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Three New Troglobitic Asellids from Western North America (Crustacea: Isopoda: Asellidae)

by

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Troglobitic isopods of the family Asellidae, comprising about 42 species (Fleming, 1973), are widespread in the eastern United States, mostly in non-glaciated areas, but extending into some glaciated parts of Illinois and Indiana. To the west, troglobitic asellids range to central Kansas, Oklahoma and Texas. West of this area, if we exclude the 4 Mexican species of *Mexistenasellus* (Cole and Minckley, 1972; Magniez, 1972; Argano, 1973) which belong to a separate family, Stenasellidae (Henry and Magniez, 1968, 1970), only 2 troglobitic asellids are known from North America: *Asellus californicus* Miller (1933) from northern California and *Conasellus pasquinii* Argano (1972) from Veracruz state, México.

The 3 new species of western troglobitic asellids described herein extend the records of blind asellids in North America south to Chiapas state, Mexico, and north to central Alberta, Canada (ca. 53°N), and add a second species from California. The new species from Chiapas is very similar to *Conasellus pasquinii* Argano (1972); the new asellids from Alberta and California show no close affinities with known species.

The generic status of North American species of *Asellus* is still unsettled. Henry and Magniez (1970) divided the species between *Conasellus* Stammer (1932) and *Pseudobaicalasellus* Henry and Magniez (1968) except *A. tomalensis* Harford and *A. californicus* Miller, which they believed to be closely related to far-eastern forms belonging to *Asellus (Asellus)* and *Nipponasellus* Matsumoto (1962). I have indicated that this is unlikely for *A. tomalensis* (see Bowman, 1974); the case of *A. californicus* will be discussed later in this paper.

Fleming (1973) presented arguments in favor of reducing both *Pseudobaicalasellus* and *Conasellus* to synonyms of *Asellus*. However, the taxonomic characters that Fleming analyzed to support his claim failed to include the basal and labial spurs (Bowman and Holmquist, 1975) and the catch-lobe, characters of the male pleopod 2 of *Asellus* that clearly separate it from American Asellidae except *A. (Asellus) alaskensis* Bowman and Holmquist.

While I consider Fleming's reduction of *Conasellus* to a synonym of *Asellus* unacceptable, I also feel that the assignment by Henry and Magniez of all but a few of the approximately 60 North American species to *Conasellus* probably over-

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simplifies the situation. But until enough taxonomic information is accumulated to permit a soundly based generic reassessment, I will follow the French authors. However, in place of *Conasellus* Stammer (1932) I am using its senior synonym, *Caecidotea* Packard (1871). For many years American authors assigned their blind species from subterranean waters to *Caecidotea* and their epigean species to *Asellus*. Miller (1933) presented evidence that the species of *Caecidotea* must have evolved independently a number of times from epigean species, and proposed reducing *Caecidotea* to a synonym of *Asellus*, as had been advocated by Forbes (1876) and Chappuis (1927). Mackin and Hubricht (1940) supported the independent status of *Caecidotea*, and Collinge (1945) went so far as to recognize separate subfamilies, Asellinae and Caecidotinae, but most specialists have supported Miller's position (Chappuis, 1950, 1953, 1957; Birstein, 1951; Steeves, 1963; Vandel, 1964). I agree with the latter authors, but in accordance with the law of priority use *Caecidotea* in place of *Conasellus*. Henry and Magniez (1970) pointed out the seniority of *Caecidotea*, but nevertheless used *Conasellus*, saying, „Nous laissons donc aux systématiciens du Nouveau-Monde le soin de règler ce point de la nomenclature".

Caecidotea chiapas, new species (Figures 1 - 39)

Material examined. Chiapas Mexico: - Cueva de los Murciélagos, 15 km ESE of San Cristobal de las Casas, collected by J. Cooke, W. Russell, and R. Mitchell, 29 VIII 1972: 6 ♂♂ (7.7, 6.6, 6.4, 6.2, 6.2, 5.2 mm), 5 ovigerous ♀♀ (5.5, 5.2, 5.0, 4.7, 4.6 mm), 7 mancas (largest 1.6 mm). - Cueva de los Llanos, 15 km ESE of San Cristobal de las Casas, collected by J. Cooke, W. Russell, R. Mitchell, 29 VIII 1972: 2 ♂♂ (7.5, 6.0 mm), 3 ovigerous ♀♀ (6.0, 5.6, 4.6 mm), 2 immature ♀♀ (4.8, 4.5 mm).

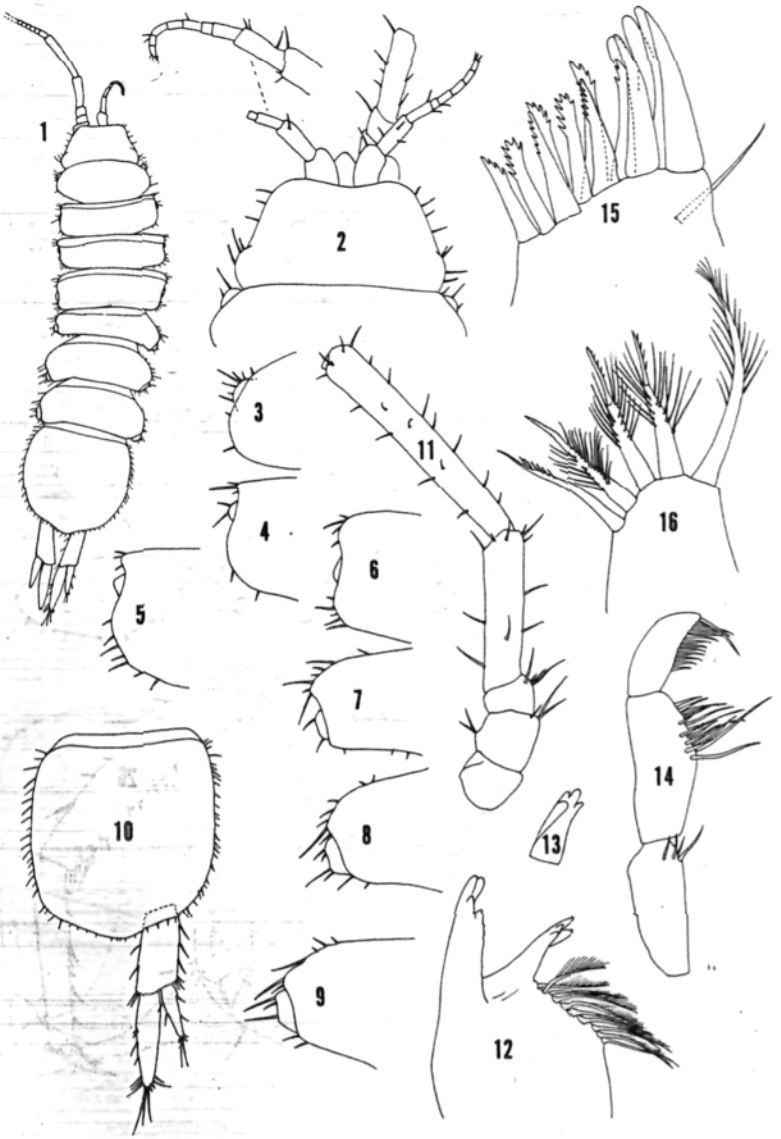
The 7.7-mm ♂ from Cueva de los Murciélogos is the holotype, USNM 152766; the remaining specimens are paratypes.

Description. Small, eyeless, unpigmented. Length up to at least 7.7 mm; body slender, linear, about 3.8 times as long as wide; coxae all visible in dorsal view. Margins of head, pereonites, and telson moderately setose. Head twice as wide as long; anterior margin slightly concave, without rostrum; postmandibular lobes broadly rounded. Telson slightly longer than wide; sides subparallel; caudomedial lobe rather low and broad, not sharply delimited.

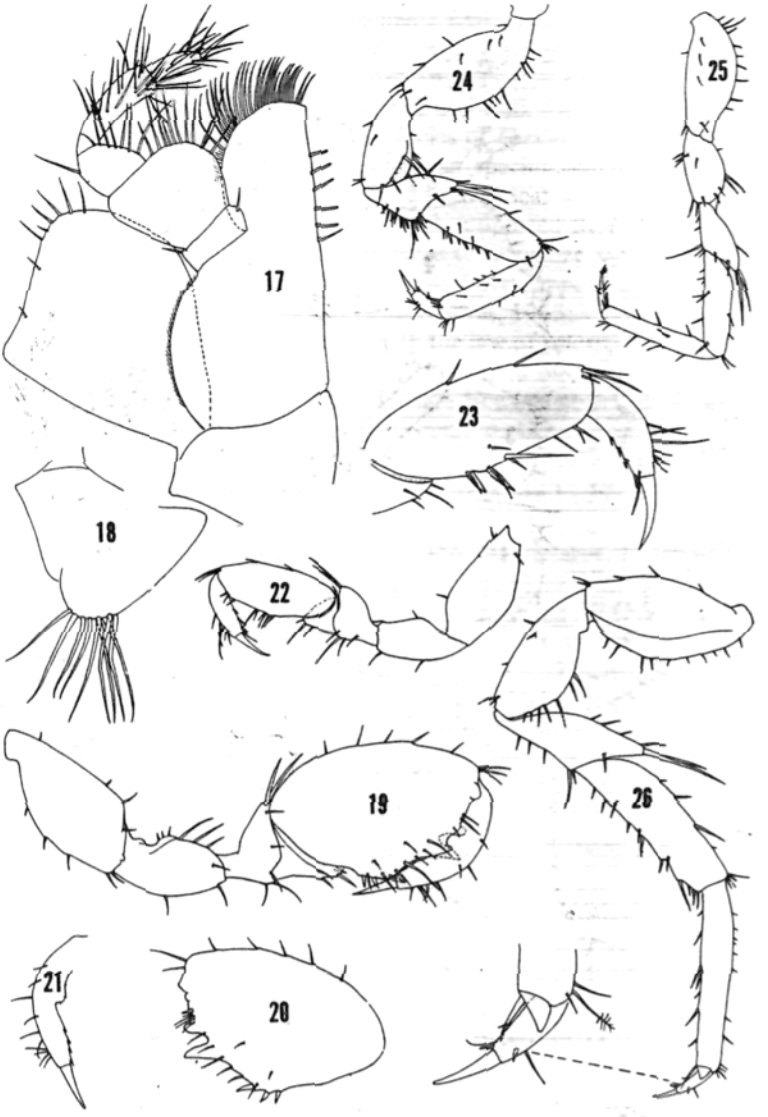
Antenna 1 reaching middle of last segment of antenna 2 peduncle; flagellum of 5 - 7 segments; last 3 segments each bearing esthete. Antenna 2 reaching pereonite 5; last segment of peduncle about 1.6 times length of preceding segment; flagellum of 25 - 35 segments.

Mandibles with 4-cuspate incisors and lacinia mobilis; spine row with 10 spines in left mandible, 12 spines in right mandible. Palp as in fig. 14. Maxilla 1, apex of outer lobe with 13 robust spines and 1 subterminal seta; inner lobe with 5 apical plumose setae. Maxilliped with 5 - 6 retinaculae.

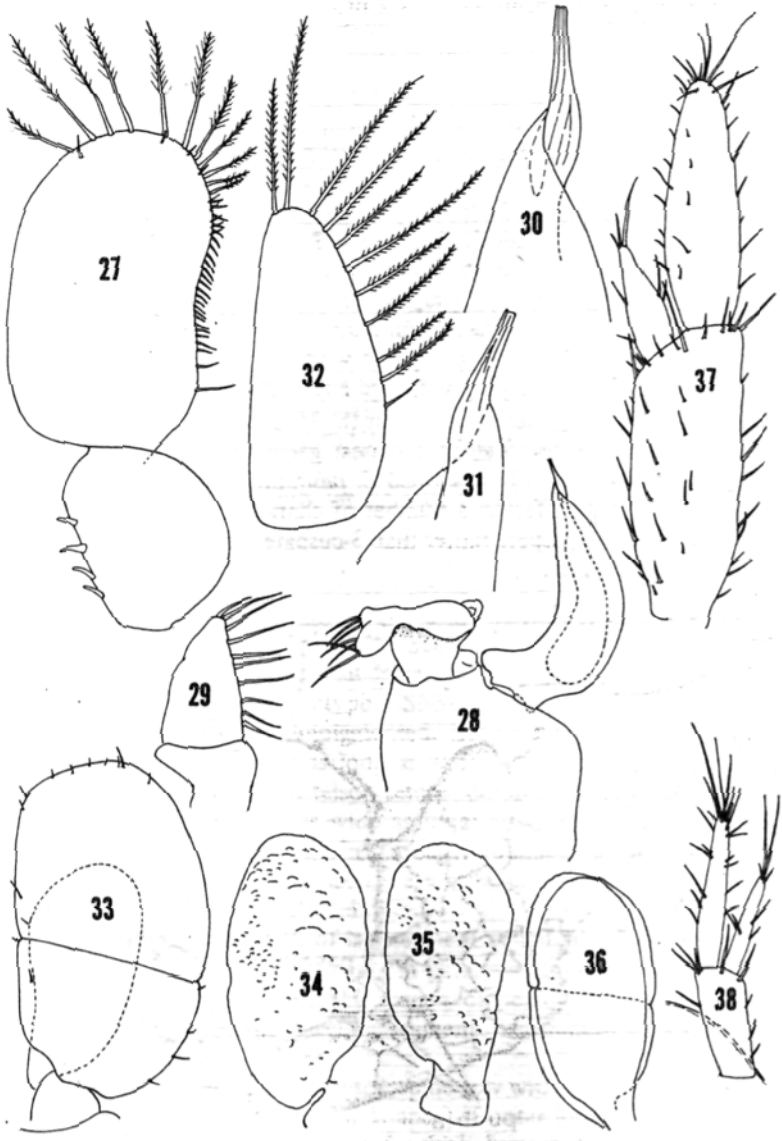
♂ pereopod 1 propus about 1.5 times as long as wide; palm defined proximally by 3 robust spines, median process of palm triangular, separated from smaller rounded distal process by U-shaped cleft. Dactyl flexor margin with rounded boss proximally and about 4 weak spines distally. ♀ pereopod 1 propus more slender, about



Figs. 1-16.
Caecidotea chiapas. 1, ♂, dorsal; 2, ♀ head, dorsal; 3-9, lateral parts of pereonites 1-7, dorsal; 10, telson and uropod, dorsal; 11, ♂ left antenna 2, dorsal; 12, left mandible; 13, incisor of right mandible; 14, right mandibular palp; 15, maxilla 1, outer lobe; 16, maxilla 1, inner lobe.



Figs. 17-26.
Caecidotea chiapas. 17, ♀ maxilliped; 18, oostegite of ♀ maxilliped; 19, ♂ pereopod 1, lateral; 20, ♂ pereopod 1 propus, medial; 21, ♂ pereopod 1 dactyl, medial; 22, ♀ pereopod 1, medial; 23, propus and dactyl of ♀ pereopod 1, lateral; 24, ♂ pereopod 4; 25, ♀ pereopod 4; 26, ♂ pereopod 6.



Figs. 27-38.
Caecidotea chiapas. 27, ♂ pleopod 1, anterior; 28, ♂ pleopod 2, posterior; 29, ♂ pleopod 2 exopod, flattened under cover glass; 30, ♂ right pleopod 2 endopod tip, posterior; 31, same, anterior; 32, ♀ pleopod 2, anterior; 33, ♂ pleopod 3; 34, ♂ pleopod 4, exopod; 35, same, endopod; 36, ♂ pleopod 5; 37, ♂ uropod, dorsal; 38, ♀ uropod, ventral.

2.5 times as long as wide; palm with 0 - 2 proximal spines, medial and distal processes absent; dactyl without proximal boss. Pereopod 4 more robust in ♂ than in ♀; merus and carpus with more spinose flexor margins.

♂ pleopod 1 larger than pleopod 2; protopod about 0.6 length of exopod, with 4 retinaculae. Exopod about 0.6 as wide as long, with plumose setae on distal margin and short naked setules on concave lateral margin. ♂ pleopod 2 exopod bent anterolaterally, shape when flattened triangular, with long setae on lateral margin. Endopod slender, curving laterally and tapering distally; tip (cannula) twisted clockwise, without additional processes. ♀ pleopod 2 oval, about 2.4 times as long as wide, with about 10 plumose setae on distal and lateral margins. Pleopod 3 exopod about 1.8 times as long as wide; distal segment about 1.5 times length of proximal segment; marginal setae short, sparse, non-plumose. Pleopods 4 and 5 rather fleshy, without marginal setae; exopod of pleopod 5 with poorly defined transverse suture. Uropods as in figs. 37-38, varying with age and sex; exopod broader in large ♂♂.

Etymology. The new species is named for the Mexican state of Chiapas.

Relationships. *Caecidotea chiapas* is closest geographically and apparently also morphologically to the recently described *C. pasquinii* (Argano, 1972) from Veracruz state, Mexico, but differs in a number of characters including the following: Left mandible, lacinia 4-cuspate rather than 3-cuspate. Maxilla 1 outer lobe with 13 rather than 11 apical spines.

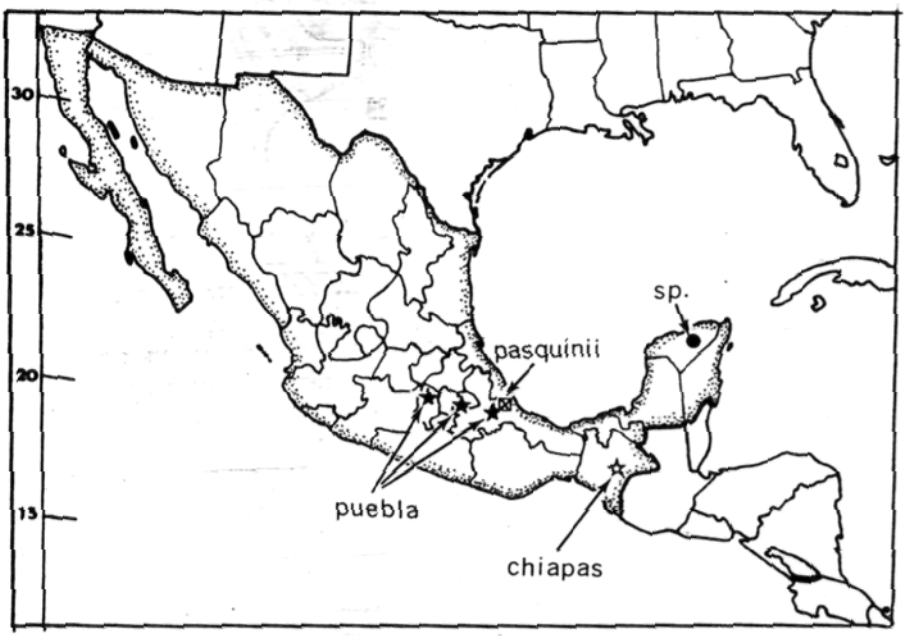


Fig. 39.
Known occurrences of *Caecidotea* spp. in Mexico.

♂ pereopod 1, palm of propus with 2 processes rather than 1. Pereopod 4 with greater sexual dimorphism. ♂ pleopod 1 with more concave lateral margin armed with short setae. ♂ pleopod 2 with more curved endoped and long twisted rather than short straight cannula; exopod triangular rather than oval. Uropod with relatively shorter protopod.

Distribution of *Caecidotea* in Mexico. The reported occurrences of *Caecidotea* in Mexico are shown in fig. 39. *C. puebla* (Cole and Minkley, 1968) the only known epigean species, is considered by Fleming (1973) to be identical with *C. communis* (Say), an inhabitant of the northeastern United States. Disjunct populations of *C. communis* in several Colorado lakes and in Echo Lake, Washington, may have been introduced by man, and its possible artificial introduction into Mexico merits investigation. If Fleming is correct, the occurrence of an isolated Mexican population of *C. communis* is difficult to explain otherwise.

The record of *Caecidotea* in Yucatan is based on Creaser's (1938) report of a single incomplete female from Balam Canche Cave near Chichen Itza.

C. chiapas extends the known range of New World Asellidae nearly to the southern boundary of Mexico. Thus far no asellids have been reported from Central or South America.

Caecidotea sequoiae, new species (Figures 40 - 59)

Material examined. California, Tulare Co., Sequoia National Park: Liburn Cave, collected by Steven J. Shimek and Paul Hara, 13 X 1974: 1 ♂ (5.3 mm, holotype, USNM 152769), 1 ♀ (3.3 mm, paratype, USNM 152770).

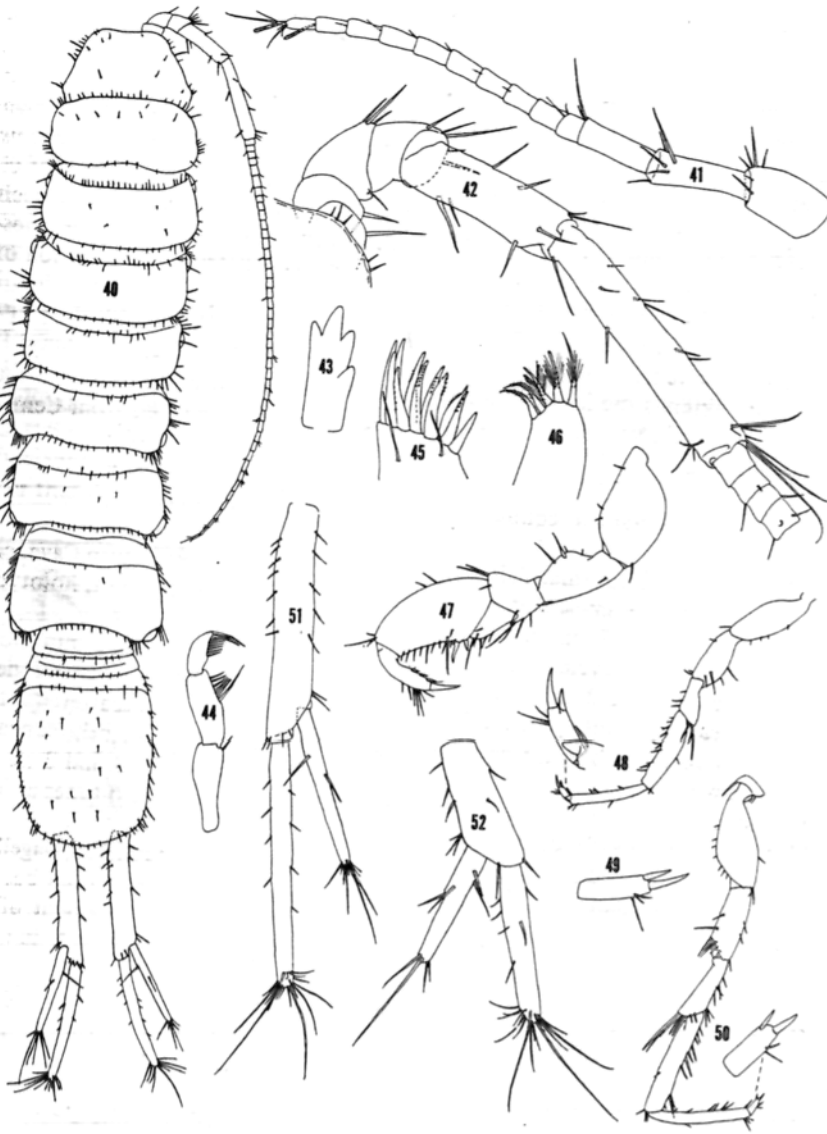
Description. Small, eyeless, unpigmented. Length up to at least 5.3 mm; body slender, linear, about 5.3 times as long as wide; coxae all visible in dorsal view. Margins of head, pereonites, and telson setose; dorsal surfaces with scattered setae. Head slightly more than twice as wide as long; anterior margin slightly concave, without rostrum; postmandibular lobes broadly rounded. Pleonites 1 and 2 clearly visible, not much narrower than telson. Telson linguiform, about 2.6 times as long as wide; caudomedial lobe scarcely delimited.

Antenna 1 reaching distal 5th of last segment of antenna 2 peduncle; flagellum of 10 segments in holotype, 7 segments in paratype; last 2 segments each bearing esthete. Antenna 2 reaching posterior margin of pereonite 6; last segment of peduncle about 1.6 times long as preceding segment; flagellum of 43 segments in holotype, 23 segments in paratype.

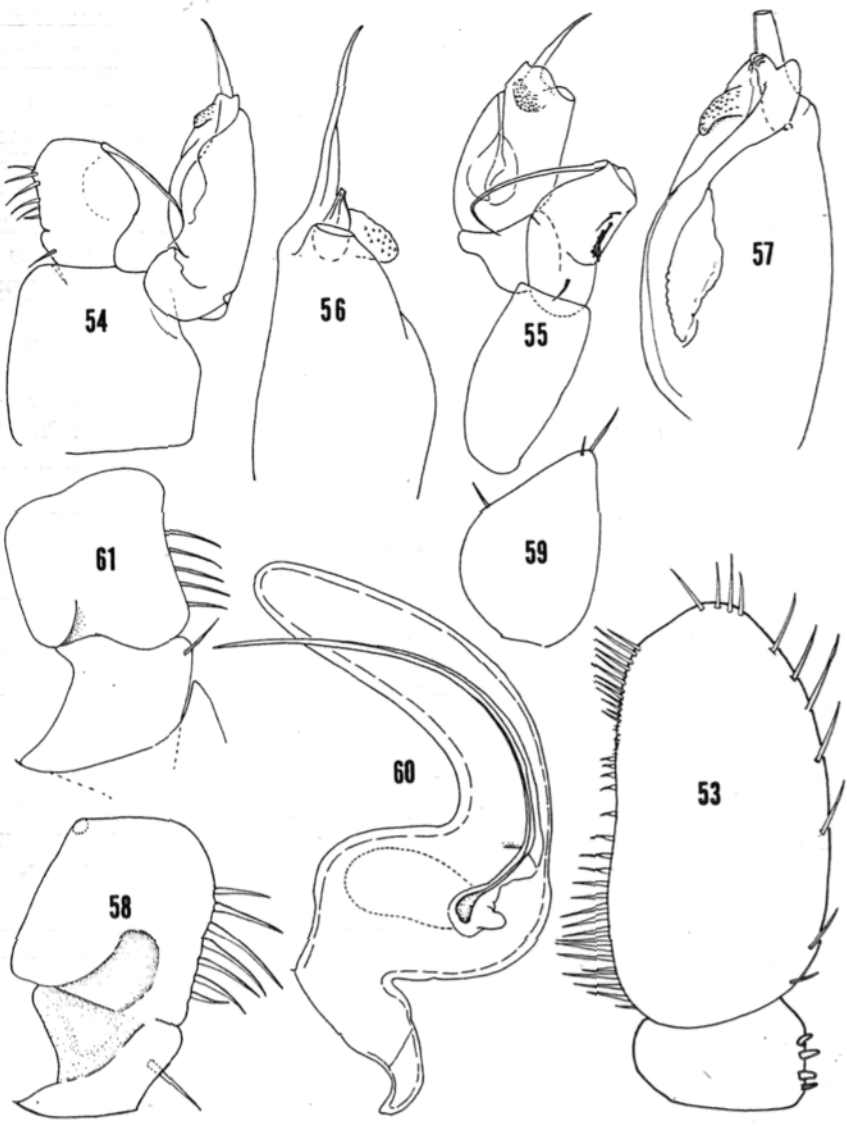
Right mandible with 4-cuspate incisor; spine row with 8 spines; palp as in fig. 44. Left mandible not examined. Maxilla 1, apex of outer lobe with 11 robust spines and 2 subterminal setae; inner lobe with 5 apical plumose setae.

Pereopod 1 propus about twice as long as wide; palm without processes, defined by 2 robust spines; flexor margin of dactyl with 3 spines. Pereopods 2 - 7, dactyl with accessory claw above and slightly behind main claw.

♂ pleopod 1 larger than pleopod 2; protopod about 1/4 length of exopod, with 4 retinaculae. Exopod about twice as long as wide, with about 10 widely spaced setae on medial and distal margins and numerous close-set setae on slightly concave lateral margin, decreasing in length toward midlength of margin.



Figs. 40-52. *Caecidotea sequoiae.* 40, ♂, dorsal; 41, ♂ left antenna 1; 42, ♂ right antenna 2; 43, incisor of ♂ right mandible; 44, palp of same; 45, maxilla 1, outer lobe; 46, same, inner lobe; 47, ♂ pereopod 1, lateral; 48, pereopod 3, lateral; 49, dactyl of pereopod 6, lateral; 50, pereopod 7, lateral; 51, ♂ right uropod, dorsal; 52, ♀ left uropod, dorsal.



Figs. 53-59.
Caecidotea sequoiae. 53, ♂ pleopod 1, anterior; 54, ♂ pleopod 2, anterior; 55, ♂ right pleopod 2, lateral; 56, endopod tip, ♂ pleopod 2, posterior; 57, same, anterior; 58, ♂ pleopod 2 exopod, posterior; 59, ♀ left pleopod 2, anterior. 60-61, *Asellus californicus.* 60, ♂ left pleopod 2 endopod, anterior (slightly tilted); 61, ♂ pleopod 2 exopod, posterior.

♂ pleopod 2 protopod slightly wider than long, unarmed. Exopod much shorter than endopod, suture between segments not clearly defined; proximal segments with 1 seta on lateral margin and triangular concavity on posterior surface; distal segment quadrate; lateral margin with 7 setae; posterolateral corner with long, curved setae. Endopod subpyriform, with long fissure; tip with the following elements for which I am using the standard terms introduced by Steeves, altho I consider the homologies questionable: Cannula short, conical; medial process very long, spiniform; lateral process a papillate ridge; posterior process cylindriform, truncate.

♀ pleopod 2 pyriform, with 2 setae at apex and 1 seta on lateral margin.

Uropods slender, slightly longer than pleotelson. Endopod 1.5 (holotype) or 1.3 (paratype) times as long as exopod; both rami with dense cluster of long apical setae.

Etymology. The specific name refers to the occurrence of the new species in Sequoia National Park.

Relationships. The slender body, elongate telson, and long antenna 2 and uropods are features common to a number of other troglobitic species of *Caecidotea*. The accessory claws on the dactyls of pereopods 5 - 7 are unusual, and the structure of the endopod of the male pleopod 2 is unlike that of any known asellid.

now Calasellus

Asellus (Phreatoasellus) californicus (Miller) (Figures 60 - 61)

Asellus californicus Miller, 1933, pp. 97-99, figs. 1-14. - Miller and Hoy, 1939, passim. *Caecidotea californicus* (Miller). - Van Name, 1936, pp. 521-522, fig. 323; 1940 p. 133.
Asellus kalifornicus Miller. - Chappuis, 1955, p. 165.

type species of genus

see Bowman 1981

Material examined: California, Lake Co., near Kelseyville; from renovated well on ranch of William Tuttle, collected by E.O. Essig, 21 III 1931: 3 syntypes, 2 ♂♂ USNM 134486 and 134488, 1 ♀ USNM 134487. - California, Santa Clara Co.; SW of Los Gatos, springs of Black Creek on slope of Black Mountain, collected by Roman Kenk, 25 VI 1967: 10+ ♂♀, USNM 112827. - California, Napa Co., Napa; mouth of spring under house, collected by S. Gray, III 1969: 3 ♂, USNM 135742.

Miller did not designate any types for *Asellus californicus*, hence the specimens examined by him are syntypes. In August 1970 Miller deposited 3 specimens in the National Museum of Natural History, designating them as ♂ holotype, ♀ allotype, and ♂ paratype. However, according to Article 73 of the International Code, these 3 specimens are syntypes.

The species has until now been known only from the type-locality; the present records extend the known range about 130 miles south. Miller provided a detailed description and full illustrations, and I add here only some details of the ♂ pleopod 2, since the taxonomic importance of this appendage was not fully recognized in 1933.

Miller describes the endopod of the ♂ pleopod 2 as "bulbous at the base, tapering into a long cylindrical process which curves outward over exopod. A fine

needle-like stylet originates in bulbous part, runs up through a sheath in curved process, and protrudes beyond its tip". As suggested by Miller's fig. 2, the bulbous base contains a cavity which opens on the anterior surface by a fissure which continues into the stylet. A smoothly rounded labial spur (Bowman and Holmquist, 1975) is present on the proximal margin of the fissure. The stylet in the Napa and Los Gatos specimens is free from the curved cylindrical process and not enclosed in a sheath. Steeves (1963) interprets the stylet as a very long cannula and the curved cylindrical process as a caudal process. The exopod of the ♂ pleopod 2 has a well developed catch-lobe on the posterior surface of the distal segment.

A. californicus is assigned to the genus *Asellus* because of the prominent basal and labial spurs on the endopod and the catch-lobe on the exopod of the ♂ pleopod 2. Within *Asellus* it is excluded from the subgenus *Asellus* because the maxilla 1 inner lobe has 5 rather than 4 terminal setae, the ♂ pereopod 1 palm lacks a proximal boss, and the ♀ pleopod 2 is not medially expanded. The distinctions between the other 2 subgenera of *Asellus, Mesoasellus* Birstein (1939) and *Phreatoasellus* Matsumoto (1962) are based on body shape and proportions. Both species of *Mesoasellus, A. (M.) dybowskii* Semenkevich from Lake Baikal and *A. (M.) strinatii* Chappuis from Turkey, are epigean broad-bodied forms, whereas the 5 Japanese species of *Phreatoasellus,* like *A. californicus,* are troglobitic and slender. Since Miller (1933) showed a clear correlation between a slender body and a subterranean life in asellids, the criteria used to separate the 2 subgenera seem questionable. Since I have not had the opportunity of examining specimens of *Mesoasellus* or *Phreatoasellus* I am assigning *A. californicus* provisionally to *Phreatoasellus.*

Except *A. (P.) californicus,* the species of *Phreatoasellus* are limited to Japan. The relationship of *A. californicus* to Eurasian rather than to other North American asellids has been noted by Birstein (1951) and by Henry and Magniez (1970), but the latter authors suggested affinities with certain species of *Nipponasellus.* The 1-merous mandibular palp of *Nipponasellus* makes this suggestion unlikely. If I am correct in assigning *A. californicus* to *Phreatoasellus*, there must have existed in the past a species or group of species ancestral to both *A. californicus* and its Japanese relatives, extending from Japan to California, presumably by way of the Bering land bridge. Because of the low vagility of troglobites, the ancestral form was probably epigean.

Salmasellus, new genus

Diagnosis. Body elongate. Pereonites nearly uniform in width. Telson not elongate. Mandibular palp 3-merous. Maxilla 1 inner lobe with 5 apical setae. ♂ pereopod 1 propus long, slender; palm without bosses, armed with row of strong spines. Dactyls of pereopods 2-7 without accessory spines. Endopod of ♂ pleopod 2 without basal or labial spurs; lateral margin with long setae arising from inflated base and fitting into groove along margin. Exopod of ♂ pleopod 2 without catch-lobe. Pleopod 3 exopod with transverse suture.

Type-species. *Salmasellus steganothrix*, new species.

Etymology. From the Latin "Salmo" = trout, + Asellus, referring to the discovery of this isopod in stomachs of rainbow trout.

Remarks. It is with some misgiving that I propose a new genus based on imperfect specimens removed from fish stomachs. I am encouraged to do so because of the abundance of the fragments and the distinctiveness of the new isopod; otherwise I might have been deterred by Stebbing's (1888) comment on an amphipod described by Stimpson (1857) from the stomach of a salmon: *"Corophium salmonis,* which Stimpson took, 'not in a very good state of preservation,' out of the stomach of a salmon, had almost better have been left there, instead of being drawn forth to create a very indistinct species."

Salmasellus steganothrix, new species (Figures 62 - 84)

Material examined. Alberta, Canada, Jasper National Park, Horseshoe Lake, collected by R. Stewart Anderson, numerous incomplete specimens and fragments, from stomachs of rainbow trout. An imperfect ♂, 7.3 mm, has been selected as the holotype, USNM 152771.

Description. Eyeless, unpigmented. Length up to about 8 mm; body slender, about 3.8 times as long as wide; pereonites increasing gradually in width to pereonite 6; pereonite 7 slightly narrower. Coxae all visible in dorsal view. Margins of head, pereonites, and telson moderately spinose. Head about twice as wide as long; anterior margin with distinct rostrum, postmandibular lobes prominent. Telson slightly wider than long; lateral margins convex, caudomedial lobe well defined.

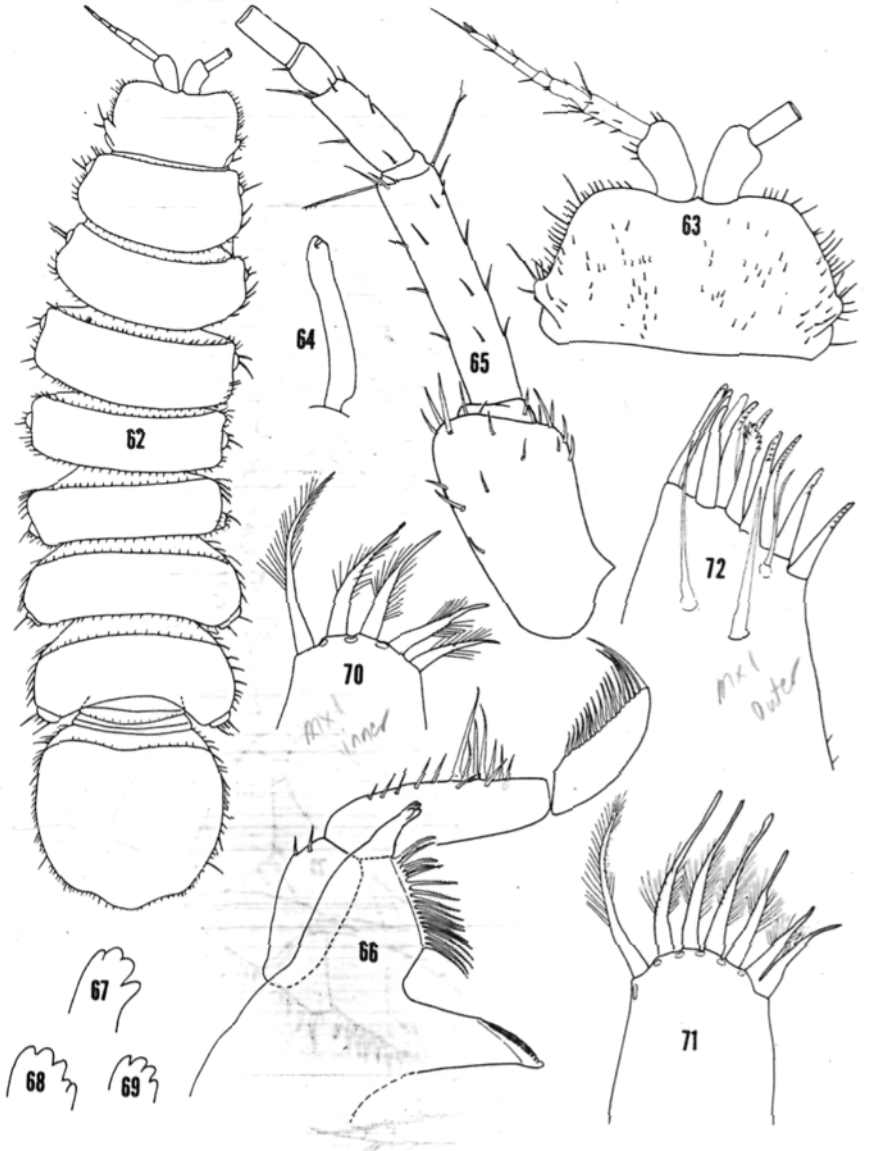
Antenna 1 about as long as width of head, flagellum of 4-5 segments, last 3 segments each with esthete. Antenna 2 broken on all specimens, usually between peduncle segments 3 and 4; 2 of longest antennae found among fragments had 53 and 55 flagellar segments and measured 7.5 and 6.2 mm respectively, hence antennae must be nearly as long as body.

Incisor of left mandible 5-cuspate; lacinia mobilis and incisor of right mandible 4-cuspate. Spine row with 17 spines in right mandible, 16 in left mandible. Palp as in fig. 66; 3rd segment with 16 setae in both mandibles. Maxilla 1, apex of outer lobe with 13 robust spines and 3 subterminal setae; inner lobe with 5 apical plumose setae (1 specimen had 7 setae on right maxilla 1 and 5 on left). Maxilliped with 3 retinaculae.

♂ pereopod 1 propus about 3 times as long as wide; palm straight, without processes but with about 8 strong sharp spines on proximal 0.6. Dactyl flexor margins with about 9 spines. ♀ pereopod 1 similar in shape to that of ♂, but much smaller and more poorly armed. Perepods 2-7 long, slender, and rather heavily spinose.

♂ pleopod 1 larger than pleopod 2; protopod about 0.4 length of exopod, with 3-4 retinaculae. Exopod nearly twice as long as wide, with about 25 short non-plumose setae on apical margin and distal part of lateral margin.

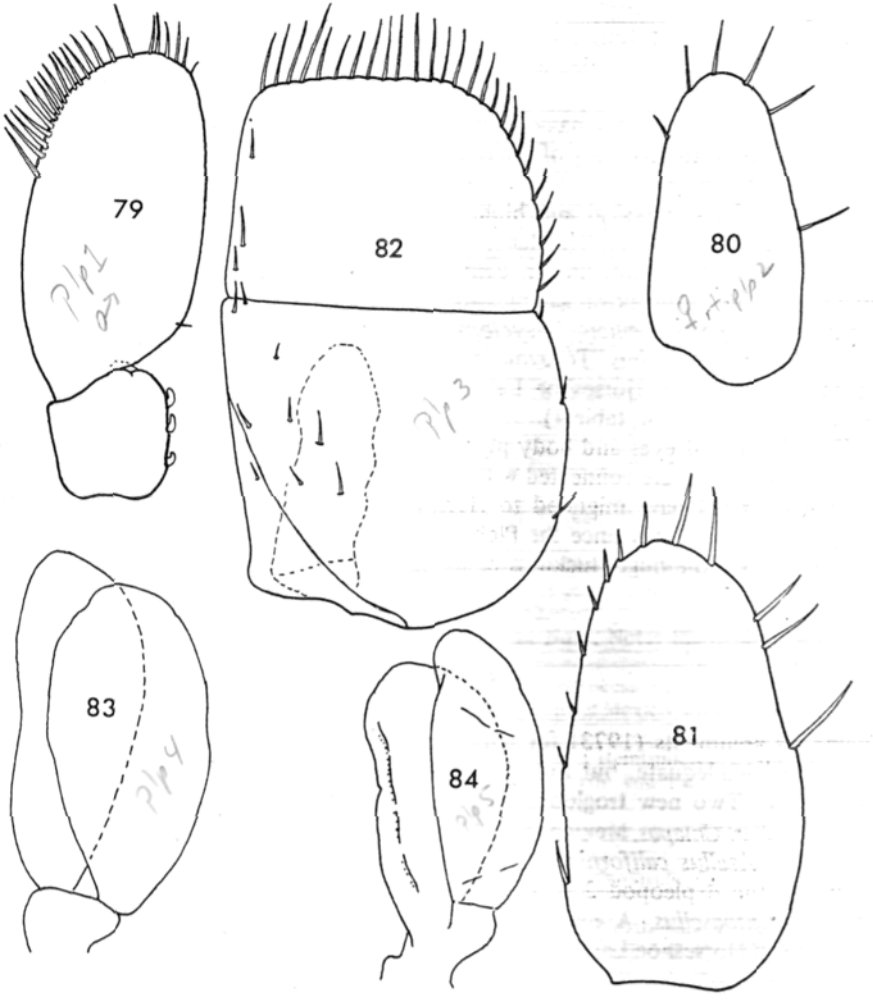
♂ pleopod 2 protopod slightly wider than long, with 1 seta on medial margin. Exopod much shorter than endopod, bent obliquely toward endopod; proximal segment subtriangular, with 5-7 plumose setae on lateral margin; distal segment oval, with concavity on proximolateral part of posterior margin and 2 long curved plumose setae at apex. Exopod L-shaped; base of L bearing 2 or 3 long setae increasing in length medially, fitting into groove on lateral surface of upright part of L,



Figs. 62-72. *Salmasellus steganothrix*. 62, ♀, dorsal; 63, head, dorsal; 64, left penis, ventral; 65, ♂ right antenna 1, dorsal; 66, right mandible; 67, incisor of right mandible; 68, incisor of left mandible; 69, lacinia of left mandible; 70, maxilla 1, inner lobe; 71, same, with abnormal number of setae; 72, maxilla 1, outer lobe.

Figs. 73-78. *Salmasellus steganothrix*. 73, ♂ pereopod 1; 74, ♀ pereopod 1; 75, pereopod 6; 76, ♂ pleopod 2, posterior; 77, ♂ pleopod 2 endopod, anterior; 78, uropod.

longest seta protruding from apex of upright, giving appearance of short apical seta. Upright part with transverse suture on posterior surface distal to midlength; suture leading to medial process ending in 2 divergent sharp tines; distal tine shorter, smooth; proximal tine longer, with serrate distal margin. Anterior surface of upright part without suture or medial process, more excavated proximally than posterior surface, leaving bases of 2-3 setae more exposed anteriorly than posteriorly.



Figs. 79-84. *Salmasellus steganothrix*. 79, ♂ pleopod 1; 80-81, ♀ right pleopod 2, anterior, from different specimens; 82, ♀ pleopod 3, anterior; 83, ♂ pleopod 4, anterior; 84, ♂ pleopod 5, anterior.

Apex of upright ending in rugose cylinder with slender curved tip; spiniform seta inserted on shoulder near base of cylinder in some specimens, absent in others.

♀ pleopod 2 oval, margins sparsely armed with naked setae, those on medial margin shorter and absent in small specimens.

Pleopod 3 exopod linguiform, bout 0.6 as wide as long; proximal segment about 0.7 length of distal segment. Pleopods 4 and 5 small, fleshy, without marginal setae or clearly defined sutures.

Uropods detached from all specimens, largest uropod found about 2.6 mm in length. Protopod with long spines on margins and surfaces. Rami slender, with long terminal setal clusters; exopod about 0.7, endopod about 1.2 times length of protopod.

Etymology. The specific name, from the Greek "stegano" = covered and "thrix" = hair, refers to the covering of the setae of the endopod of the ♂ pleopod 2 by the walls of the lateral groove.

Ecology. Some physical and biological data for Horseshoe Lake are given by Anderson (1974, table 6). This lake; at an elevation of 1230 m, has an area of 13 hectares and a maximum known depth of 32 m. The maximum Secchi disk reading was 12 m. In plankton samples Anderson found 6 species of Cladocera and 4 copepods: *Diaptomus silicis, Eucyclops agilis, Acanthocyclops vernalis,* and *Microcyclops varicans rubellus.* To avoid possible confusion, attention is called to the existence of another Horseshoe Lake in Banff National Park, farther south in Alberta (Anderson, 1974, table 4).

The absence of eyes and body pigment suggest that *Salmasellus* inhabits underground waters that are connected with Horseshoe Lake by springs. *Salmasellus* must have migrated to Horseshoe Lake, presumably from the south, by groundwater routes since the Pleistocene; it is inconceivable that it could have survived under the huge thickness of ice that covered the type-locality during the Pleistocene.

SUMMARY

Fleming's arguments (1973) for reducing *Conasellus* to a synonym of *Asellus* are considered inadequate, but the name *Conasellus* is replaced by its senior synonym *Caecidotea.* Two new troglobitic species of *Caecidotea* are described, *C. chiapas from caves in Chiapas,* Mexico, and *C. sequoiae* from Liburn Cave, Tulare County, California. *Asellus californicus* is reported from springs in Napa and Santa Clara Counties; the ♂ pleopod 2 is redescribed, and the species is assigned to the subgenus *Phreatoasellus.* A new genus and species, *Salmasellus steganothrix*, is described from Horseshoe Lake, Alberta, Canada.

RESUME

Les arguments de Fleming (1973) pour mettre en synonymie *Conasellus* et *Asellus*

sont considérés comme inadéquats. Cependant, le nom générique *Conasellus* est remplacé par son synonyme antérieur *Caecidotea.*

Deux nouvelles espèces troglobies de *Caecidotea* sont décrites: *C. chiapas* provenant de cavernes à Chiapas (Mexique) et *C.sequoiae* de la grotte de Liburn, Comté de Tulare (Californie). *Asellus californicus* est signalé dans des sources des Comtés de Napa et de Santra Clara; le pléopode 2 du mâle est redécrit et l'espèce est attribuée au sous-genre *Phreatoasellus*. Une espèce appartenant à un nouveau genre, *Salmasellus steganothrix,* est décrite du lac Horshoe, Alberta (Canada).

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