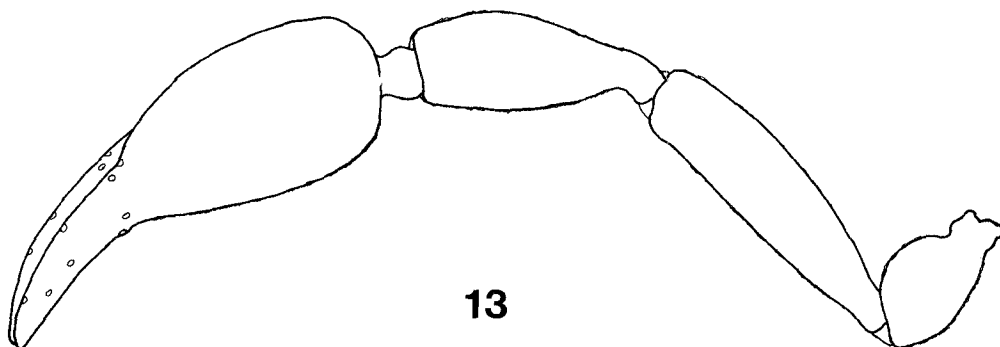


Figure 13.—*Parachelifer scabriculus* (Simon), holotype female: right palp, dorsal view (setae omitted).

Diagnosis.—*Fissilicreagris macilentum* is difficult to diagnose. With the inclusion of the two specimens from Santa Clara County, its characters seem firmly established. However, *F. chamberlini* (Beier), type species of *Fissilicreagris* Čurčić and only other known species in the genus, is not well defined—not Chamberlin, nor Beier, nor Čurčić have given any detailed description of the types. Therefore, until *F. chamberlini* is better known, no meaningful comparison can be made with *macilentum*.

Remarks.—There is no doubt that the two specimens from Santa Clara County are conspecific with the holotype; no major differences in their characters can be seen. *Obisium macilentum* Simon is here placed in the genus *Fissilicreagris* because of the possession of a small cleft at the middle of the anterior margin of the posterior genital operculum (sternite 3) of the male (Čurčić 1984). However, the internal genitalia of the male are much like those in the genus *Saetigerocreagris* Čurčić (1984) and *Tartarocreagris* Čurčić (see Muchmore 1992).

Because of great similarity in overall habitus, *Fissilicreagris macilentum* and one or another species of the genus *Parobisium* Chamberlin have been confused. Actually, the two are easily distinguished by the nature of the spinneret on the chelicera—long and dentate or branched in *Fissilicreagris*, but low and knoblike or galeate in *Parobisium*. However, among others, Banks (1895, 1911) characterized *Obisium macilentum* as having no stylet (spinneret) on the chelicera, and Moles & Moore (1921) credited *Obisium macilentum* with having “spinneret small knob.” Thus, many early records of this species are erroneous or suspect (see synonymy).

Material examined.—Holotype (see above). USA: California: Santa Clara County; 12 km S of Los Gatos,

Santa Cruz Mts., 23 February 1963, I. Westcott, 1 ♂; 6.5 km NE of Big Basin, oak duff, 18 May 1976, S. Kuba, 1 ♀ (both in FSCA).

Family Chernetidae Menge
Genus *Lustrochernes* Beier
Lustrochernes acuminatus (Simon)
(Figs. 9–12)

Chelifer (*Chelanops*) *acuminatus* Simon 1878:156.

Lustrochernes (?) *acuminatus* (Simon): Beier 1932b:95; Hoff 1958:21.

(for more complete synonymy, see Harvey 1991:594).

Type data.—Two male types, labeled “*Lustrochernes acuminatus* E. S., Types. 2384.” No locality data with types, but original description mentions Mariposa, California [USA: California: Mariposa County, Mariposa]. One of the types (No. 2384–1) is here designated the lectotype, the other (No. 2384–2) becoming the paralectotype. Deposited in MNHN; examined. Both fingers are missing from right palpal chela of the lectotype.

Redescription.—Carapace and palps reddish brown, other parts yellowish brown. Carapace longer than broad; surface smooth and shiny, with 2 faint transverse furrows; 2 eyespots; setae acuminate. Abdominal tergites and sternites divided; surfaces smooth; 18 or more, apparently acuminate, setae on each middle tergite; sternal setae too faint to enumerate. Internal genitalia faint, but clear enough to show great similarity to those of other *Lustrochernes* without a ventral process (e. g., *L. carolinensis* Muchmore, 1991); there definitely is no long process like that in *L. grossus* (Banks) from Arizona and New Mexico. Chelicera 0.37 as long as carapace; hand with 5 setae; flagellum of 3 setae; galea long, slender, with 5–6 small rami. Palp (Fig. 9) robust; femur about 0.95 and chela about 1.5 × as long as car-

apace. Trochanter $1.4\text{--}1.8\times$, femur $2.3\text{--}2.35\times$, patella $1.95\times$, and chela (without pedicel) $2.45\text{--}2.75\times$ longer than broad; hand (without pedicel) $1.65\text{--}1.7\times$ longer than deep; movable finger 0.85 as long as hand. Medial surfaces of all segments finely granulate. Trichobothria as shown in Fig. 10; *it* much closer to finger tip than distance between *ist* and *isb*. Fixed chelal finger with about 35 and movable finger with about 40 cusped teeth; each finger with 9–10 external and 3 internal accessory teeth. Venom apparatus in movable finger only. Legs rather robust: leg IV (Fig. 11) with femur + patella $2.9\text{--}2.95\times$, tibia $3.9\text{--}4.2\times$, and tarsus $4.0\text{--}4.05\times$ longer than deep. Long tactile setae on patella, tibia and tarsus of leg IV. *Measurements (mm)*: Figures given first for lectotype, followed in parentheses by those for paralectotype. Body length 3.81 (4.11). Carapace length 1.04 (1.08). Chelicera length 0.385 (0.40). Palpal trochanter 0.58 (0.60)/0.40 (0.35); femur 1.02 (1.05)/0.445 (0.45); patella 0.94 (0.975)/0.48 (0.495); chela (without pedicel) 1.54 (1.61)/0.56 (0.61); hand (without pedicel) 0.93 (0.97)/0.54 (0.59); pedicel length 0.09 (0.105); movable finger length 0.77 (0.815). Leg I: femur 0.295 (0.32)/0.20 (0.21); patella 0.54 (0.555)/0.205 (0.215); tibia 0.52 (0.55)/0.14 (0.15); tarsus 0.42 (0.445)/0.10 (0.105). Leg IV: femur + patella 0.92 (0.96)/0.32 (0.325); tibia 0.755 (0.78)/0.18 (0.205); tarsus 0.51 (0.52)/0.125 (0.13).

Variation.—At hand are 8 males and 36 females from Riverside, San Bernardino, Los Angeles, San Luis Obispo, El Dorado, and Shasta counties, California, and Latah County, Idaho, which appear conspecific with the types. They are mounted on slides and have been studied carefully to yield important supplemental information. They reveal that the species is highly variable in size and moderately variable in proportions.

Males are about the same size as the types, females a little larger. Carapace with about 70 setae, 4 at anterior and 12–15 at posterior margin. Tergal chaetotaxy of one male 13:17:14:18:22:21:22:23:23:23:T5TTTT4T:2, others similar. Sternal chaetotaxy of same male 28:[4–3]:(4)14(3):(1)9(1):24:25:27:27:28:22:T3TTTT4T:2, other males generally similar; anterior chaetotaxy of one female 24:(3)12(3):(1)7(1):–, other females similar. Internal genitalia of males like those of types and very similar in shape to those of *L. carolinensis* Muchmore (1991) but somewhat more heavily sclerotized. Spermathecae of female (Fig. 12) with terminal sacs round or oval

in outline, rather like those of *L. viniai* Dumitresco and Orghidan from Cuba and Florida (see Muchmore 1991). Chelicera about $\frac{1}{3}$ as long as carapace; hand with 5 setae, *bs*, *sbs* and *es* finely denticulate; galea of male about same size as that of female, long slender, with 5–6 rami. Palp with femur $0.85\text{--}0.95$ and chela $1.35\text{--}1.5\times$ as long as carapace; trochanter $1.6\text{--}2.0\times$, femur $2.3\text{--}2.65\times$, patella $1.9\text{--}2.2\times$, and chela (without pedicel) $2.4\text{--}2.8\times$ longer than broad; hand (without pedicel) $1.6\text{--}1.85\times$ longer than deep; movable finger $0.7\text{--}0.8\times$ as long as hand. Fixed chelal finger with 35–39 and movable finger with 38–42 cusped marginal teeth, and each finger with 8–12 external and 2–4 internal accessory teeth. Leg IV with femur + patella $2.9\text{--}3.3\times$, tibia $4.05\text{--}4.6\times$, and tarsus $4.0\text{--}4.3\times$ longer than deep. *Measurements (mm)*: Body length 3.1–5.7. Carapace length 1.04–1.30. Chelicera length 0.37–0.45. Palpal trochanter 0.51–0.69/0.27–0.40; femur 0.87–1.14/0.355–0.48; patella 0.82–1.10/0.40–0.55; chela (without pedicel) 1.41–1.90/0.53–0.74; hand (without pedicel) 0.865–1.15/0.52–0.68; pedicel length 0.10–0.15; movable finger length 0.67–0.68. Leg IV: femur + patella 0.86–1.10/0.27–0.43; tibia 0.68–0.89/0.16–0.21; tarsus 0.47–0.57/0.11–0.15.

Diagnosis.—Generally similar to *Lustrochernes grossus* (Banks) from Arizona, Colorado and New Mexico (see Muchmore 1991), but a little larger (palpal femur length usually >0.95 mm); without the distinctive, long, anteriorly directed ventral process seen in the internal genitalia of male *L. grossus*; and spermathecae of female small and globular or ovoid rather than hammer-shaped as in *L. grossus*.

Material examined.—Lectotype and paralectotype (see above). USA: California: Los Angeles County; San Gabriel Mts., Chilad Flats, under elytra *Ergates* (Cerambycidae), 21 June 1953, A. Menke, 1 ♀ (UCDC); Jackson Lake (NW of Wrightwood), 27 July 1968, R. S. Cheary, 1 ♂ (FSCA); Riverside County: Idyllwild, 20 May 1969, K. W. Cooper, 3 ♂, 2 ♀ (FSCA); San Bernardino County: Barton Flat, from *Pinus jeffreyi*, 24 May 1956, H. Ruckes & B. J. Adelson, 1 ♀ (UCDC); San Bernardino Mts., Poopout Hill, 2450 m, under ponderosa pine bark, 31 May 1969, K. W. Cooper, 2 ♂, 3 ♀ (FSCA); Cienega Seco (NE of Redlands), 19 September 1969, K. W. Cooper, 1 ♀ (FSCA); Ventura County: Grade Valley, 7 May 1959, G. I. Stage, 3 ♀ (UCDC); San Luis Obispo County: La Panza Camp, 19 km NE of Pozo, under bark *Pinus coulteri*, J. Powell, 2 ♀ (UCDC); El Dorado County: Snowline Camp, under elytra of *Alanus* [SIC!—probably *Alaus* (Elateridae)], 24 June 1948, S. A. Sher, 2 ♂, 22 ♀ (UCDC);

Shasta County: 8 km NE of Old Station, 4 June 1978, T. R. Haig, 1 ♀ (FSCA). Idaho: Latah County, Moscow, on *Prionus californicus* (Cerambycidae), 5 August 1971, A. Greene, 1 ♂ (FSCA).

Remarks.—No original details and no measurements were given for this species by Beier (1932b:95), who only tentatively placed it in *Lustrochernes*. This seems odd, as the specimens were available in the collection of the MNHN along with the other types treated here, which Beier apparently did study. In any event, Beier's intuition was sound and placement in *Lustrochernes* is correct, at least so far as a broad definition of the genus is accepted (see Muchmore 1991).

Lustrochernes acuminatus seems widely distributed through the mountains of California from Los Angeles County in the south to Shasta County in the north, and it also occurs in northwestern Idaho. From this it seems a good possibility that the specimens from Oregon reported by Benedict & Malcolm (1982) as *Lustrochernes grossus* are in reality representatives of *L. acuminatus*. The Oregon specimens have not been available for reexamination, especially of the genitalia, in order to verify this supposition.

It is interesting to note two teratologies in these specimens. In the female from Shasta County, California, the right chelicera is lacking seta *bs* from the hand, and there are two setae in the general area of *es*. In the male from Latah County, Idaho, the left palpal chela is lacking trichobothrium *b* from the movable finger.

Family Cheliferidae Risso
Genus *Parachelifer* Chamberlin
Parachelifer scabriculus (Simon)
(Fig. 13)

Chelifer scabriculus Simon 1878:154.

Parachelifer scabriculus (Simon): Chamberlin 1932:19;

Beier 1932b:238–239, fig.247; Chamberlin 1952:300–305, figs. 13A–C, 14A–J; Hoff 1958:32.

(for more complete synonymy, see Harvey 1991:522).

Type data.—Holotype female, labeled “2382 — Chelifer scabricula E. S., Type — Mariposa — Amerique” [USA: California: Mariposa County, Mariposa]. Deposited in MNHN; examined. The specimen as a whole is very pale, and the right chelicera and movable finger of the left palpal chela are missing.

Redescription.—The holotype has been bleached by long preservation; as a result, the true coloration is not evident and many of the

setae are not visible. Carapace a little longer than broad; surface heavily granulate, with scattered tubercles; with 2 transverse furrows; without postero-lateral crests; 2 large eyespots present; about 100 setae. Coxal area without notable features. Abdominal tergites lightly granulate, without lateral crests. Tergal and sternal chaetotaxies impossible to make out. Genitalia not discernible. Chelicera $\frac{1}{3}$ as long as carapace; hand with 5 setae; flagellum of 3 setae; serrula exterior with 17–18 blades; both galeae broken. Palp (Fig. 13) rather elongate; femur about $1.15\times$ and chela about $1.65\times$ as long as carapace. Trochanter $1.85\times$, femur $4.3\times$, patella $2.95\times$, and chela (without pedicel) $3.15\times$ longer than broad; hand (without pedicel) $1.9\times$ longer than deep; movable finger 0.88 as long as hand. Surfaces granulate except chelal fingers. Trichobothria as shown in Fig. 13. Fixed finger with about 38 cusped teeth; teeth of movable finger not ascertained. Legs moderately slender: leg IV with femur + patella $3.0\times$, tibia $4.45\times$, and tarsus $4.75\times$ longer than deep; tarsus with long tactile seta 0.75 length of segment from proximal end. All claws distinctly bifid. *Measurements (mm)*: Body length 3.17 . Carapace length 1.02 . Chelicera length 0.35 . Palpal trochanter $0.57/0.31$; femur $1.16/0.27$; patella $0.975/0.33$; chela (without pedicel) $1.66/0.53$; hand (without pedicel) $0.925/0.49$; pedicel length 0.13 ; movable finger length 0.81 . Leg I: femur $0.35/0.21$; patella $0.465/0.185$; tibia $0.47/0.13$; tarsus $0.42/0.09$. Leg IV: femur + patella $0.89/0.295$; tibia $0.69/0.155$; tarsus $0.50/0.105$.

Variation.—Chamberlin (1952) described in great detail a number of specimens from Santa Clara, Monterey and Riverside counties, California, which he assigned to *Parachelifer scabriculus*. Comparison of the characteristics of the females with those of the holotype given above indicates that they are, indeed, conspecific. A considerable amount of variation in size and proportions and numbers (of setae) was revealed among these specimens; and the sex-related characters of the males became clear.

Diagnosis.—Chamberlin's description (1952) can be considered an accurate diagnosis of *Parachelifer scabriculus*, which is the type species of the genus *Parachelifer* Chamberlin (1932; 1952: 299). As Benedict & Malcolm (1979) have pointed out, it is difficult (or impossible) to distinguish *P. scabriculus* from related western U. S. species, which lack modern descriptions.

Remarks.—It is mentioned above that *Chelifer*

scabriculus Simon is the type species of the genus *Parachelifer*. As the specimens studied by Chamberlin (1952) are certainly conspecific with Simon's type, the emended diagnosis of the genus given by Chamberlin (1952:299) is sound.

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